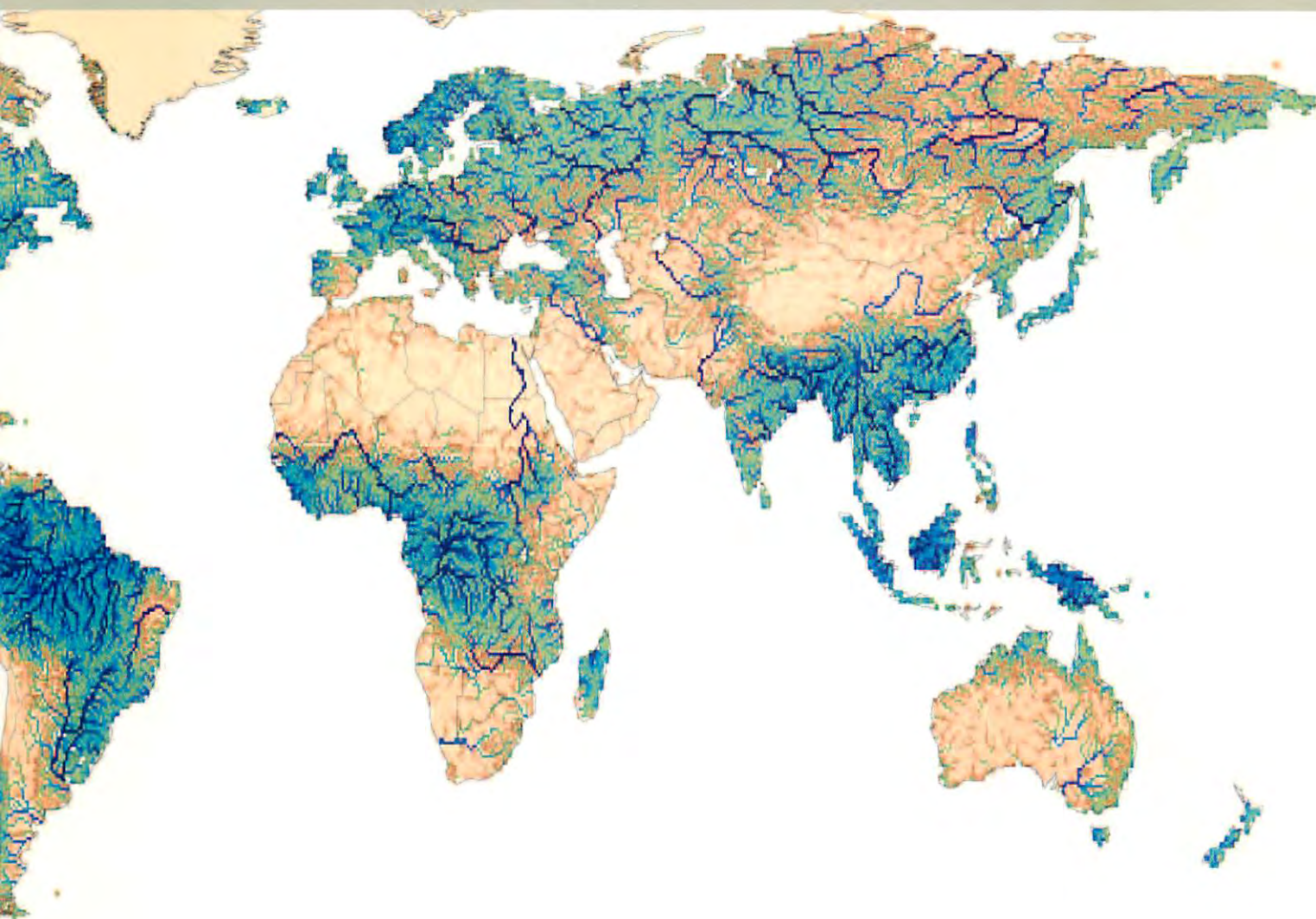




Inter-University Research Institute Corporation, National Institutes for the Humanities

**Research Institute for Humanity and Nature**

# Annual Report 2005





# ***Annual Report 2005***

Inter-University Research Institute Corporation  
National Institutes for the Humanities

Research Institute for Humanity and Nature (RIHN)



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## Message from Director-General

This is the RIHN Annual Report for 2005. It comprises RIHN's activity from April 1<sup>st</sup>, 2005 through March 31, 2006.

Since its establishment on April 1<sup>st</sup>, 2001, the RIHN successfully completed its first five years.

In 2004 RIHN became one of the "National Institutes for the Humanities" of the "Inter-University Research Institute Corporation, Japan." I think this reorganization has a very great significance for Japan as well as for the whole world of our age, because the RIHN's basic understanding that the root of the so-called global environmental problems lies in the human way of living (the human culture in the broadest sense of the word) is now widely acknowledged.

In the mid-February of 2006, RIHN's new building started to work in nature-rich Kamigamo area of Kyoto. I hope more and more vivid activity of our RIHN will be developed in this new environment.

Director-General  
Toshitaka HIDAKA

## History

### Fiscal Year

- 1995 A proposal of Japan Science Council of Ministry of Education, Science, Sports and Culture: "On the promotion of the global environmental sciences" (April). "It is necessary to examine the founding of a central research organization that will promote integrated cooperative research toward the solution of global environmental problems."
- 1997 Investigation of the possible forms that the proposed research organization for the global environmental sciences may take. The Ministry of Education, Science, Sports and Culture established the Chosakyoryokusha-kaigi (Committee of Investigation Collaborators) for the establishment of a central research organization and made a budget for the concrete investigations.
- The Ministerial Council for the global environmental conservation made an agreement on the "Provisional measure for global environmental conservation", in preparation for the UN General Assembly's Special Session on the Environment and Development (June). "The Council will investigate the means of possible adjustments necessary for the research organization to carry out integrated research in broad academic fields in addressing global environmental problems".
- 1998 Preparatory work for the establishment of the "Research Institute for the Global Environment Sciences" (tentative).
- 1999 The preparation Committee of the Institute compiled a report in March 2000 and proposed the foundation of the "Research Institute for the Global Environment Sciences" (tentative) for promoting integrated research projects, by amalgamating various broad disciplines from humanity and social sciences to natural sciences and using a network to be formed among workers in universities and research institutes within and outside the country.
- 2000 Investigation for the founding of the Research Institute for Humanity and Nature (tentative). Report "On the Fabric of the Research Institute for Humanity and Nature (tentative)" was completed in February.
- 2001 Foundation of the Research Institute for Humanity and Nature. Following the execution of the government ordinance (No. 151 of the year 2001) amending part of the ordinance on the law concerning the establishment of national schools (Kokuritsu-gakko-setchi-ho-shikorei), the Research Institute for Humanity and Nature was founded (Director-General: Professor Toshitaka Hidaka). The Institute commenced its research activity on the campus of Kyoto University.
- 2002 The Institute moved to the site of the old Kasuga Primary School of Kyoto City.
- 2004 Inter-University Research Institution Corporation, National Institute for the Humanities (NIHU) established on April 1st based on the National University Corporation Law. RIHN became one of the member institutes of the NIHU.
- 2005 New facility was completed in December 2005, and relocated in February 2006.

# Introduction

## Mission of RIHN

Research Institute for Humanity and Nature (RIHN) was founded in April 2001. This inter-university research institute, under the Ministry of Education, Culture, Sports, Science, and Technology, the Government of Japan, conducts integrated researches, to innovate countermeasures to the global environmental issues.

Environmental issues, such as global warming, loss of biodiversity, and depletion of water resources are said to be the consequences of humanity-nature interactions being manifested today in various parts of the world. It is fundamentally a problem of human life style, or culture in the broadcast sense of the word.

One of the difficulties in assessing global environmental issues stems from the fact that many of them have appeared across the vast regions of the globe in most unpredictable manner. A number of the problems manifested before us seem to be caused by factors, of which the origins are, in space and time, far away from regions of the problems. Nowadays we have understood that such problems appear to be strongly influenced by not only physical and chemical mechanisms, but also cultural causes.

Naturally, one would think that these multi-faced problems cannot be solved by conventional approaches. In fact, the measures taken hitherto were based on the idea of controlling nature, which has yielded few solutions, and even resulted in causing vicious cycles for the environmental issues.

Our first and most fundamental task is to define what is meant by the global environmental issues and to re-examine the conventional ways of thinking that were developed during the 20th century.

Firstly we examine how human interacts with nature, an intricately complex matter. It must be hard work. However this is our primary mission. Secondly, based on such perspectives we need to consider how we can maintain the global environment that has the "Futurability", and what sorts of life style we must adopt.

To achieve these goals, a new academic approach is called for. RIHN is tackling to a new trial stated in the message from the Director-General. We intend to announce to the public how human can benefit from our research, while building academic "knowledge" to further contribute to resolving the global environmental issues.

## Roles and Function of RIHN

### [Integration]

In recent years many studies aimed at finding various countermeasures to the global environmental issues, but we now have reached a point where new directions are needed. We have faced with questions such as, what sorts of lifestyles will be acceptable in the future, and how large an area of the tropical forest should be retained? To answer these simple, but socially demanding questions, we have developed a new integrated approach, bringing together different disciplines from natural sciences, social sciences, humanity studies, engineering, land and food sciences, medical sciences, and others.

### [Fluidity]

It is very important to maintain high fluidity of the research system, in order to emphasize a cross-disciplinary, integrated approach towards the environmental issues. RIHN is a research institute with the highest possible fluidity operation that satisfies the "project-based format".

### [Internationality]

Maintenance of the cross-disciplinary, integrated approach towards the global environmental issues would naturally demand international visions. RIHN will develop tight links with international as well as national research organizations, promote overseas-based research projects, and participate in the planning and operation of

international research projects. RIHN will also appoint many non-Japanese, visiting academics and research staff.

### **[Leadership]**

Strong leadership enables us to carry out integrated research in such a fluid organization. With collaborative researchers and institutions, RIHN will provide the leaders to multi-disciplinary research projects.

### **[RIHN as a Role of Inter-University Research Institute Corporation]**

RIHN, one of the inter-university research institute corporation, bears the following three major distinct features.

#### **1. RIHN as a co-operative think-tank**

We have run 14 ongoing, funded research projects since April, 2006. They have been promoted by more than 1,000 researchers consisting of RIHN staff and external collaborators. In line with our basic concept, "global environmental issues as human culture", the research projects cover diverse academic disciplines and fields such as natural sciences, social sciences and humanities. Also, we have invited experts and researchers not only from universities and institutional corporations, but also governmental agencies and commercial sectors.

#### **2. RIHN as interface between field sites and research correspondents**

More than 30 field sites that are being investigated by the research projects extend a wide geographical area including Japan and much of Eurasia. We have conducted persistent and collaborative research activities with research correspondents and local staff. Each field site has been set up in the country in which the field investigation is being operated under the academic authorization of the country, through MOA (Memorandum Of Agreement) and MOU (Memorandum Of Understanding) agreed between RIHN and the local institutions. The agreements have enabled us to enhance academic competency of young researchers in the country, and to promote academic exchange programs between RIHN and the local institutions.

#### **3. RIHN with High-Tech equipment**

RIHN has already installed state-of-the-art and brand-new analytical apparatuses in the laboratories of mass spectrometer (mineral and metal), stable isotope (tracer), and DNA analyses (genetic phylogeny and ancient genotype). We intend to develop a new analytical tool and to promote scientific research activities between RIHN staff and external collaborators.

### **■ Research Project System**

RIHN have carried out cross-disciplinary and integrated studies in a project-based format, without dividing research activities into traditional disciplinary areas. The project-based researches have been directed by the establishing 5 research axes that represent integrated perspectives of the global environmental problems; each research project follows the direction of the relevant research axis.

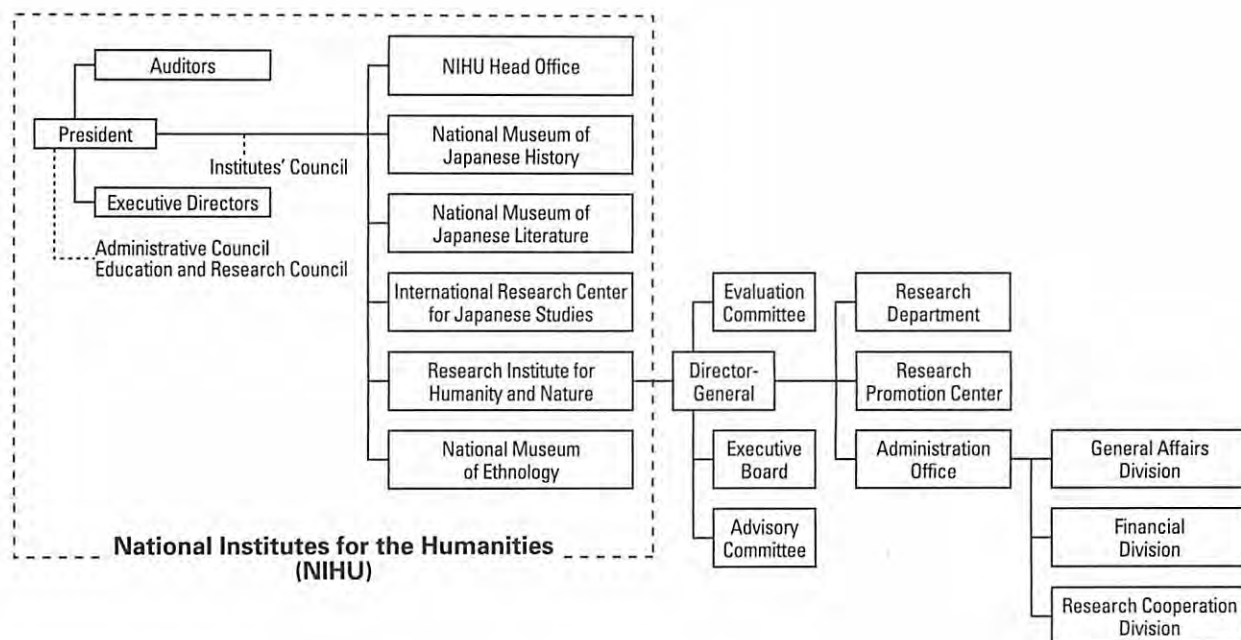
Each project is progressed with a few steps: the potential project leader conducts an Incubation Study (IS) of the project. Successful progress of the IS will promote the leader to develop the Feasibility Study (FS) of the period of about one year. Then, the FS will be upgraded to the full-scale study of about 5-year period, subject to results of the assessment by the Evaluation Committee, and approval by the Advisory Committee.

### **■ National Institutes for the Humanities (NIHU)**

Inter-University Research Institute Corporation **National Institutes for the Humanities (NIHU)** was established on April 1st., 2004, based on the National University Corporation Law. RIHN became one of the institutes of NIHU along with the following institutes, National Museum of Ethnology, International Research Center

for Japanese Studies, National Museum of Japanese History, National Institute of Japanese Literature, all of which are concerned with different viewpoints surrounding cultural problems. RIHN intends to contribute the solution of global environmental issues within this group, and to construct an academic concept on which to base human culture.

## Organization



### Partner Organizations for Fluid Association (Fiscal Year 2005)

- Center for Ecological Research, Kyoto University (2001-)
- Hydrospheric-Atmospheric Research Center, Nagoya University (2001-)
- Arid Land Research Center, Tottori University (2001-)
- Institute of Industrial Sciences, University of Tokyo (2002-)
- National Museum of Ethnology, NIHU (2002-)
- Graduate School of Science, Tohoku University (2002-)
- Institute of Low Temperature Science, Hokkaido University (2003-)
- Tropical Biosphere Research Center, University of Ryukyus (2003-)

## Boards and Committees (in alphabetical order)

### Advisory Committee

Deliberates on important matters relative to personnel, planning, administration and operation of the institute.

FUJII, Yoshiyuki	Director, Arctic Environment Research Center, National Institute of Polar Research, Research Organization of Information and Systems
FURUSAWA, Iwao	Professor, Faculty of Life Science, Fukuyama University
NAKAMAKI, Hirochika	Professor, Department of Cultural Research, National Museum of Ethnology, NIHU
NAKAMURA, Kenji	Professor, Hydrospheric-Atmospheric Research Center, Nagoya University
SHIRAHATA, Yozaburo	Senior Research Coordinator, Research Department, International Research Center for Japanese Studies, NIHU
TACHIMOTO, Narifumi	Dean, College of International Studies, Chubu University
TANAKA, Masayuki	Vice-President, Tohoku Institute of Technology
YAMAMURA, Norio	Professor, Center for Ecological Research, Kyoto University
AKIMICHI, Tomoya	Professor, Research Institute for Humanity and Nature, NIHU
FUKUSHIMA, Yoshihiro	Professor, Research Institute for Humanity and Nature, NIHU
HAYASAKA, Tadahiro	Professor, Research Institute for Humanity and Nature, NIHU
NAKAWO, Masayoshi	Professor, Research Institute for Humanity and Nature, NIHU
SATO, Yo-Ichiro	Professor, Research Institute for Humanity and Nature (August 1, 2004-), NIHU
SAITO, Kiyooki	Professor, Research Institute for Humanity and Nature, NIHU
	Director, Research Promotion Center, RIHN

### Evaluation Committee

Undertakes evaluations of the feasibility studies and selects research projects to be forwarded to full-scale research; interim and post-evaluation of the research subjects under full-scale research.

EHLERS, Eckart	Professor, University of Bonn, Germany
FURUSAWA, Iwao	Professor, Faculty of Life Science, Fukuyama University
IWASA, Yo	Professor, Graduate School of Sciences, Kyushu University
HEINTZENBERG, Jost	Director, Institute for Tropospheric Research, Germany
KIKKAWA, Jiro	Professor Emeritus, The University of Queensland, Australia
LEGENDRE, Louis	CNRS Research Professor, Director, Villefranche Oceanography Laboratory, France
MORISHIMA, Akio	Chair of the Board of Directors, Institute for Global Environmental Strategies
MURAKAMI, Yo-ichiro	Professor, International Christian University
NIWA, Masako	Professor Emeritus, Nara Women's University
SAWA, Takamitsu	Director, Institute of Economic Research, Kyoto University
SIMMATHIRI, Appanah	Senior Programme Adviser, Forestry Research Support Programme for Asia and the Pacific (FAO), Bangkok, Thailand
SUN, Honglie	Professor, Institute of Geographical Science and Natural Resources Research, Chinese Academy of Science, P. R. China
TACHIMOTO, Narifumi	Dean, College of International Studies, Chubu University
TANAKA, Masayuki	Vice-President, Tohoku Institute of Technology
WATANABE, Okitsugu	Whip, The Graduate University for Advanced Studies
YASUNARI, Tetsuzo	Professor, Hydrospheric-Atmospheric Research Center, Nagoya University

**Executive Board**

Discusses important matters of the institute.

AKIMICHI, Tomoya	Program Director, Research Institute for Humanity and Nature, NIHU
FUKUSHIMA, Yoshihiro	Program Director, Research Institute for Humanity and Nature, NIHU
HAYASAKA, Tadahiro	Program Director, Research Institute for Humanity and Nature, NIHU
HIDAKA, Toshitaka	Director-General, Research Institute for Humanity and Nature, NIHU
NAKAWO, Masayoshi	Program Director, Research Institute for Humanity and Nature, NIHU
SAITO, Kiyooki	Director, Research Promotion Center, Research Institute for Humanity and Nature, NIHU
SATO, Yo-ichiro	Program Director, Research Institute for Humanity and Nature, NIHU (August 1, 2004-)
OKAZAKI, Shoji	Director, Administration Office, Research Institute for Humanity and Nature, NIHU

RIHN organizes other committees, if necessary, for smooth operation.

## Staff Members

Director-General HIDAKA, Toshitaka

### ○Research Department

Program Directors	AKIMICHI, Tomoya	FUKUSHIMA, Yoshihiro	HAYASAKA, Tadahiro
	NAKAWO, Masayoshi	SATO, Yo-Ichiro	
Emeritus Professors	NAKANISHI, Masami	WADA, Eitaro	
Professors	AKIMICHI, Tomoya	FUKUSHIMA, Yoshihiro	HAYASAKA, Tadahiro
	KAWABATA, Zen'ichiro	KINOSHITA, Tetuya	NAKANO, Takanori
	NAKAWO, Masayoshi	NAKASHIZUKA, Tohru	OSADA, Toshiki
	SATO, Yo-Ichiro	TAKASO, Tokushiro	WATANABE, Tsugihiko
	YUMOTO, Takakazu		

◇Visiting Professors INOUE, Takashi (Executive Producer, NHK special TV program center)  
KUWAMURA, Tetsuo (professor, Chukyo University)  
SUGIMOTO, Takashige (Tokai University)

◇Associate Professors	ICHIKAWA, Masahiro	KANAE, Shinjiro	KUBOTA, Jumpei
	NONAKA, Kenichi	OKUMIYA, Kiyohito	SHIRAIWA, Takayuki
	TANIGUCHI, Makoto	UCHIYAMA, Junzo	UMETSU, Chieko
	YACHI, Shigeo	YOSHIOKA, Takahito	ZHENG, Yuejun

◇Assistant Professors	ABE, Hiroshi	ENDO, Takahiro	KATO, Yuzo
	KAWAMOTO, Kazuaki	SAEKI, Tazu	TAKEUCHI, Nozomu
	YATAGAI, Akiyo		

◇Research Fellows	IMAMURA, Akio	ISHII, Reiichiro (-Jun.30.2005)	KATAGIRI, Shuichiro
	KIMOTO, Yukitoshi	KUME, Takashi	MORIYA, Kazuki
	MURATA, Fumie	NISHIMOTO, Futoshi (Nov.1.2005-)	
	NISHIMURA, Yuichiro (-Sep.30.2005)		TAKAHASHI, Atsuhiko
	TANNO, Ken-ichi (Jul.1.2005-)	TATENNO, Ryunosuke (-Nov.30.2005)	
	TERASHIMA, Motoki	YAMASHITA, Satoshi	

◇Invited Research Fellows COBBI, Jane (Nov.1.2005-Jan.31.2006)  
FENG, Fong-Long (Oct.3.2005-Feb.28.2006)  
HARRISON, Rhett Daniel (Sep.1.2005-)  
KHARAKWAL, Jeewan Singh (-May.9.2005)  
KUPPANNAN, Palanisami (Apr.15.2005-Jul.31.2005)  
LEE, Ya-Fu (05.6.20-05.9.19)  
LI, Jun (Sep.20.2005-Dec.20.2005)  
QI, Wuyun (-Aug.17.2005)  
SHEN, Weirong (-Dec.20.2005)  
SHINDE, Vasant Shivram (Mar.10.2006-)  
ZHENG, Hongxing (Apr.6.2005-Mar.30.2006)

◇Research Fellows (RR)	HOSHIKAWA, Keisuke	MATSUOKA, Masayuki	SATO, Yoshinobu
◇Research Fellows (JSPS)	CHENG, Zhi	HYODO, Fujio	KUROKAWA, Hiroko
	NAGANO, Takanori	NAKAGAWA, Michiko	SATAKE, Shinsuke
◇Clerks	FUKETA, Yoshimi	HARADA, Atsuko	HASE, Noriko
	TAIRA, Hiroyo	ICHIDA, Koichiro	ISODA, Maki
	IWATA, Atsuko	KOBORI, Masako (Oct.1.2005-)	MORI, Masayo (Dec.1.2005-)
	NAGAOKA, Kumiko	NAKAMURA, Yumiko (-Feb.7.2005)	
	OKITA, Hiroko	ONAKA, Yoriko	SASAKI, Noriko
	SHIMIZU, Hiromi	SHIONO, Keiko	TAKAHASHI, Keiko
	TAKINO, Kayoko		
◇Technicians	AKEDO, Masako	FUJIWARA, Yoichi	HASHIMURA, Osamu
	HOSONO, Takahiro	IBUKI, Naomi (Nov.1.2005-)	IGETA, Akitake
	IMADA, Miho	INOUE, Mitsuyuki	ISHITOBI, Tomotoshi

KASHIO, Tamaki	KATSUYAMA, Masanori	
LINDSTROM, KATI (May.19.2005-)		MAEDA, Tomoko (Oct.1.2005-)
MATSUKAWA, Taichi	MIYAJIMA, Toshiaki	MIYAWAKI, Chie
MIYAZAKI, Chihiro (Nov.1.2005-)	MURAKAMI, Yumiko (May.1.2005-)	
NAKANISHI, Nozomi	NAKATSUKASA, Michiko (05.7.16-)	
OGAWA, Akiko	OGURA, Asayo	OISHI, Taro
ONISHI, Hideyuki (May.16.2005-)	SASAKI, Naoko	TANAKA, Takuya
UENO, Aki	WATANABE, Mitsuko (Oct.1.2005-)	

## ○Research Promotion Center

◇Director, Professor	SAITO, Kiyooki		
◇Associate Professors	MOMOKI, Akiko	SEKINO, Tatsuki	YOSHIMURA, Mitsunori
◇Assistant Professor	KOHMATSU, Yukihiro		
◇Technicians	IGI, Setsuko	TAKI, Chiharu (-Jul.31.2005)	TANAHASHI, Toshiyuki

## ○Administration Office

Director	OKAZAKI, Shoji		
◇General Affairs Division	Head	INOUE, Akio	
	Deputy Head	KOSEKI, Kenichi	
General Affairs Section	Head	MURATA, Satoshi	
	Clerk	OKITA, Masaki	
	Secretary	MURATA, Chiyo	
	Clerical Assistant	ISHIHARA, Naoko	
Personnel Section	Head	MINATO, Hideto	
	Chief	NAKANISHI, Seiji	
	Clerical Assistant	IWASAKI, Eri	
◇Accounting Division	Head	MORI, Takashi	
	Deputy Head	NISHIGAKI, Soji	
Budgeting Section	Head	URASHIMA, Shinji	
	Clerical Assistant	MORIKAWA, Akiko	
Accounting Section	Head	TANAKA, Yoshiro	
	Clerk	SETA, Yoriko	
	Clerical Assistant	HOSOGUCHI, Miyo	
Supply Section	Head	MIYAZAKI, Yoshihito (-Dec.31.2005)	SATO, Fumiaki (Jan.1.2006-)
	Chief	MATSUKI, Toshiyuki	
	Clerical Assistants	KIMURA, Minako	TAMEISHI, Miki
	Janitor	ONISHI, Kazuma	
Facilities Section	Head	SHINO, Ayumi	
	Clerk	SHINTANI, Tomohiro	
◇Research Cooperation Division	Head	MATSUDA, Mitsunori	
	Deputy Head	MAENO, Masayo	
Research Cooperation Section	Head	OKAZAKI, Akihiko	
	Clerk (maternity leave)	MATANO, Makiko (-Dec.31.2005)	
	Clerk	IMAI, Masatoshi	
	Clerical Assistants	ARAKI, Keiko	HIROSE, Kumi
		OMAE, Yoko	SODEOKA, Sachiko
International Affairs Section	Head	SUMIKURA, Mariko	
	Clerk	OHSHIMA, Minako	
	Clerical Assistant	OHMOTO, Emi	
Team Research Section	Head	OOSUGI, Akira	
	Technicians	FUJITA, Masanobu	KANEMATSU, Takako
		MATSUDA, Kaeko (Jun.16.2005-)	SUEZAWA, Reiko (-Jun.30.2005)

## Research Activities

### Research Axes and Research Projects

Each project will be organized through the period of incubation study (IS) and tested in the feasibility study (FS) of about one year. Then the result of the feasibility study will be evaluated and, if assessed as suitable, will proceed to the full-scale study of about 5 years. In this process the evaluation of the project is given by the Evaluation Committee and approval by the Advisory Committee.

#### AXIS 1: Environmental Change Impact Assessment

To study possible changes in natural environment and their impacts on human-ecological system.

- 1-1FR Impacts of climate changes on agricultural production system in arid areas
- 1-2FR Recent rapid change of water circulation in the Yellow River and its effects on environment
- 1-3FS Vulnerability and resilience of social-ecological systems

#### AXIS 2: Human Activity Impact Assessment

To study impacts on natural systems of human industrial and economic activities and their changes that are induced by reforms and replacement of political and ideological domains.

- 2-1FR Emissions of greenhouse gases and aerosols, and human activities in Eastern Asia
- 2-2FR Sustainability and biodiversity assessment on forest utilization options
- 2-3FR Human activities in Northeastern Asia and their impact to the biological productivity in North Pacific Ocean
- 2-4PR Human activities on urban subsurface environments
- 2-5PR Erosion of genetic diversity as a social, ecological and environmental problem
- 2-6FS Diagnosis of chain interactions between humans and nature using environmental traceability method

#### AXIS 3: Spatial Scale

To clarify the whole interactions between human and nature in a given region, and explore for constructing sustainable society.

- 3-1FR Multi-disciplinary research for understanding interactions between humans and nature in the Lake Biwa-Yodo River watershed
- 3-2FR Interactions between natural environment and human social systems in subtropical islands
- 3-3FS Environmental change and the Indus civilization

#### AXIS 4: History and Time Scale

To demonstrate sustainability and transformation by examining historical and temporal processes of interactions between global environmental changes and human activity.

- 4-1FR Historical evolution of adaptability in an oasis region to water resource changes
- 4-2FR A trans-disciplinary study on the regional eco-history in tropical monsoon Asia: 1945-2005
- 4-4FS Neolithisation and modernisation: landscape history on East Asian inland seas
- 4-5FS Historical interactions between the hybrid societies of ethnic groups and the natural environment in a semi-arid region in central Eurasia

**AXIS 5: Conceptual Framework for Global Environmental Issues**

Theoretical and empirical analysis for building conceptual framework of global environmental issues.

**5-1FR** Global water cycle variation and the current world water resources issues and their perspectives

**5-2FR** Interactions between the environmental quality of a watershed and the environmental consciousness: with reference to environmental changes caused by the human use of land and water resources

**5-3PR** A new cultural and historical exploration into human-nature relationships in the Japanese Archipelago

**5-4FS** Effects of environmental change on interactions between pathogens and humans

**Incubation Studies**

1. Better understanding the interaction between carbon circulation and human activities in Asia (HONDA, Yoshiaki, Chiba University)
2. Interactions between humans and harmful biological agents in degraded freshwater ecosystems (KAWABATA, Zen'ichiro)
3. Infectious diseases as a global environmental problem – a human ecological approach to insect-borne diseases in tropical Asia (MOJI, Kazuhiko, Institute of Tropical Medicine, Nagasaki University)
4. Environmental changes and people's lives on the Loess Plateau – a study of its environmental history (MURAMATSU, Koichi, Gakushuin University)
5. Hypoxic environment at high altitude -human aging and diseases in association with ecology, culture and nature- (OKUMIYA, Kiyohito)
6. On-farm conservation: environmental compatibility of a traditional farming system and lifestyle (SATO, Tadashi, Tohoku University)
7. Historical interaction between nomadic states' activities and environmental transformation in the high-latitude Asian steppe region (SHIRAISHI, Noriyuki, Niigata University)
8. A design of the self-reliant and sustainable local communities: a case study on Ise Bay basin area (TAKANO, Masao, Graduate School of Environmental Studies, Nagoya University)
9. Change and stability in environment: why do people have a fear of environmental change? (TAKEUCHI, Nozomu)
10. Reconstruction of the high resolution environmental history and high-precision chronology by the analysis of annually laminated sediments (YASUDA, Yoshinori, International Research Center for Japanese Studies)
11. Cooperative society development for cross-national environmental issues in East Asia (ZHENG, Yuejun)

## Research Projects

### Full-Research

**Research axis:** Environmental Change Impact Assessment

**Project number:** I-1FR

**Project name:** Impacts of climate changes on agricultural production system in arid areas

**Project leader:** WATANABE, Tsugihiko (RIHN)

**Core members:** see Table 1 attached at the end

**HP:** <http://www.chikyu.ac.jp/iccap/>

### Research objectives and topics

#### 1. Research Objectives

- a) To examine and diagnose the structure of land and water management in agricultural production system in arid areas, especially to evaluate quantitatively the relationship between cropping system and hydrological cycle and water balance in farmland and region.
- b) To develop the methodology or model for integrated assessment on impacts of climate change and adaptations for it, mainly on the aspect of the land and water management.
- c) To assist the development and improvement of the Regional Climate Model (RCM) for more certain prediction with higher resolution of future changes in regional climate.
- d) To assess the vulnerability of agricultural production system and to suggest possible and effective measures for enhancing sustainability of agriculture, through integrated impact and adaptation assessment of climate changes.

#### 2. Topics and Methodology

- a) This project selects two case study areas, the Mediterranean region of Turkey and Nile Valley and Delta in Egypt, in the east Mediterranean region, which is one of the most sensitive areas in agriculture to predicted future climate change.
- b) Focusing land use and cropping pattern, and soil and water condition, its interrelationship with regional climate, basin hydrology, plant and crop production, irrigation system, agricultural economics, etc. is to be modeled with which the vulnerability of agricultural production system is assessed.
- c) Based on some scenarios for future climate change generated by the improved RCM, mechanisms of the impact and adaptation processes in agricultural production system are identified.
- d) With feedbacks and interactions clarified in analyzing the process of assessing climate change impacts and adaptations, the key factors and parameters for improvement of the sustainability of agriculture are to be identified.

**Project leader and collaborators:** see the table attached at the end.

#### Progress of the Project from April 2005 to March 2006

Based on the diagnostic studies on the natural condition of the basin including climate, hydrology, water resources, and on human activities like land use, cropping system, and irrigation and drainage management, present basic structure of the agricultural production system is analyzed. Simultaneously, the future possible climate changes of the basin in the 2070s is projected by the most advanced GCMs and RCM with downscaling methods based on the SRES scenarios of A2 and A1B. With generated climate scenarios, impacts of climate changes on regional hydrological regime, natural vegetation, crop productivity, irrigation management, cropping cultivation system, and national economy have been assessed by some particular models developed in this project.

These assessments verify some points about the method for generating future climate scenarios and its

certainties, and prove the basic structure of the present agricultural system and the path of climate change impacts on the system.

## **Outcomes and Future works of the Project**

### **1. Outline of the outcomes**

#### **1) The whole project**

- a. The climate change scenarios for the 2070s of the basin have been generated, with which impacts of climate changes on basin hydrology and agriculture could be assessed and discussed.
- b. The projection of future climate by the GCMs and RCM has still much uncertainty, while measures for improvement are developed and applied during the model development stage.
- c. Basic framework of paths of climate change impacts on the agricultural production system of the basin was depicted with concerning components, critical factors and relations.
- d. In the basin in the 2070s, air temperature will increase by 1 to 2 degree in Centigrade in winter, and monthly precipitation will decrease by 5 to 10 mm, at maximum 30mm.
- e. The conventional rain-fed wheat depends on rainfall in winter from November to May.
- f. Wheat production may have some damages caused by higher temperature and lack of rainfall. Higher temperature might make growing period shorter and less fertility resulting in reduction of vegetation growth and yield, while higher concentration of CO<sub>2</sub> could enhance photosynthesis of crops with higher vegetation production.
- g. Available water resources for irrigation will be decreased by less rainfall and snow in winter and earlier snow-melt in spring with higher temperature.
- h. Irrigation water requirements in summer will be increased with higher temperature resulting in much water consumption.
- i. Sea-level rise will cause ill drainage in the lower region in the delta, while seawater intrusion into ground water will be very limited because of less permeability of geological profiles.
- j. The possible natural vegetation will be shifted: steppe, deciduous broadleaf trees, and savanna will expand and semi-alpine evergreen trees will shrink in area.
- k. Land use and cropping pattern may change, for example, spring-wheat may come up to north and higher land.
- l. Other impacts on pest and disease and changes in livestock reproduction system can be predicted.

#### **2) Outcomes of sub-groups**

##### **a. Climate**

The MRI-CGCM2 of Meteorological Research Institute, Japan projects that average temperature will increase by 2.3°C in southern part of Turkey in the 2070s with global warming experiment and annual precipitation will decrease from 470mm to 360mm. The method to downscale the outputs of GCM with RCM and re-analyzed meteorological data like of NCEP or ECMWF is developed. Analysis of the archived meteorological station data proves the trend of temperature increase and precipitation decrease in the past.

##### **b. Hydrology and water resources**

The annual average runoff discharge of the Seyhan River is 282mm and available water resources of the basin are relatively stable. Since the 1990s, there has been no serious drought with dry-up of reservoirs, while in the future some drought may happen by reduction of runoff discharge caused by climate change.

Sea-level rise will cause ill drainage in the lower region in the delta, while seawater intrusion into ground water will be very limited. In the delta region, irrigation depends only 1% of its water supply on ground water.

##### **c. Vegetation and crop productivity**

In the Seyhan Basin, vegetation varies from lower coastal region to semi-alpine region of 1,000 meters or more above sea level. In the area below 600m above sea level, original or natural vegetation is lost by human

activities. It is predicted that global warming may expand the area with, steppe, deciduous broadleaf trees, and savanna and shrink semi-alpine evergreen trees in the basin.

The increase of CO<sub>2</sub> concentration, temperature and water stress with climate change may affect production of major crops in the basin, including wheat in rain-fed condition and maize in irrigated land.

#### d. Irrigation and drainage

Water use in irrigation has been increasing. The reasons for the increase are diversification of cultivated crops, increased loss in delivery system caused by overage and ill-maintenance, and lack of intensives for water saving of the farmers. Soil salinity problem was serious after construction of irrigation systems in the lower delta and has been mitigated by leaching with much water application. The predicted water demand increase due to climate change could be managed by improvement of irrigation efficiency even with the present facilities.

#### e. Socio-Economy

The multi-regression analysis estimate future reduction of cereal production in the Adana region and rein-fed region with changes in temperature and rainfall due to global warming. On the other hand, the Input-Output model predicts the higher productivity of agricultural sector for the whole Turkey with global warming. Also, future admission of Turkey to EU may affect definitively the Turkish agriculture, especially in view of direct income support policy of EU.

## 2. Future works

Further works are required to realize the expected outcomes on two main subjects as follows:

### 1) Integrated assessment of climate change impacts

The factors, mechanism, direction and extent of climate change impacts on agricultural production system, especially on land and water management, are to be figured out, depicting a elements and their relation map. Relationships between a certain climate element and target factor or parameter, and changes in spatial distribution of target factor due to climate change are to be evaluated quantitatively or on GIS, with some range according to adaptation level. These figures and analyses could demonstrate the possible changes of production system with some scenarios of socio-economic conditions and provide the climate models with feedbacks and suggestions as well as necessary mentoring the climate change related parameters.

### 2) Structure and wisdom of agriculture in arid region

Not only the climate change impacts, but also implication of agriculture in local environment is to be discussed. In practice, agriculture-related or agriculture-induced environmental problems are described including their aspect, reason, and measures in the past and present, especially with special reference with climate changes. Based on the local knowledge on living with the resources and environment of the region, conditions for sustainable agriculture and society are to be suggested.

## Major output of the project (April 2005 to March 2006)

### 1. Publications

#### Books

Chakravorty, U. and C. Umetsu 2005 "Basinwide Water Management: A Spatial Model," In Jacqueline Geoghegan and Wayne Gray eds. *Spatial Aspects of Environmental Policy* (Series editors, Tom Tietenberg and Kathy Segerson. THE INTERNATIONAL LIBRARY OF ENVIRONMENTAL ECONOMICS AND POLICY) Hampshire, UK: Ashgate Publishing. pp. 5-27.

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## 2. Main research meetings

Main activities of the project can be summarized as below.

### 1) International Workshop

a. Kyoto Workshop in the RIHN Pre-International Symposium, Kyoto. October 18-20, 2005

a. Participants: 37 (Japanese: 30, Turkish: 7)

b. Invited lecture: 5, Research paper presentation: 14. Proceedings published.

b. Kyoto Workshop, Japan. March 9-10, 2006

a. Participants: 26 (Japanese: 20, Turkish: 5, Israeli: 1)

b. Research paper presentation: 20. Proceedings published.

### 2) Project Research Meeting

Five times; May, June, September, December 2004, and March 2005

### 3) Sub-Group Research Meeting

Many (properly)

**Table 1 Project Member: Project Leader and Collaborators**

#### Japan

##### Project Leader

WATANABE, Tsugihiko\*\* Research Institute for Humanity and Nature

##### Adviser

MATSUBARA, Masatake Osaka University of Foreign Studies

##### Project Member

ABE, Ayako	Center for Climate System Research, University of Tokyo
ADACHI, Fumihiko	Faculty of Life and Environmental Science, Shimane University
ANDO, Makoto	Field Science Education and Research Center, Kyoto University
AODA, Tadao	Faculty of Agriculture, Niigata University
ASAMI, Atsuyuki	Graduate School of Agriculture, Kyoto University
ASANUMA, Jun	Terrestrial Environment Research Center, University of Tsukuba
FUJIHARA, Yoichi	Research Institute for Humanity and Nature
FUJINAWA, Katsuyuki*	Faculty of Engineering, Shinshu University
FURUKAWA, Masanao	Graduate School of Science and Technology, Shinshu University
HARAGUCHI, Tomokazu	Faculty of Agriculture, Saga University
HIRATA, Masahiro	School of Agriculture, Obihiro University of Agriculture and Veterinary Medicine
HOSHIKAWA, Keisuke	Research Institute for Humanity and Nature
HOSHIYAMA, Sachiko	Kinjo-Gakuin University
IIZUMI, Toshichika	Graduate School of Life and Environmental Sciences, University of Tsukuba
KAGATSUME, Masaru	Graduate School of Agriculture, Kyoto University
KAMEYAMA, Hiroshi	Faculty of Agriculture, Kagawa University
KATO, Keisuke	Graduate School of Agricultural Studies, Tottori University
KIMURA, Fujio*	Graduate School of Life and Environmental Sciences, University of Tsukuba
KITOH, Akio	Meteorological Research Institute, Japan Meteorological Agency
KITSUKI, Akinori	Graduate School of Agriculture, Kyoto University
KOBATA, Tohru*	Faculty of Life and Environmental Science, Shimane University

KOJIRI, Toshiharu*	Disaster Prevention Research Institute, Kyoto University
KONDO, Hidetoshi	Graduate School of Agriculture, Kyoto University
KORIYAMA, Masumi	Faculty of Agriculture, Saga University
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## Full-Research

**Research axis:** Environmental Change Impact Assessment

**Project number:** 1-2FR

**Project name:** Recent rapid change of water circulation in the Yellow River and its effects on environment

**Project leader:** FUKUSHIMA, Yoshihiro (RIHN)

**Core members:** see p. 25~26

**HP:** <http://www.chikyu.ac.jp/rihn/project/1-2.htm> & <http://www.chikyu.ac.jp/yrjs/>

## ■ Outline of Research Project

### 1. Objective

Environmental problems related to the water resources and managements have been occurred all over the world. Since 1990's, the drying-up frequency has rapidly increased due to uptake of river water to irrigation midstream in the Yellow River. In the lower reaches area of the Yellow River, living people suffer water shortage for irrigation, industrial and drinking water. The objectives of this research projects are; (1) to evaluate both effects of global warming and land cover/use changes on water cycle in the Yellow River Basin, (2) to establish management tactics, and (3) to estimate and analyze the future impacts. Japanese and Chinese research teams work together for (1). Chinese team mainly deals with (2), and Japanese team mainly works for (3). As Chinese research team is carrying out the integrated research on hydro-meteorological observations and analyses in the Yellow River Basin, the Japanese research team of this project focuses on the following two subjects; (1) Processes of water and heat exchanges and precipitation at land-atmosphere boundary in the middle reach of the Yellow River of semi arid region, and (2) Water and material exchanges between surface water – groundwater - seawater in the lower reach of the Yellow River, and it's effects on the marine biological system in the Bohai Sea. This project is going to evaluate the water cycle and water uses in the Yellow River Basin with a high resolution model on hydrology and water resources, as well as the observation results from (1) and (2) with newly established observation systems. Socio economical analyses by uses of statistical data and field observations data will be made through relationship between economical development and changes in water demands since 1950's. Finally, this project evaluates the changes in water uses due to natural environmental change including climate changes and human activities.

### 2. Contents

Five sub-teams are established for the project and Sub-team (5) is to synthesize the results derived from other sub-teams in the final year;

- (1) Observation and Analysis of Atmospheric Boundary Layer structure in Loess Plateau
- (2) Observation and Analysis of groundwater and sea water in the mouth of the Yellow River
- (3) Observation and Analysis on Variability of Marine Biology in Bohai Sea
- (4) Statistical analysis between economical development and water resources
- (5) Analysis of both water cycle and water resources by the establishment of a high-resolution hydrological model

## ■ Relationship with Research Axis

This project belongs to Axis 1 "Environmental change impact assessment", however, the project consists of both Axis 1 and Axis 2 "Human activity impact assessment". This is because the increase in air temperature may be caused by increase in energy consumption and increased aerosol. In addition to this, changes in land-atmosphere interaction due to land cover/use changes by irrigation may alter the water vapor transports from the ocean to the land due to the changes in land-ocean interaction. Regarding to Axis 3 "Spatial scale", data sets with the spatial resolution of 0.1 degree grid (about 10km x 10km) will be used in sub-regions in terms of social economy, environmental issues

and sedimentation. Policy decision and management to the changes of river discharge during 1950~2000 is related to Axis 4 "History and time scale" This project will also address the concept of "impact zone" of the Yellow River, because the concept of "natural basin" does not work for the hydrology with the human activities, particularly in the lower reach of the Yellow River. Therefore this project will also concern the Axis 5 "Conceptual framework for global environmental issues."

### ■ Project members

- ◎ FUKUSHIMA, Yoshihiro: RIHN, Professor, Synthesized Understanding from each sub-study component and analysis of both water cycle and water resources by the establishment of a high-resolution hydrological model (SU & HHM)
- IMURA, Hidefumi: Nagoya University, Professor, Statistical analysis between economical development and water resources (SEW)
- KINOSHITA, Tetsuya: RIHN, Professor, Historical analysis on flood and drought disasters of the Yellow River (HA)
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## ■ Status

### Background and objectives

Environmental problems related to the water resources and managements have been occurred all over the world. Since 1990, the frequency which river water in the Yellow River has not reached to the Bohai Sea has rapidly increased due to uptake of river water to irrigation in the midstream area. In the lower reaches area of the Yellow River basin, people suffer water shortage for irrigation, industrial and drinking water. In addition to these, the shortage of river water induces the decrease of groundwater level and increase of water pollution. According to the increase in population and food demand on the earth, such a case seems to increase and to spread much more in near future worldwide. How can we recognize and resolve thus problem is the most important and urgent for human being? Recent crisis occurred in the Yellow River basin is complicated, because natural climate fluctuation, global warming and change of land utilization may affect each another. This research will be made based on recent knowledge on the effects of climate change and human impacts on water cycle in the Yellow River Basin, and ancient Chinese thought/idea on water managements.

### Methods

We plan to achieve this study through the following sub-studies;

- (1) Field observations and analyses on land-atmosphere interactions in the Loess Plateau,
- (2) Field observations and analyses on interactions between river water, groundwater, and seawater in the Yellow River delta,
- (3) Development of socio-economical model for sustainable developments,
- (4) Development of ecological model of Bohai Sea,
- (5) Development of an integrated model to evaluate the effects of land use change on the water circulation in the Yellow River basin, and
- (6) Analyses of Chinese thought/idea and knowledge on water managements.

Sub-study (6) has been started from 2005.

The sub-study (5) will integrate the results obtained by each sub-study team.

### Expected results

We wish to get how land use changes affect to water cycle over the Yellow River drainage basin and what kinds of effect may occur by the decrease of groundwater stages in the downstream to marine circumstance through five years research. This study may be at the forefront of the ecological studies in the coastal zones where many people live, and we may be able to evaluate the effects on the marine products in the Sea of Japan through Bo-Hai Sea and

Yellow Sea. We will evaluate the problems under the consideration which the provision to the changed environment would cause worse environment, by uses of written documents during more than 3000 years and recent data in the Yellow River basin.

### Attained Results

Cut-off of the Yellow River during 1990's mainly happened due to water consumptions from upstream to downstream for maintaining the irrigated areas with slight decrease of precipitation. The cut-off of the Yellow River ceased recently because the changes of water law by Chinese government and water managements with seasonal control of the water consumptions. However the river discharge into the Bohai sea is still very low. Meanwhile, the recent satellite data and numerical simulation models show the decrease of exchanging water between Bohai Sea and the Yellow Sea. We will evaluate the relationship between the decrease of Yellow River discharge and the decrease of exchanging water between Bohai Sea and the Yellow Sea. Observation results at Loess Plateau show the drastic vertical exchange of air between land surface and atmosphere. We will develop a model to explain this unexpected new phenomenon. In addition to these, the sedimentation in the Yellow River in downstream still increases the possibility of flooding though continuous embankments have been made. Degradation of water quality in irrigated areas is another important issue in the Yellow River basin.

### ■ Outcome up to now

#### Summary

Members of project are working together with the other project "Development of simulation models for Hydrology and Water Resources" which is a subject No. 6 of "Coexistence of People, Nature and the Earth (RR2002)", the Revolutionary Research Project of MEXT. This RIHN project 1-2 mainly focus on the field observations and analyses, on the other hand, The RR2002 project mainly focus on the establishment of the hydro-meteorological data sets (including high resolution of precipitation and radiation data set), evaluation of land use/cover changes from satellite data, and analyses of water managements in irrigation areas. The outcomes of the project 1-2 are as follows;

#### Sub-team (1): Observation and Analysis of Atmospheric Boundary Layer structure in Loess Plateau

10km<sup>2</sup> - scale surface fluxes of momentum, sensible heat, latent heat, and carbon dioxide have been successfully obtaining using FROS (Flux & Radiation Observation System). Especially, FROS revealed vertical differences of surface fluxes within the surface layer, mainly due to spatial distributions of surface heterogeneity caused by human (agricultural) activity. WPR (Wind Profiler Rader) revealed different diurnal variations of ABL (Atmospheric Boundary Layer) developments affected by different upwind topography. This difference was represented as distinctive TKE (Turbulent Kinetic Energy) in upper part of ABL at mid-daytime. An "air collision model" applicable for atmospheric turbulence within the surface layer was developed (Takahashi and Hiyama, 2004). A few modifications were applied to the "air collision model" to represent atmospheric turbulence within the mixed layer. The "modified air collision model" can basically represent atmospheric turbulence within the ABL, which develops over different kinds of upwind topography. Seasonal variation in spatial distribution of surface wetness was revealed using 10-day composite satellite remote sensing data (NOAA/AVHRR) over eastern part of Eurasia (Higuchi et al., 2005). This surface wetness index was based on the spatial relationships between normalized difference vegetation index (NDVI) and surface temperature (Ts).

#### Sub-team (2): Observation and Analysis of groundwater and sea water in the mouth of the Yellow River

Directions of the water movements both from the Yellow River to the groundwater in the delta, and from the groundwater to the Bohai Sea have been evaluated from hydrological measurements. Material transports including nutrients from delta to the Bohai Sea have also been evaluated from the chemical analyses of groundwater and pore water in the coastal zone. Chemical analyses of the adsorbed cation component of the sediment in the Yellow

River delta show that the pore water have been rinsed by the fresh groundwater after sedimentation in the marine environment at front of the delta. The signals of the Yellow River Cut-off were also found in the chemical components of the pore water in the delta. Direct groundwater discharge rates and material transports by groundwater into the Bohai Sea were evaluated using automated seepage meters in the coastal zone. Three dimensional distributions of saltwater-freshwater relationships are also evaluated using resistivity measurements. Hydraulic impact zone of the Yellow River on the groundwater in the Delta was evaluated by statistical analyses of the relationship between discharge rates of the Yellow River and groundwater potential data in the Yellow River delta. The areas of the impact zone are estimated to be about 20 km in wide each side from the river in the delta.

#### Sub-team (3): Observation and Analysis on Variability of Marine Biology in Bohai Sea

The final goal of this project is to clarify the effect of variability of the Yellow River discharge on the physical, chemical and biological characteristics of the Bohai Sea. In 2004, we carried out the box model analysis of the southern part of the Bohai Sea using the historical observed data in 1982 when the Yellow River discharge was rather high, and in 1992 when the Yellow River discharge was rather low. The satellite data analyses show that the phase lags of surface temperature at near shore were larger than the of the middle of Bohai sea, which indicates the importance of the water exchanges between Bohai-sea and the Yellow Sea. As a result of the box model analysis it was revealed that the estuarine circulation in the Bohai Sea had been weakened from 1982 to 1992 due to the decrease of the Yellow River discharge. The average residence time of fresh water had become longer in 1992. DIN (Dissolved Inorganic Nitrogen) concentration increased but DIP (Dissolved Inorganic Phosphorus) concentration decreased from 1982 to 1992 in the Bohai Sea. Primary production was regulated mainly by water temperature and DIN concentration in 1982 but it was regulated mainly by DIP concentration in 1992. Primary production was larger than decomposition plus bottom release, and nitrogen fixation was larger than denitrification in 1982. However, decomposition plus bottom release was larger than primary production, and denitrification was larger than nitrogen fixation in 1992 in the Bohai Sea.

#### Sub-team (4): Statistical analysis between economical development and water resources

In order to assess the relationship between water resources demand and supply change and socioeconomic change, firstly, we have collected statistical data, country, province and major city levels, mainly from the yearbooks. Then, water resources supply and demand structure considering sectors, local distinction and seasonal changes were grasped. Especially, agricultural water demand that is approximately 70% of total used in Yellow River basin were analyzed among local basins (upper stream, midstream, and down stream) based on published statistical data. Industrial and domestic water uses in both Taiyuan of Shanxi Province and Xian of Shaanxi Province were analyzed based on case studies. We have collected scientific documents and data relating to Xian city in order to understand expansion of domestic water by maintaining of new water service and decline of subsurface by drawing industrial water. We have also analyzed effect of Wanjazhai Water Transport Project on water resources of Fen He River. Moreover, the effectiveness of sewage system to treat the drain water from urban life and industrial use and its cost were examined in both above cities.

#### Sub-team (5): Analysis of both water cycle and water resources by the establishment of a high-resolution hydrological model

A high-resolution model on hydrology and water resources in the study area and validation of the model are developed from upstream to downstream of the entire Yellow River Basin (750,000 km<sup>2</sup>). The processes of river water discharge in Tibetan Plateau were elucidated by the model which had already developed by the project members for the water cycle in Siberia. The river water discharge was evaluated at Lanzhou where the major dams were built and many irrigation area exist. The model can evaluate the changes in river discharge by uses of the water management

data including dam operation, and water consumption for the irrigation.

## 1. List published to journals or presented

### Sub-theme (1)

#### Journal papers with review

Hiyama, T., A. Takahashi, A. Higuchi, M. Nishikawa, W. Li, W. Liu and Y. Fukushima 2005 "Atmospheric boundary layer (ABL) observations on the Changwu Agro-Ecological Experimental Station over the Loess Plateau, China" *AsiaFlux Newsletter*, 16, (in press).

### Sub-theme (2)

#### Journal papers with review

Taniguchi, M. 2005 "Climate change and groundwater" *Japanese Groundwater*, Vol. 47: 5-17.

Chen JY, CY. Tang, S. Sakura, JJ. Yu, Y. Fukushima 2005 "Nitrate pollution from agriculture in different hydrogeological zones of the regional groundwater flow system in the North China Plain" *Hydrogeology Journal* Vol. 13: 481-492.

Chen JY, Y. Fukushima, CY. Tang and M. Taniguchi 2004 "Water Environmental problems occurred in the lower reach of the Yellow River" *J. Japan Soc. Hydrol. & Water Resour.* Vol. 17-5: 555-564.

### Sub-theme (3)

#### Journal papers with review

Yanagi, T. and T. Hino 2005 "Short-term, seasonal, and tidal variations in the Yellow River plume" *La mer* 43: 1-7.

Hayashi, M., T. Yanagi and X. Guo 2004 "Difference of nutrients budgets in the Bohai Sea between 1982 and 1992 related to the decrease of the Yellow River discharge" *J. Korean Soc. of Oceanogr.* 39: 14-19.

### Sub-theme (4)

#### Journal papers with review

Akio ONISHI, Hidefumi IMURA, Ji HAN and Weihua FANG 2005 "A study on grain productivity changes in 5 different basins in Yellow River basin" *Environmental Systems Research*, Vol. 33, pp. 79-88, 2005.

Hidefumi IMURA, Akio ONISHI, Mina OKAMURA and Weihua FANG 2005 "Water Resource Balance in Yellow River Basin Based on the County Level Water Use Data" *Environmental Systems Research*, Vol. 33, pp. 477-485, 2005.

Fang, W., Imura, H. 2005 "The spatial and temporal changes of pan evaporation from 1971 to 2000 in the Yellow River basin" *Environmental Systems Research*, Vol. 33, pp. 165-170.

Fang, W., Imura, H. 2006 "Wheat Irrigation Water Requirement Variability (2001~2030) in the Yellow River Basin under HADCM3 GCM Scenarios" *Environmental Science*. Vol. 19, No. 1, pp. 3-14.

### Sub-theme (5)

#### Journal papers with review

Ma, X., T. Yasunari, T. Ohata and Y. Fukushima 2005 "The influence of river ice on spring runoff in the Lena River, Siberia" *Annals of Glaciology* Vol. 40: 123-127.

Ma, X., Y. Fukushima, T. Yasunari, M. Matsuoka and Y. Sato 2005 "Hydrological modeling for the upstream and midstream region of the Yellow River basin" *In General Assembly of the European Geosciences Union 2005*, Vienna, Austria.

Ma, X., T. Yoshikane, Y. Sato, Y. Fukushima, F. Kimura and T. Yasunari 2005 "Toward the understanding of the water resources change in the Yellow River basin; development of hydrological modeling aiming at the connection

with atmospheric water vapor circulation" *Proceedings of the China-Japan joint symposium on water resources in the Yellow River basin* May 8-9, 2005, Tsinghua University, Beijing, China: 18-19.

Ma, X., Y. Fukushima, T. Yasunari, M. Matsuoka, K. Hoshikawa and Y. Sato 2005 "Hydrological modeling of the Yellow River basin, China" *In 5th International Scientific Conference on the Global Energy and Water Cycle* California, USA.

Ma, X., T. Yasunari, T. Ohata and Y. Fukushima 2005 "Hydrometeorological data analysis of the Lena River basin" *In 6th International Conference on Global Change* December 12-13, 2005, Tokyo, Japan: 156-159.

Chen JY., Y. Fukushima and M. Taniguchi 2005 "Water use and its Impact zone in the lower Reach of the Yellow River" *Proc. 2<sup>nd</sup> Intl. Yellow River Forum*: 97-106.

Matsuoka, M., Y. Fukushima, T. Hayasaka, Y. Honda and T. Oki 2005 "Analysis of the land cover change in large irrigated districts in the Yellow River basin using time series of Landsat and AVHRR" *Asian Conference on Remote Sensing*.

Matsuoka, M., T. Hayasaka, Y. Fukushima, Y. Honda and T. Oki 2005 "Land Cover Monitoring over Yellow River Basin in China using Remote Sensing" *The 11th CERE S International Symposium on Remote Sensing*.

## 2. List presented in symposium or public lectures

(1) YRiS (Yellow River Studies) Joint workshop with RR2002 project

December. 1-3, 2005. in Fukuoka city

Proceedings (Published on January 30, 2006. 134 pages)

(2) Publications of News Letter on web

Vol. 4: Spring. 1, 2005. 26pages

Vol. 5: November. 1, 2005. 12pages

## 3. Papers reported to society except scientific communities

FUKUSHIMA, Yoshihiro "The problem facing in Irrigated Agriculture of both Yellow River and California domain"

August 22, 2005 Yomiuri Shin-bun

**Feasibility Study****Research axis: Environmental Change Impact Assessment****Project number: 1-3FS****Project name: Vulnerability and resilience of social-ecological systems****Project leader: UMETSU, Chieko (RIHN)****Core members: see No. 3****HP: in preparation****1. Research objectives and topics**

A vicious cycle of poverty and environmental degradation such as forest degradation and desertification is a major cause of global environmental problems. Especially in semi-arid tropics (SAT) including Sub-Saharan Africa and South Asia where a majority of the poor concentrates, poverty and environmental degradation widely prevails. People in this area largely depend on rainfed agricultural production systems and their livelihoods are vulnerable against environmental variability. Environmental resources such as vegetation and soil are also vulnerable against human activities. In order to solve this "global environmental issues", a key is a quick recovery or a resilience of human society and ecosystems from impacts of environmental variability. Thus in this project we consider society and ecology as one social-ecological system and try to perform empirical analysis for its resilience in semi-arid tropics.

In the past, no serious attention has been paid to the vulnerability and resilience of people whose livelihoods and production systems heavily depend on environmental resources. Especially for farmers and nomads in developing countries who rely on environmental resources, a loss of resilience of social-ecological systems, due to an increase in population and the collapse of rural communities, is of critical importance. The aim of this project is to consider human activity within the context of environmental change in view of social-ecological resilience. Thus, to clarify the effects of local environmental change on social-ecological systems as well as the mechanism through which they recover from shock. Also from various case studies, we will try to identify household and community factors that determine the capacity for resilience, and the role of institutions on resilience. By analyzing factors influencing social-ecological resilience, it is possible to introduce policy interventions for enhancing human security in developing countries.

The concept of resilience has long been discussed among ecologists after the seminal paper "Resilience and Stability of Ecological Systems" by C. S. Holling (1973). The engineering resilience was defined as recovery time to return to the initial equilibrium before disturbance. This unique equilibrium concept was soon expanded to the concept of ecological resilience that emphasizes capacity to endure disturbance incorporating non-linearity, multiple equilibria and regime shift. Recently, some researchers tried to apply those resilience concepts to complex social-ecological systems.

The above development went in tandem with the emergence of ecological economics that was established during the late 1980s. The important agenda was to link socio-economic research with ecological research. Ecological economics developed mainly in developed countries has less focus on critical development issues such as poverty and environmental degradation. Also conventional development economics ignored ecological issues that are a base for human economic activities. Thus, there is a need to apply the resilience concept of social-ecological systems in order to solve pressing development issues such as resource degradation and to enhance human security.

In the semi-arid tropics (SAT), the livelihood of the people is vulnerable against environmental variability. The SAT includes regions such as Sub-Saharan Africa and South Asia where the number as well as the share of the people who live in absolute poverty will remain large for some time to come. People in this area largely depend on vulnerable rainfed agricultural production systems. Thus increasing food security, resilience of livelihood and reducing poverty are acute issues in this area. The G-8 Environment and Development Ministers Meeting held in

March 2005 called especially upon the need of research for impacts of climate change on vulnerable livelihoods particularly in sub-Saharan Africa regions. The proposed research aims at considering impacts of environmental variability and increasing resilience of people, which is the pressing global environmental issues for international community.

The objective of the research is as follows:

1. We consider impacts of environmental variability through vulnerability and resilience of human activities in semi-arid tropics.
2. We study factors affecting social-ecological systems and the recovery from impacts and shocks.
3. We analyze factors that form the ability of household and community to recover and the role of institution for resilience.
4. Thus we identify the factors affecting resilience of social-ecological systems and the ways to enhance resilience of rural people in semi-arid tropics against environmental variability.

## **2. Contents and methodology**

In order to achieve our objectives, we focus on four themes. Each four themes interlink each other and thus provide comprehensive assessment of resilience of social-ecological systems. Under the supervision of theme leader, respective researchers will participate in sub-programs. Not as ordinary discipline based research groups, we organized theme based research organization. Most researchers involve more than one sub-program, thus making it possible to realize flexible research organization.

**Theme I: Ecological resilience and human activities under variable environment**

**Theme II: Household and community responses to variable environment**

**Theme III: Political-ecology of vulnerability and resilience: historical and institutional perspective**

**Theme IV: Integrated analysis of social-ecological systems**

We develop a method for comprehensive assessment of resilience from four research themes. Theme I focus on soil and forest resources for analyzing ecological resilience. In theme II, we conduct intensive interview for farm households/communities and will identify the factors affecting social resilience. Theme III considers historical changes in land tenure system by government policies and their effects on natural environment as well as social political factors of increasing vulnerability and the process of collapse and recovery of resilience in different communities. Theme IV covers larger areas utilizing statistics, remote sensing data and aerial photographs to help tracing long-term changes in soil and forestry resources in addition to the analysis of data on rainfall and temperature. By utilizing the information provided by themes I, II and III, we develop comprehensive method for assessing social-ecological resilience. The time scale of the analysis is from 1960s to the present when the changes in social and natural environment have been accelerated.

The study areas of the project are the countries in semi-arid tropics (SAT). SAT is characterized by unpredictable weather, long dry seasons, inconsistent rainfall and soils with poor nutrients. This area is a home of one-sixth of the world's population, a half of them live in absolute poverty with less than one US dollar a day. The large population in SAT live in rainfed agricultural areas and their marginal livelihood is critically depends on fragile and poorly endowed natural resources. The target research areas in SAT are Southern Africa region (Zambia, Zimbabwe), West Africa region (Burkina Faso, Niger), and South Asia (India). Particular emphasis will be placed on the rural agricultural areas in Zambia where intensive field survey will be conducted. In Zambia, drought prone Eastern and Southern Provinces are our target research areas. Those areas are in agroecological zone of I and IIa where annual rainfall is less than 800 mm and between 800 mm and 1,000 mm respectively.

## **3. Project members**

©UMETSU, Chieko

RIHN, Associate Professor, Regional analysis, farm survey

A YACHI, Shigeo	RIHN, Associate Professor, Advisor
<b>Theme I</b>	
○SHINJO, Hitoshi	Graduate School of Agriculture, Kyoto University, Assistant Professor, organic materials and soil fertility
○TANAKA, Ueru	Graduate School of Global Environmental Studies, Kyoto University, Associate Professor, soil degradation and erosion
SHIBATA, Shozo	Graduate School of Global Environmental Studies, Kyoto University, Associate Professor, tree/shrub components and its succession
MIURA, Reiichi	Graduate School of Agriculture, Kyoto University, Lecturer, grass/herb components and its succession
MIYAZAKI, Hidetoshi	Graduate School of Agriculture, Kyoto University, Ph. D. Candidate, measurement of land plot, crop components
Mwale, Moses	Mt. Makulu Central Research Station, Ministry of Agriculture and Cooperatives, Chief Agricultural Research Officer, soil analysis
<b>Theme II</b>	
○SAKURAI, Takeshi	Policy Research Institute, MAFF, Senior Economist, household survey and analysis
KANNO, Hiromitsu	National Agricultural Research Center for Tohoku Region, Laboratory of Agricultural Meteorology, Team Leader, measurement of rainfall data
<b>Theme III</b>	
○SHIMADA, Shuheï	Graduate School of Asian and African Area Studies, Kyoto University, Professor, village society and institution
ARAKI, Minako	Faculty of Letters and Education, Ochanomizu University, Associate Professor, village society and institution
KODAMAYA, Shiro	Graduate School of Social Sciences, Hitotsubashi University, Professor, agricultural development and social change
HANZAWA, Kazuo	College of Bioresource Sciences, Nihon University, Professor, farm household survey
Mulenga, Chileshe	Institute of Economic and Social Research, University of Zambia, Senior Lecturer, analysis of social behaviors
<b>Theme IV</b>	
○YOSHIMURA, Mitsunori	RIHN, Associate Professor, ecological change monitoring
SAEKI, Tazu	RIHN, Assistant Professor, climate monitoring
YAMASHITA, Megumi	Survey College of Kinki, Lecturer, vegetation monitoring
<b>India</b>	
○PALANISAMI, K.	Tamilnadu Agricultural University, Centre for Agricultural and Rural Development Studies, Director, household survey and analysis
YATAGAI, Akiyo	RIHN, Assistant Professor, monsoon rainfall analysis
RANGANATHAN, C. R.	Tamilnadu Agricultural University, Department of Mathematics, Professor, economic modelling
CHANDRASEKARAN, B.	Tamilnadu Agricultural University, Tamil Nadu Rice Research Institute, Director, rice production analysis
GEETHALAKSHMI, V.	Tamilnadu Agricultural University, Department of Agricultural Meteorology, Professor, monsoon rainfall analysis
<b>Burkina Faso</b>	
Kimseyinga Savadogo	University of Ouagadougou, Department of Economics, Professor, household data

analysis

(◎ : Project leader, ○ : Core member, A: Advisor)

#### 4. Progress up to now (FY2005)

##### 4.1 Research Activities during the Feasibility Study

###### A. Research organization

- We set four themes as mentioned before and invited appropriate researchers to participate in the project. Their fields include agronomy and soil science, development economics, resource economics, anthropology, environmental geography, climatology, remote-sensing specialist.
- We identified potential collaborating institutions and researchers in Zambia, India and Burkina Faso.
- To prepare for the field research in Zambia, research permits for core members during 2006-2011 have been approved in December 2005 by the Government of Zambia through the assistance of the Institute of Economic and Social Research, University of Zambia. The affiliation procedure of core project members with ISER/UNZA has been completed.

###### B. Methodologies

During the FY2005, we conducted literature review, field observation and preliminary interview for farmers, we identified some research targets that should be included in our resilience study. Details are mentioned in the previous section.

###### C. The 6<sup>th</sup> Open Meeting of IHDP at Bonn

- We organized a session (Adaptive Management and Resilience: Local Responses to Environmental Stress and Risks) at the 6th Open Meeting of the Human Dimensions of Global Environmental Change Research Community, 9-13 October 2005 held at the University of Bonn.

##### 4.2 Problems and Solutions for Research

###### A. Problem and solutions during IS/FS study

Although theoretical study is ahead of empirical study in resilience research, few empirical researches have been done that applies resilience to practical development issues. Therefore, it is required to apply this concept to regional problems. We set themes I, II, III that study closely with local communities and then extend further to theme IV with wider geographical scope.

###### B. Changes made from the initial plan

During the incubation and feasibility study, we initially considered only Zambia and South India. However, in PR we will expand the research area to semi-arid tropics (SAT). Thus it may be possible to have comparative analysis of resilience based on differences of population pressure and land endowment.

#### 5. Outcome up to now (2005)

##### 5.1 Results of Preliminary Field Research

- The 2004/5 cropping season in Zambia was hit by severe drought since 1991/2 cropping season. Especially in Eastern and Southern Provinces, crop failure of maize ranged between 85-90 percent. Recently, drought resistant cotton production is increasing in Eastern and Southern Provinces. The increasing cotton production needs to be examined carefully in the context of food security.
- During the field trip to Zambia in August 2005, we conducted a field observation for the potential field sites in Eastern and Southern Provinces of Zambia. We obtained a partial weather data from the Meteorological Department, Ministry of Communications and Transport. Also we obtained information on geographical data from the Department of Survey, Ministry of Land Resources.
- During the field trip to Zambia in November 2005, we obtained the data set of Crop Forecast Survey for 8000 farm

households in the 2004/5-drought year from the Central Statistical Office. We plan to obtain additional data sets for Post Harvest Survey in 2004 and 2005.

- We had a discussion on project collaboration with researchers and the staff of the following institutions: The Institute of Economic and Social Research, University of Zambia (UNZA); Faculty of Agriculture, UNZA; Mt. Makulu Central Research Station, Ministry of Agriculture and Cooperatives; Central Statistical Office; Survey Department, Ministry of Land Resources; Meteorological Department, Ministry of Transport and Telecommunications; Food Security Research Project (FSRP), Michigan State University and USAID.
- We prepared 1-3FS project report for FY2005 and organized Resilience Seminar five times.

## 5.2 Forthcoming Agenda

- We need to further discuss with collaborating institutions so that we can start Theme I and II without a problem.
- We need to find out the best ways to ship equipments for on-farm weather observation.
- All project members and themes need to discuss and collaborate to realize project objectives.
- We continue recruiting potential members for our project objectives.

## 6. Publications

### 6.1 Publications by Members

- Tanaka, U., Seto, S., Shinjo, H. and Miyazaki, H. 2005 "Realities and problems of external commitment as viewed from desertification study at a life-size scale". Abstracts of J-FARD & JIRCAS Symposium on "Perspectives of R&D for improving agricultural productivity in Africa", pp. 38-41, J-FARD&JIRCAS, Tokyo.
- Shinjo, H., Ikazaki, K., Tanaka, U. and Kosaki, T. 2005 "Spatial Heterogeneity in Sandy Soils of the Sahel Region in West Africa: Implications for Desertification Processes". *Proceedings of First International Symposium on the Management of Tropical Sandy Soils for Sustainable Agriculture*, Khon Kaen, Thailand.
- Furuya, J. and T. Sakurai 2005 "Capacity Utilization of Rice Milling Industry and Interlinkage in the Rice Market in Ghana". *Japanese Journal of Rural Economics*, vol. 7, pp. 88-99.
- Berthé, A., J. S. Caldwell, A. Yoroté, M. Doumbia, T. Sakurai, K. Sasaki, H. Kanno and K. Ozawa 2005 "Farmers' Climate Risk Management and Household Vulnerability in the Dry Savannah of West Africa: A Case Study in Southern Mali". *Journal of Agricultural Meteorology*, vol. 60, no. 5, pp. 397-402.
- Caldwell, J. S., A. Berthé, H. Kanno, K. Sasaki, A. Yoroté, K. Ozawa, M. Doumbia and T. Sakurai 2005 "Improved Seeding Strategies in Response to Variability in the Start of the Rainy Season in Mali, West Africa". *Journal of Agricultural Meteorology*, vol. 60, no. 5, pp. 391-396.
- Kajisa, K. and T. Sakurai 2005 "Efficiency and Equity under Output Sharing Contracts in Groundwater Markets: the Case of Madhya Pradesh, India". *Environment and Development Economics*, vol. 10 (6), pp. 801-919.
- Chakravorty, U. and C. Umetsu. Basinwide Water Management: A Spatial Model. In Jacqueline Geoghegan and Wayne Gray eds. *Spatial Aspects of Environmental Policy* Series editors, Tom Tietenberg and Kathy Segerson. THE INTERNATIONAL LIBRARY OF ENVIRONMENTAL ECONOMICS AND POLICY. Hampshire, UK: Ashgate Publishing. pp. 5-27, 2005.
- Chieko Umetsu, Sevgi Donma, Takanori Nagano and Ziya Coşkun "The Efficiency of WUA Management in the Lower Seyhan Irrigation Project", *Journal of Rural Economics: Special Issue*. pp. 440-444, 2006.
- Chakravorty, Ujjayant, Eithan Hochman, Chieko Umetsu and David Zilberman "Alternative Institutions for Water Distribution", Working paper #5-17, Department of Economics, University of Central Florida Orlando FL, U.S.A., 2005. <http://www.bus.ucf.edu/wp/content/archives/05-17Chakravorty.pdf>

## 6.2 Symposium, Workshop, Seminar in FY2005

### a. International meetings

The 6th Open Meeting of the Human Dimensions of Global Environmental Change Research Community, 9-13 October 2005, University of Bonn, Bonn, Germany.

Theme 1: Adaptive Management and Resilience; Session 1.4. Local Responses to Environmental Stress and Risks; Organizers: Chieko UMETSU and Keisuke HOSHIKAWA; Taibi Aude Nuscia, Mohamed El Habib Barry, University of Angers and CNRS, Angers, France, "The Diawling National Park on the Senegal River Low Delta (Mauritania): A Participative Management for an Environmental and Socio-Economic Restoration still under Pressure"; Tun Myint, Indiana University, Bloomington, IN, USA, "Analyzing Multilayer Governance of Social Ecological Systems"; Chieko Umetsu, Sevgi Donma, Takanori Nagano, Ziya Coşkun, "The Efficient Management of Water User Associations: A Case of Lower Seyhan Irrigation Project in Turkey".

### b. Domestic meetings

- April 28: 7<sup>th</sup> Resilience seminar

Title: Rural development scheme that aims at coexistence of economic activity and environmental conservation: The case of Tanzania; Speaker: Ueru Tanaka, Graduate School of Global Environmental Studies, Kyoto University

- June 10: 8<sup>th</sup> Resilience seminar

Title: The introduction of recent studies on resilience of lake ecosystems; Speaker: Shigeo Yachi, RIHN

- July 21: 9<sup>th</sup> Resilience seminar

Title: Social transformation and change in land use in East Zambia: the case of new farmland opening by Chewa farmers; Speaker: Ryuta Yoshikawa, Graduate School of Asian and African Area Studies, Kyoto University

Title: Response of agricultural society to variation of international coffee price: economic liberalization in 1990s and the "coffee crisis" in Ethiopia; Speaker: Keiichiro Matsumura, Graduate School of Human and Environmental Studies, Kyoto University

- October 21: 10<sup>th</sup> Resilience seminar

Title: Reconstructing the concept of "sustainable development" with focus on ecological resilience; Speaker: Satoshi Kojima, Institute for Global Environmental Strategies

- November 25: 11<sup>th</sup> Resilience seminar

Title: Meteorological data measurement in Mali, West Africa: 2001-2004; Speaker: Hiromitsu Kanno, National Agricultural Research Center for Tohoku Region

Title: How do farmers cope with plot-specific rainfall variability?: The empirical study in Mali, West Africa; Speaker: Takeshi Sakurai, Policy Research Institute, Ministry of Agriculture, Forestry and Fisheries

- December 9: FS member meeting

## Full-Research

**Research axis:** Human Activity Impact Assessment

**Project number:** 2-1FR

**Project name:** Emissions of greenhouse gases and aerosols, and human activities in Eastern Asia

**Project leader:** HAYASAKA, Tadahiro (RIHN)

**Core members:** IWAMI, Toru (The Univ. of Tokyo)

KAWAMOTO, Kazuaki (RIHN)

SAEKI, Tazu (RIHN)

NAKAZAWA, Takakiyo (Tohoku Univ.)

NAKAJIMA, Teruyuki (The Univ. of Tokyo)

HAYASHIDA, Sachiko (Nara Women's Univ.)

SHI, Guangyu (Institute of Atmospheric Physics, CAS, China)

### 1. Background and Objectives

Most of human activities have been based essentially on the individual climate, culture, and social economic system, but recently they are being changed drastically by the influences of the globalization and developing market of economy and global-scale climate change. The human activities affected by the various global phenomena give rise to various environmental issues and emissions of greenhouse gases and aerosols, which again bring about many problems in large area or over the world. In this research project, the atmospheric constituent is studied, taking account of global warming issues. Therefore, it is not a mere local air pollution study, but the study on the relationship between human activities and climate change through emissions of greenhouse gases and aerosols.

The recent growth of economy in East Asian region is being watched with keen interest. The relationship between human activities and emissions of greenhouse gases and aerosols in this region are studied with collaboration of socioeconomic analysts and atmospheric scientists. This research project consists of macro-analysis of economy, development of emission inventory, analysis of atmospheric transport by using model and satellite data, and ground-based observation around Japan and China.

The objectives of the present research project are to investigate

- 1) the relationship between changes in economy, industry, social system under the globalization and changes in anthropogenic emissions of greenhouse gases and aerosols, and
- 2) influences of these greenhouse gases and aerosols emitted in Asian region on the global-scale atmospheric environment and climate change.

### 2. Strategy

While most of studies similar to this research project are mainly carried out by atmospheric scientists, viewpoints from human activities are emphasized in this study.

- 1) Socioeconomic analyses on the anthropogenic emissions are carried out. Changes in land use, consumption, quality, and transport process of energy for the past 20 years in Asia are analyzed.
- 2) Regional emissions of greenhouse gases and aerosols due to human activities are estimated through the analysis of observed data with atmospheric transport model.
- 3) The effects of greenhouse gases and aerosols emitted by human activities in Asia are evaluated synthetically.

### 3. Relation with the Research Program

In the past few decades, socioeconomic situations in Eastern Asia have been changing largely. It is consistent with the purpose of research axis 2 to study the relationship between those changes and emissions of greenhouse gases and aerosols, which are major anthropogenic factors in recent climate changes.

#### 4. Outcomes in 2005

[Pollution property industry and globalization of economy]

It was presumed from the regression analysis that the production of the pollution properties was greatly influenced by not export but the home consumption and it is provided not by the direct export of an article but the indirect export of other related articles. Or, it is thought that the production of the pollution properties is influenced by the economic magnitude or the level of consumption of the country. Moreover, it was suggested that the production of the pollution properties was closely related to the factor of the labor pay than that of the environmental control.

[Energy consumption and emission inventory]

The emission inventory for 20 years in Asian region was made by using various statistics of the energy consumption such as IEA energy balance, United Nations energy statistics, and China energy statistics, etc.

The amount of the emission in the Asian region increases by 1.3 times (OC) ~2.5 times (NO<sub>x</sub>) during 20 years of 1980~2000. The increase rate of the amount of the NO<sub>x</sub> emission in China is larger, and the increase rate in the 20 years reaches as much as 3.1 times. It is suggested that the emission structure of air pollution in Asia, especially in China has changed greatly in recent years.

[Observations and analysis of atmospheric constituents and radiation]

In order to obtain quantitative information on the discharge source and the absorption source of carbon dioxide (CO<sub>2</sub>) in the East Asian region, the observation sites were established in the coast region and the inland in China. The isotope ratio of carbon ( $\delta^{13}\text{C}$ ) has been also observed as well as the CO<sub>2</sub> concentration since March, 2003. As a result, the seasonal variations of the CO<sub>2</sub> concentration and  $\delta^{13}\text{C}$  at the observation sites in northern part of China were especially large, and twice or more the amplitude were observed compared with those at the same latitude in the western part of China. Such large seasonal variations of the CO<sub>2</sub> concentration and  $\delta^{13}\text{C}$  are presumed to reflect an active photosynthesis and the respiration of the biosphere in the northeastern China. Moreover, it was suggested from the  $\delta^{13}\text{C}$  analysis that the seasonal change of CO<sub>2</sub> can be ascribed to the C<sub>4</sub> plant. It is inferred that the farmland where grain is produced was developed by human activities, and the C<sub>4</sub> plants such as corn and cereals are widely distributed.

On the other hand, the aerosol composition observed in Fukue island has shown large ratios of the organic carbon aerosol compared with that observed in Okinawa. As for the air parcel observed in Fukue island, the analysis with the atmospheric transportation model suggested that the influence of Chinese continent was large. Moreover, it was shown from the satellite observation that the concentration of carbonaceous aerosol was relatively high in East China Sea. This result reflects the biomass combustion (fuel and scorch field, etc.) in China.

#### 5. Publication list in 2005

K. ARAO

2005 Atmospheric aerosol environment in recent years in Western Kyushu, Japan. Proceedings of the 21th Asian Conference on Environmental Issue (ACEI2005), 17-18 November 2005, Nagasaki, Japan, pp. 88-93.

S. FUKAGAWA, H. KUZE, G. BAGTASA, S. NAITO, M. YABUKI, T. TAKAMURA, N. TAKEUCHI

2006 Characterization of seasonal and long-term variation of tropospheric aerosols in Chiba, Japan. Atmospheric Environment, 40(12), pp. 2160-2169 (2006).

T. HAYASAKA, K. KAWAMOTO, G.-Y. SHI, A. OHMURA

2006 The Importance of Aerosols in Satellite-derived Estimates of Surface Shortwave Irradiance over China, Geophys. Res. Lett., 33, L06802, doi:10.1029/2005GL025093.

T. IWAMI

- 2005 'Advantage of Latecomer' in Abating Air-Pollution: Experience in East Asia, *International Journal of Social Economics* 32-3.
- T. IWAMI
- 2005 Globalization and Pollution Industries in East Asia, *Center for International Researches on the Japanese Economy, University of Tokyo, Discussion Paper Series, CIRJE-F-394*, January 2006.
- T. IWAMI
- 2006 The trade, direct investment, and environmental issues in East Asia, *Keizaigakuronshu*, Univ. Tokyo, 71(4).
- S. MUKAI, I. SANO, B. N. HOLBEN
- 2005 Aerosol properties over Japan by sun/sky photometry, *Water, Air and Soil Pollution*, vol. 5, pp. 133-143.
- S. MUKAI, I. SANO, M. YASUMOTO, Y. NAKAGUCHI
- 2005 Simultaneous monitoring of aerosols and PM<sub>2.5</sub> over Osaka, *SPIE*, vol. 5979, pp. 59791z-1-8, doi:10.1117/12.627368, 2005.
- S. MURAYAMA, N. SAIGUSA, S. YAMAMOTO, C. TAKAMURA, S. MORIMOTO, H. KONDO, T. NAKAZAWA, S. AOKI, T. USAMI
- 2005 Temporal variations of CO<sub>2</sub> and its carbon and oxygen isotopic ratios in a cool-temperate deciduous forest in central Japan, *Proceedings of the 7th International Carbon Dioxide Conference*, Boulder, USA (CD).
- T.-Y. NAKAJIMA, A. UCHIYAMA, T. TAKAMURA, N. TSUJIOKA, T. TAKEMURA, T. NAKAJIMA
- 2005 Comparisons of warm cloud properties obtained from satellite, ground, and aircraft measurements during APEX intensive observation period in 2000 and 2001. *J. Met. Soc. Japan*, 83(6), pp. 1085-1095.
- I. SANO, S. MUKAI
- 2005 Retrieval of aerosols from space with POLDER on the satellite ADEOS-1 in 1997 to ADEOS-2 in 2003, *SPIE*, vol. 5979, pp. 597920-1-8, doi:10.1117/12.627378, 2005.
- S. SUGAWARA, S. AOKI, T. NAKAZAWA, J. TANG, D. ZHANG, G. SHI, Y. LIU, S. MORIMOTO, S. ISHIDOYA, T. SAEKI, T. HAYASAKA, M. ISHIZAWA
- 2005 Observations of atmospheric CO<sub>2</sub> concentration and its carbon isotopic ratio in China, *Proceedings of the 7th International Carbon Dioxide Conference*, Boulder, USA (CD).
- R. SUZUKI, J. XU and K. MOTOYA
- 2006 Global Analyses of satellite-derived vegetation index related to climatological wetness and warmth, *International Journal of Climatology* 26, 425-438.
- A. TAKAMI, T. MIYOSHI, A. SHIMONO, S. HATAKEYAMA
- 2005 Chemical composition of fine aerosol measured by AMS at Fukue Island, Japan during APEX period. *Atmospheric Environment* 39: 4913-4924 (doi 10.1016/j.atmosenv.2005.04.038).
- A. TAKAMI, A. HIGURASHI, T. MIYOSHI, A. SHIMONO, S. HATAKEYAMA
- 2005 Difference of chemical compositions observed at the northern and southern Japanese coastal region in East China Sea, *J. Aerosol Res.* 20: 352-354.
- J. XU, S. HAGINOYA, K. SAITO, K. MOTOYA
- 2005 Surface heat balance and pan evaporation trends in Eastern Asia in the period 1971-2000. *Hydrological Processes*, vol. 19: 2161-2186, DOI:10.1002/hyp.5668.
- ZHANG, XIA, T. NAKAZAWA, S. AOKI, S. NAKAOKA, M. ISHIZAWA, S. MAKSYUTOV, S. SUGAWARA, T. SAEKI, T. HAYASAKA
- 2005 Temporal variations of the atmospheric CO<sub>2</sub> concentration in the southmost part of Japan, *Proceedings of the 7th International Carbon Dioxide Conference*, Boulder, USA (CD).

**Full-Research****Research axis: Human Activity Impact Assessment****Project number: 2-2FR****Project name: Sustainability and biodiversity assessment on forest utilization options****Project leader: NAKASHIZUKA, Tohru (RIHN)****Core members: see No. 3****1. Research Objectives and Topics**

In this project, we try to evaluate the sustainability of forest utilization in various aspects, with particular emphasis on biodiversity aspects. The goods and ecosystem services that may be lost with decreasing biodiversity should be identified. Also the evaluations from the aspects of socio- and environmental economy will be assessed for various forest utilization systems including the traditional, and so-called sustainable systems in the region. The driving forces and incentives to cause the recent change in forest utilization system are also to be studied. Finally we try to present new criteria or ways of thinking to evaluate the forest utilization systems. The target research sites are, 1) Tropical rainforest area around Lambir Hills National Park, Sarawak, Malaysia, 2) Tropical forest areas in Saba, Malaysia, 3) Temperate evergreen forest area in Yaku Island, Japan and 4) Temperate deciduous forest area in Abukuma Mts., Japan. Research items below are to be studied in all the site above and compared; 1) The historical change in forest utilization and its drivers are to be studied by socio-economical analyses, 2) Effects of forest change on biological diversity is to be studied, 3) The ecological services critically associated with biodiversity are to be studied, and 4) Models for forest utilization change and biodiversity will be developed.

**2. Relation with Research Program**

The anthropogenic factors caused by socio-economic, and/or political change have been greatly affected forest change. This project will elucidate the socio-economic drivers caused such changes in ecosystems and biodiversity, as well as the evaluating ecological services which are provided by biodiversity. This approach meets the direction of the Program-2 of the RIHN.

**3. Project Members**

©NAKASHIZUKA, Tohru (RIHN): Project leader

\* ICHIKAWA, Masahiro (RIHN): Researches in Lambir, Sarawak

\* MOMOSE, Kuniyasu (Ehime University): Researches in Lambir, Sarawak

YOSHIMURA, Mitsunori (RIHN)

YAMASHITA, Satoshi (RIHN)

MIGUCHI, Hideo (Niigata University)

YAMANE, Masaki (Kagoshima University)

MIYASHITA, Tadashi (Tokyo University)

INUI, Yoko (Osaka Kyoiku University)

CHONG, Lucy (Foerst Research Center Sarawak)

SAKAI, Shoko (Kyoto University)

KANAZAWA, Kentaro (Kobe College)

ICHIOKA, Takao (Kyoto University)

HARISON, Rhett (Kyoto University)

HATADA, Aya (Echigo-Matsunoyama Museum of Natural Science)

MURASE, Kaori (University of Tokyo)

RAHMAN, Johan B Hi (Forest Research Center, Sarawak)

ICHIE, Tomoaki (Center for Tropical Forest Science)  
 TANAKA, Kenta (Hokkaido University)  
 NAGAMAITSU, Teruyoshi (Forestry and Forest Research Institute)  
 KAGA, Michi (Kyoto University)  
 NOMURA, Masahiro (Hokkaido University)  
 MATSUMOTO, Takashi (Kyoto University)  
 NAKAGAWA, Michiko (RIHN)  
 KUROKAWA, Hiroko (Kyoto University)  
 MOROOKA, Toshiyuki (University of Tokyo)  
 SAMEJIMA, Hiromitsu (Kyoto University)  
 TAKEUCHI, Yayoi (Kyoto University)  
 TSUJI, Shoko (Kyoto University)  
 KISHIMOTO, Keiko (Kyoto University)  
 TANAKA, Hiroshi (Nagoya University)  
 AIBA, Masahiro (Kyoto University)  
 KOIZUMI, Miyako (Kyoto University)  
 KATO, Yumi (Kyoto University)  
 KAMIYA, Koichi (Kyushu University)  
 TSUCHIYA, Taizo (Kyushu University)  
 KUMANO, Yuko (Kyoto Institute of Technology)  
 TANAKA, Kenzo (Ehime University)  
 NAGATA, Kazuyuki (University of Tokyo)  
 HAMAMOTO, Kyoko (Ehime University)  
 FUJITA, Wataru (RIHN)  
 HOSO, Masaki (Kyoto University)

\* KITAYAMA, Kanihiro (Kyoto University): Researches in Kinabaru, Saba

TODA, Masanori (Hokkaido University)  
 HASEGAWA, Hiroshi (Hiroshima Shudo University)  
 ITO, Masamichi (Yokohama National University)  
 TAKYU, Masaaki (Tokyo University of Agriculture)  
 SANO, Makoto (Forestry and Forest Products Research Institute)  
 MAJALAP, Noreen (Foerst Reseach Center Sabah)  
 HASEGAWA, Motohiro (Forestry and Forest Products Research Institute)  
 MATSUBAYASHI, Hisashi (Tokyo University of Agriculture)  
 SEINO, Tatsuyuki (Kyoto University)  
 TANABE, Shin-ichi (Kanazawa University)  
 AKUTSU, Kosuke (Hokkaido University)  
 OKABE, Fumie (Hokkaido University)  
 KOTTE, Rina (University of Tokyo)  
 TAKENAKA, Kohei (Hokkaido University)  
 KAWAGUCHI, Tatsuya (Yokohama National University)  
 SATOMURA, Takami (Kyoto University)

\* KOHYAMA, Takashi (Hokkaido University): Researches in Yaku Island

ISHIBASHI, Shiro (Hokkaido University)  
 USHIHARA, Ami (Hokkaido University)

URAGUCHI, Aya (Hokkaido University)

\* AIBA, Shin-ichiro (Kagoshima University): Researches in Yaku Island

\* YUMOTO, Takakazu (RIHN): Researches in Yaku Island

KUDOH, Gaku (Hokkaido University)

MATSUI, Kiyoshi (Nara University of Education)

TAKAMIYA, Masayuki (Kumamoto University)

NOMA, Naohiko (University of Shiga Prefecture)

AGETSUMA, Naoki (Hokkaido University)

SPRAGUE, David (Institute for Agricultural Environment)

KANETANI, Seiichi (Forestry and Forest Products Research Institute)

OTANI, Tatsuya (Forestry and Forest Products Research Institute)

MORINO, Mari (Yokohama National University)

HANYA, Goro (Kyoto University)

AGETSUMA, Yoshimi (Yakushima Ecology Group)

IMAMURA, Akio (RIHN)

FUCHO, Yoshiko (Hokkaido University)

TAKEDA, Shiro (Kumamoto University)

TOBO, Kozue (Kumamoto University)

YOSHIYAMA, Kayo (Kumamoto University)

HASEGAWA, Daisuke (Kagoshima University)

FUKUI, Dai (Hokkaido University)

SATO, Hirotoshi (Kyoto University)

TERAKAWA, Mari (Nara University of Education)

TSUJINO, Ryo (Kyoto University)

HINO, Takafumi (Hokkaido University)

NAKURA, Kyoto (Kyoto University)

HAMADA, Tomohiro (University of Shiga Prefecture)

HAYAISHI, Shusei (Kyoto University)

\* NIYAMA, Kaoru (Forestry and Forest Products Research Institute): Researched in Abukuma

OHKOCHI, Isamu (Forestry and Forest Products Research Institute)

YOSHIMARU, Hiroshi (Forestry and Forest Products Research Institute)

TOJO, Hitoshi (Forestry and Forest Products Research Institute)

KIKUCHI, Satoshi (Forestry and Forest Products Research Institute)

ISAGI, Yuji (Hiroshima University)

MAETO, Kaoru (Kobe University)

KITABATAKE, Shun (Kobe University)

ISONO, Masahiro (Forestry and Forest Products Research Institute)

IEHARA, Toshiro (Forestry and Forest Products Research Institute)

MAKINO, Shun-ichi (Forestry and Forest Products Research Institute)

TANAKA, Hiroshi (Forestry and Forest Products Research Institute)

TANAKA, Nobuhiko (Forestry and Forest Products Research Institute)

OKABE, Kimiko (Forestry and Forest Products Research Institute)

HAMAGUCHI, Kyoko (Forestry and Forest Products Research Institute)

SHIBATA, Mitsue (Forestry and Forest Products Research Institute)

INOUE, Taisei (Forestry and Forest Products Research Institute)

KAGAYA, Etsuko (Forestry and Forest Products Research Institute)  
 GOTO, Hideaki (Forestry and Forest Products Research Institute)  
 MIYAMOTO, Asako (Forestry and Forest Products Research Institute)  
 YAGIHASHI, Tsutomu (Forestry and Forest Products Research Institute)  
 YASUDA, Masatoshi (Forestry and Forest Products Research Institute)  
 NAGAIKE, Takuo (Forest Research Institute, Yamanashi Prefecture)  
 USHIMARU, Atsushi (RIHN)  
 KONDO, Toshiaki (Hiroshima University)  
 TATENO, Ryunosuke (RIHN)  
 FUJIMORI, Naomi (Yamanashi Prefectural Forest)

\* SATO, Jin (University of Tokyo): Sociological analyses on forest utilization

ABE, Rhuichiro (University of Tokyo)  
 IZUMI, Keiko (Nihon Veterinary and Animal Science University)  
 YAMASHITA, Izumi (University of Tokyo)  
 HIRANO, Yuichiro (University of Tokyo)  
 IWASAKI, Aki (University of Tokyo)  
 ASAO, Mariko (University of Tokyo)  
 OH, Tomohiro (University of Tokyo)  
 BABA, Takeshi (Kyoto University)

\* AKAO, Ken-ichi (Waseda University): Ecological and economic model of forest use

SATAKE, Akiko (Kyoto University)  
 ONUMA, Ayumi (Keio University)

(◎ : Project leader, \* : Core member)

#### 4. Research Schedule

Apr. 2002 – Mar. 2003 (Feasibility study)

- Collect the information on each study site
- Screen the utilization options
- Screen the target organisms for biodiversity studies
- Establish the protocol methods of the studies

Apr. 2003 – Mar. 2004 (First year)

- Establish GIS in each site
- Evaluate biodiversity in the target utilization options
- Study the mechanisms to maintain biodiversity
- Study the relationships between taxonomic groups and their roles in the ecosystem
- Retrospective study on the past utilization of forests

Apr. 2004 – Mar. 2005 (2<sup>nd</sup> year)

- Evaluate biodiversity in the target utilization options
- Study the mechanisms to maintain biodiversity
- Study the relationships between taxonomic groups and their roles in the ecosystem
- Retrospective study on the past utilization of forests

Apr. 2005 – Mar. 2006 (3<sup>rd</sup> year)

- Study the mechanisms to maintain biodiversity
- Study the mechanisms to maintain biodiversity
- Detect the driving forces and incentives to cause utilization change

- Economic value of each utilization options

Apr. 2006 – Mar. 2007 (4<sup>th</sup> year)

- Summarize the mechanisms to maintain biodiversity
- Summarize the relationships between taxonomic groups and their roles in the ecosystem
- Detect the driving forces and incentives to cause utilization change
- Economic value of each utilization options

Apr. 2007 – Mar. 2008 (5<sup>th</sup> year)

- Integrate the evaluation
- Develop better evaluation methods to evaluate sustainability

## 5. Modification on the Original Research Plan:

The research has been progressed as the original research plan.

## 6. Progress of the Project

(a) Historical change in forest utilization and its social- and economic backgrounds

- The land use changes were shown as same format of matrix and figure, which will be base of comparison study between the 4 study sites. Main findings are shown as follows:
- Changes of forest uses in 4 sites were clarified from field work and document survey. Results of ethnobotanical study were coming out.
- In Abukuma and Yakushima, before 1950s traditional forest uses were still observed, but after then, affected by commercial cutting and industrial planting, the traditional uses were abandoned.
- In the tropical forest areas, also after 1950s affected by economic development such as road constructions and plantation development, the land use was drastically changed.
- Local people's institutions related forest uses and their changes were studied (Lambir).

(b) Evaluating impacts of forest utilization on biodiversity, ecological functions and ecological services

- The studies on changes of biodiversity and ecological functions following forest changes, such as decrease of broad leaf forests and forest fragmentation, were continuously conducted. Changes of biodiversity, depending on fauna and flora and forest types, were found.
- Regarding ecological services, data on relationship between changes of forests and the services were shown, for example natural enemies of vermin grow in the young forest which created by industrial rotation logging (Abukuma). It is found that forest product uses by local people in different forests type are different (Lambir).
- Biodiversity maps in 4 sites were drawn. Ecological service map also would be drawn as a product of this research project.
- Results from field study on impacts from forest changes on culture which local people possess were coming out (Lambir).

(c) Economic evaluation of each forest option

- Results from anthropological field research show importance of forest products to gain subsistence and maintain household of local people (Lambir).
- Economic values of forests, using CVM method, were calculated (Kinabaru).

(d) Development of ecological and economic models concerning biodiversity conservation

- Relationship between forest policy changes and relating actors, such as international organizations, local politicians, logging companies and NGOs were analyzed (Lambir).
- Regarding forest resource use in high biodiversity forest areas, it was theoretically suggested the commons theory is not necessarily applicable.

## 7. Problems for implementation or points need to change plan

- Base of comparison of forest changes between 4 sites were provided, so that the comparison and generalization will be further subject.
- Biodiversity map will be developed up to maps showing ecological functions and ecological services.
- Further analysis of impact from forest changes on local people's society and culture will be needed.
- In the rest of the project period, consideration to publish the project results must be paid.

## 8. Outcomes (2005)

### Original paper (International)

- Aiba, M. and Nakashizuka, T. 2005 "Sapling structure and regeneration strategy in 18 *Shorea* species co-occurring in a tropical rainforest". *Annals of Botany* 96: 313-321.
- Chen, H.-w., Toda, M. J. and Gao, J.-j. 2005 "The *Phortica* (s.str.) *foliiseta* species-complex (Diptera, Drosophilidae) from China and its adjacent countries". *Acta Zootaxonomica Sinica* 30: 198-209.
- Ebihara, A., Ishikawa, H., Matsumoto, S., Lin, S.-J., Iwatsuki, K., Takamiya, M., Watano, Y. and Ito, M. 2005 "Nuclear DNA, chloroplast DNA, and ploidy analysis clarified biological complexity of the *Vandenboschia radicans* complex (Hymenophyllaceae) in Japan and adjacent areas". *American Journal of Botany* 92: 1535-1547.
- Hanya, G., Zamma, K., Hayaishi, S., Yoshihiro, S., Tsuruya, Y., Sugaya, S., Kanaoka, M. M., Hayakawa, S. and Takahata, Y. 2005 "Comparisons of food availability and density of Japanese macaques in primary, naturally regenerated and plantation forests". *American Journal of Primatology* 66: 245-262.
- Harrison, R. D., Momose, K. and Inoue, T. 2005 "Pollination of *Dipterocarpus* by *Apis dorsata* during a general flowering". *Malaysian Nature Journal* 57: 67-80.
- Ichie, T., Kenta, T., Nakagawa, M., Sato, K. and Nakashizuka, T. 2005 "Resource allocation to reproductive organs during masting in the tropical emergent tree, *Dipterocarpus tempehes*". *Journal of Tropical Ecology* 21(2): 237-241.
- Ichie, T., Kenzo, T., Kitahashi, Y., Koike, T. and Nakashizuka, T. 2005 "How does *Dryobalanops aromatica* supply carbohydrate resource for reproduction in a masting year?" *Trees* 19: 703-710.
- Isagi, Y., Kudo, M., Osumi, K., Sato, T. and Sakio, H. 2005 Polymorphic microsatellite DNA markers for a relict angiosperm *Cercidiphyllum japonicum* Sieb. et Zucc and their utility for *C. magnificum*. *Molecular Ecology Notes* 5: 596-598.
- Iwata, K., Eguchi, K. and Yamane, Sk. 2005 "A case study on urban ant fauna of southern Kyushu, Japan, with notes on a new monitoring protocol (Insecta, Hymenoptera, Formicidae)". *Journal of Asia-Pacific Entomology* 8: 263-272.
- Kohyama, T. 2005 "Scaling up from shifting gap mosaic to geographic distribution in the modeling of forest dynamics". *Ecological Research* 20: 302-312.
- Kohyama, T., Kubo, T. and Macklin, E. 2005 "Effect of temporal autocorrelation on apparent growth rate variation in forest tree census data and an alternative distribution function of tree growth rate". *Ecological Research* 20: 11-15.
- Kubo, T. and Kohyama, T. 2005 "Abies population dynamics simulated by a functional-structural tree model". *Ecological Research* 20: 255-269.
- Nakagawa, M., Takeuchi, Y., Kenta, T. and Nakashizuka, T. 2005 "Pre-dispersal seed predation by insects vs. vertebrates in six dipterocarp species in Sarawak, Malaysia". *Biotropica* 37: 388-395.
- Nakashizuka, T. 2005 "The role of biodiversity in Asian forests". *Journal of Forest Research* 9: 293-298.
- Shimamura, T. and Momose, K. 2005 "Organic matter dynamics controls plant species coexistence in a tropical peat swamp forest". *Proceeding of Royal Society of London Series B* 272: 1503-1510.
- Takeuchi, Y., Kenta, T. and Nakashizuka, T. 2005 "Comparison of sapling demography of four dipterocarp species

with different seed-dispersal strategies". *Forest Ecology and Management* 208: 237-248.

#### –Books–

- Itioka, T. 2005 Diversity of anti-herbivore defenses in *Macaranga*. In: Roubik, D. W., Sakai, S., & A. A. H. Karim (eds.) *Pollination ecology and the rain forest: Sarawak studies*. pp. 158-171. Springer, New York.
- Momose, K., Hamid, A. A. 2005 The Plant-Pollinator Community in a Lowland Dipterocarp Forest. In: Roubik, D. W., Sakai, S. & A. A. Hamid (eds.) *Pollination ecology and the rain forest: Sarawak studies*. pp. 65-72. Springer-Verlag, New York, USA.
- Momose, K. 2005 Beetle Pollination in Tropical Rain Forests. In: Roubik, D. W., Sakai, S. & A. A. Hamid (eds.) *Pollination ecology and the rain forest: Sarawak studies*. pp. 104-110. Springer-Verlag, New York, USA.
- Nagaike, T., Yoshida, T., Miguchi, H., Kamitani, T., Nakashizuka, T. 2005 Rehabilitation for species enrichment in abandoned coppice forests in Japan. In: Stanturf, J. A. & P. Madsen, (eds.) *Restoration of Boreal and Temperate Forests*. pp. 371-381. CRC Press.
- Nakagawa, M., Itioka, T., Momose, K., Nakashizuka, T. 2005 Insect Predators of Dipterocarp Seeds. In: Roubik, D. W., Sakai, S. & Hamid, A. A. (eds.) *Pollination ecology and the rain forest: Sarawak studies*, pp. 145-157. Springer-Verlag, New York, USA.
- Roubik, D. W., Sakai, S., Hamid, A. A. (eds.) 2005 *Pollination ecology and the rain forest: Sarawak studies*. Springer, NY.
- Sakai, S., Momose, K., Yumoto, T., Nagamitsu, T., Nagamasu, H., Hamid, A. A., Nakashizuka, T., Inoue, T. 2005 Plant reproductive phenology and general flowering in a mixed dipterocarp forest. In: Roubik, D. W., Sakai, S. & A. A. Hamid (eds.) *Pollination ecology and the rain forest: Sarawak studies*, pp. 35-50. Springer, NY.
- Yumoto, T., Nakashizuka, T. 2005 The Canopy Biology Program in Sarawak: Scope, methods, and merit. In: Roubik, D. W., Sakai, S. & A. A. Hamid (eds.) *Pollination ecology and the rain forest: Sarawak studies*, pp. 13-21. Springer, New York.

#### Original paper (In Japanese)

- Inoue, T. 2005 Nihon no chorui no suitai riyu (reasons of decline of butterflies in Japan). *Konchu (Insect)* 8(2): 43-64.
- Sato, J. 2005 Sumatora oki jisin niyoru tsunami higai no kyokun to seikatsu fukkou heno housaku (Lessons form Sumatra earthquake and measures for rehabilitation of livelihood). *Chiiki anzengaku gakkai ronbun shu* 7: 433-442.
- Seino, T. 2005 Zai no seitai kinou tokusei kara mita nettairin jushu no tayousei (Biodiversity of tropical timber from viewpoints of ecological characteristics). *Nihon seitai gakkaiishi (Journal of Japan society of ecology)* 55: 301-305.
- Masaki, T. and Shibata, H. 2005 Shinrin no koiki choki teki na sikennchi kara erareru seika to ikinokorino tameno joken (Requirements for forest survival from the results from experimental area of wide range and long terms) *Nihon seitai gakkaiishi (Journal of Japan society of ecology)* 55: 359-369.
- Momose, K. 2005 Nyu ekorogi naru gokai (Misunderstandings of new ecology) *Ajia afurik chiiki kenkyu (Asia and African studies)* 3: 72-84.

#### Books (In Japanese)

- Agestuma, N. 2005 Shokumostu mou (Food chains). Nakamura, F. and Koike, T. (eds.) *Shinrin no kagaku (Forest science)*, pp. 80-85. Asakura shoten.
- Inoue, T. 2005 Shinrin no seichou ni tomonau chou rui gunsho no henka (Changes of butterflies following by forest growth). Nihon sizen hogo kyokai (Association of Japan nature conservation) ed. Seitaiyaku kara mita sato yama no sizen to hogo (Nature of Satoyama and its conservation from viewpoint of ecology), pp. 36-39. Koudansha.
- Ichiei, T. 2005 Masting genshou (masting phenomenon) Nakamura, F. and Koike, T. eds. *Shinrin no kagaku (Forest*

science), pp. 14-15. Asakura shoten.

Kanazawa, K. 2005 Sarawak no shinrin bassai to senjuumin punan no genzai (Deforestation in Sarawak and present condition of Punan) Iketani, K. (ed.) *Nettai ajia no morino tami* (Forest peoples in the tropical Asia): 273-301. Jinbun shoin.

Sato, J. 2005 Kaihatu wa ikani gakushu suruka (How development studies?) Shinzaki, M. (eds.) *Chiikino jiritsu* (Self-dependent of region) 250-271. Komonzu.

Sato, J. 2005 shakai kaihatsuno seido to ninaite. COE committee of Nihon fukushi Univ. (ed.) *Fukushi shakai kaihatsu gaku no koutiku* (Building study on social welfare development): 177-182. Mineruba shobo.

Sato, J. 2005 Genjo no okuyuki wo toraeru gakumon (Study on understandings of depth of current conditions). Kawata translated Rebisutoro-su kougi (Lecture on Levi strose). Heibonsha library.

Sato, J. 2005 Nihonni okeru sigen shakai gaku no souseito mihattatu (Development and undevelopment of resource social study in Japan). Matsubara, N. and Maruyama, M. (ed.) *Azia taiheiyo kankyo no sin siten* (New viewpoint for environment in Asian pacific), pp. 27-50. Sairyusha.

Nakashizuka, T. 2005 Seibutu tayousei towa nandarou? (What is biodiversity?) Hidaka, T. ed. Seibutsu tayousei wa naze taisetsuka (Why biodiversity is important), pp. 1-40. Shouwado.

## 9. Symposia, Workshop and Others

Sustainability and biodiversity of forest ecosystems –drivers, mechanisms, and effects of forest change–. 18 Oct. 2005. International symposium of RIHN. Kyoto.

International symposium on forest ecology, hydrometeorology and forest ecosystem rehabilitation in Sarawak. 29-30 March 2005. Sarawak Forestry Corporation (SFC) and Japan Research Consortium for Tropical Forests in Sarawak (JRCTS). Kuching.

**Full-Research****Research axis: Human Activity Impact Assessment****Project number: 2-3FR****Project name: Human activities in Northeastern Asia and their impact to the biological productivity in North Pacific Ocean****Project leader: SHIRAIWA, Takayuki (RIHN)****Core members: see No. 3****Research objectives and topics****1. Research Objectives**

This is a project assessing the human impact in the Amur River basin on the marine ecology in the Sea of Okhotsk and the northern North Pacific. The key element supporting the biomass production in the Sea of Okhotsk is considered to be "dissolved iron" from the Amur River. The primary goal of the project is, therefore, to elucidate the mechanism of how the dissolved iron and fulvic acids are formed and transported to the ocean both by the Amur River and through the atmosphere, and how the flux changes will affect the phytoplankton production in the Sea of Okhotsk and the northern North Pacific. We will then clarify this "Giant Fish Feeding Forest System" by quantifying anthropogenic impacts on the flux changes to the ocean.

**2. Research Topics**

The Sea of Okhotsk and the adjacent northern North Pacific are known as the most productive sea in the world. The highest productivity is believed to be maintained both by intensive upwelling of various nutrients and the supply of dissolved iron from the Amur River and through the atmosphere. The dissolved iron can be transported remotely by a form of complex with organic matters such as fulvic acid. The flux of dissolved iron, therefore, depends strongly on land-surfaces in the Amur River basin where the organic matters are produced.

The Amur River basin was historically developed after the end of 19<sup>th</sup> century in the Russian side. In the Chinese side, *i.e.*, the Songhua Jiang basin, intensive human activity dates back to several hundreds years. Accelerated human impact became more obvious after the middle of the 20<sup>th</sup> century in both sides of the Amur River. This whole area is being affected currently by various anthropogenic and natural impacts such as forest fire, deforestation, agricultural, industrial activities, flooding, and drought. Land-use changes in the Amur River drainage, therefore, might have caused or may cause significant changes in the flux of dissolved iron, which might have or may result in biomass production changes in the ocean.

The primary goal of the project is to elucidate the mechanism of how the dissolved iron is to be formed and transported to the ocean both by the Amur River and through the atmosphere, and how the flux change of dissolved iron will affect the phytoplankton production in the Sea of Okhotsk and the northern North Pacific. Secondly, we will clarify the anthropogenic impact on flux changes of dissolved iron to the ocean. Thirdly, we will develop hydro-geochemical and marine biological models which describe the transport of dissolved iron from the Amur River basin to the Sea of Okhotsk. We will then simulate the impact of possible land-use changes on the marine productivity both in the past and in the future. Finally, based on the analyses of flows in materials, human-beings, and available information about the 'Giant Fish Feeding Forest', we would like to help to develop an ideal land-use strategy in the Amur River basin which also satisfies sustainable use of the Sea of Okhotsk and the northern North Pacific.

**3. Members of the project**

◎ SHIRAIWA, Takayuki (Research Institute for Humanity and Nature, Land-use and Ice core analyses)

**Group 1: Physical oceanographic conditions.**

○ WAKATSUCHI, Masaaki (Institute of Low Temperature Science, Hokkaido Univ., Physical oceanographic

conditions)

OHSIMA, Keiichiro (Institute of Low Temperature Science, Hokkaido Univ., Physical oceanographic conditions)

FUKAMACHI, Yasushi (Institute of Low Temperature Science, Hokkaido Univ., Physical oceanographic conditions)

KITAGAWA, Hiromitsu (Faculty and Graduate School of Engineering, Hokkaido Univ., Physical oceanographic conditions)

YASUDA, Ichiro (Graduate School of Frontier Science, Univ. of Tokyo, Physical oceanographic conditions)

## **Group 2: Geochemical and biological conditions.**

○NAKATSUKA, Takeshi (Institute of Low Temperature Science, Hokkaido Univ., Oceanic geochemistry / biogeochemical transport from river to ocean)

○KUMA, Kenshi (Graduate School of Fisheries Science, Hokkaido Univ., Iron analyses in ocean)

NISHIOKA, Jun (Institute of Low Temperature Science, Hokkaido Univ., Rare metal analyses in ocean)

MATSUNAGA, Katsuhiko (Yokkaichi Univ., River-ocean interaction)

SEKI, Satoshi (Institute of Low Temperature Science, Hokkaido Univ., Sediment analysis in ocean)

SOURIN, Rumi (Faculty of Science, Shizuoka Univ., Biological plankton)

SUZUKI, Koji (Graduate School of Environmental Earth Sciences, Hokkaido Univ., Ocean biogeochemistry)

TUDA, Atsushi (Graduate School of Frontier Science, Univ. of Tokyo, Iron analyses in North Pacific)

YOSHIMURA, Takeshi (Environmental Science Research Laboratory, Central research Institute of Electric Power Industry, Oceanography, Biogeochemistry)

TAKADA, Hyoe (Graduate School of Fisheries Science, Hokkaido Univ., Oceanic geochemistry)

NAKAMURA, Yohei (Graduate School of Environmental Earth Sciences, Hokkaido Univ., biogeochemistry)

## **Group 3: Transport of biogeochemical materials.**

○NAGAO, Seiya (Graduate School of Environmental Earth Sciences, Hokkaido Univ., Organic matters analyses)

KODAMA, Hiroki (Kyoto Prefectural Univ., Biogeochemistry from land to river)

TERASHIMA, Motoki (Research Institute for Humanity and Nature, Organic matters analyses)

## **Group 4: Biochemical transport from terrestrial ecosystem.**

○SHIBATA, Hideaki (Field Science Center for Northern Biosphere, Hokkaido Univ., Biogeochemistry from land to river)

○YOH, Muneoki (Environmental Conservation, Tokyo Univ. of Agriculture & Technology, Biogeochemistry from land to river)

ISHII, Yoshiyuki (Institute of Low Temperature Science, Hokkaido Univ., Hydrological analyses in Siberia)

KOMIYA, Keiji (Field Science Center for Northern Biosphere, Hokkaido Univ., Biogeochemistry)

OUI, Baku (Environmental Conservation, Tokyo Univ. of Agriculture & Technology, Biogeochemistry from land to river)

## **Group 5: Background of the anthropogenic impacts.**

○KAKIZAWA, Hiroaki (Graduate School of Agriculture, Hokkaido Univ., Forest management analyses)

ENDO, Takahiro (Research Institute for Humanity and Nature, Politics in area management)

HARA, Toshihiko (Institute of Low Temperature Science, Hokkaido Univ., Dynamics of Forest)

ICHIKI, Takateru (Graduate School of Agriculture, Hokkaido Univ., Agricultural Economics and its history)

IWASHITA, Akihiro (Slavic Research Center, Hokkaido Univ., Political analyses on China/Russia)

OONISHI, Hideyuki (Research Institute for Humanity and Nature, Minority people in Siberia)

PAKU, Kou (Graduate School of Agriculture, Hokkaido Univ., Agricultural Economics and Land-use changes)

SAKASHITA, Akihiko (Graduate School of Agriculture, Hokkaido Univ., Agricultural Economics and its history)

YAMAZAKI, Midori (Graduate School of Agriculture, Hokkaido Univ., Forest management analyses)

YAMANE, Masanobu (Kanagawa Prefectural Nature Conservation Center, Forest change background analysis)

**Group 6: Spatial and historial monitoring of land-use changes.**

- HARUYAMA, Shigeko (Graduate School of Frontier Science, Univ. of Tokyo, Land-use change monitoring)
- KONDO, Akihiko (Tiba Univ. Environmental Remote Sensing Center, Land-use change monitoring)
- HIMIYAMA, Yukio (Hokkaido Univ. of Education, Asahikawa, Land-use changes and the background)
- MASUDA, Yoshitaka (Graduate School of Frontier Science, Univ. of Tokyo, Land-use change monitoring)
- MUROOKA, Mizue (Hokkaido Abashiri Fisheries Experimental Station, land alteration analysis by Satellite)
- YAMAGATA, Kotaro (Joetsu Univ. of Education, Land form development)

**Group 7: Estimate of atmospheric transports of terrestrial materials.**

- MATOBA, Sumito (Institute of Low Temperature Science, Hokkaido Univ., Trace metal analyses in ice cores)
- UEMATSU, Mitsuo (Ocean Research Institute, Univ. of Tokyo, Aerosol analyses)
- AZUMA-GOTO, Kumiko (National Institute of Polar Research, Chemistry of ice core)
- HONDOH, Takeo (Institute of Low Temperature Science, Hokkaido Univ., Physical analyses in ice core)
- KOSHIMA, Shiro (Tokyo Institute of Technology, Biomass in ice core)
- NAKAWO, Masayoshi (Research Institute for Humanity and Nature, Dust variation reconstruction)
- NARITA, Hideki (Institute of Low Temperature Science, Hokkaido Univ., Ice core analyses)
- NARITA, Yasushi (Graduate School of Frontier Science, Univ. of Tokyo, Aerosol observation)
- MINAMI, Hideki (Hokkaido Tokai Univ., Aerosol analyses)
- TAKEUCHI, Nozomu (Research Institute for Humanity and Nature, Biomass in ice core)

**Group 8: Natural variability of the hydro-metrological and hydro-chemical conditions.**

- TACHIBANA, Yoshihiro (Liberal Arts Education Center, Tokai Univ., Natural variability analyses)
- HAYASHI, Ryuma (Graduate School of Agriculture, Kyoto Prefectural Univ., Pollen analysis)
- KUBOTA, Jumpai (Research Institute for Humanity and Nature, Hydrological modeling)
- ONISHI, Takeo (Public Works Research Institute, Hydrological modeling)
- TAKAHARA, Hikaru (Kyoto Prefectural Univ., Pollen analysis)

**Group 9: Modeling of biomass production.**

- MATSUDA, Hiroyuki (Graduate School of Environment and Information Sciences, Yokohama National Univ., Biomass modeling)
  - KISHI, Michio (Graduate School of Fisheries Science, Hokkaido Univ., Marine ecosystem model)
  - ARAI, Nobuo (Slavic Research Center, Hokkaido Univ., Sea product analyses in the Far East)
  - MUKAI, Hiroshi (Field Science Center for Northern Biosphere, Hokkaido Univ., Marine ecosystem analyses)
  - SAITO, Seiichi (Graduate School of Fisheries Science, Hokkaido Univ., Satellite monitoring of phytoplankton)
  - KRASNENKO, Andrey (Graduate School of Fisheries Science, Hokkaido Univ., Oceanic geochemistry)
- (◎ : Project leader, ○ : Core member)

**4. Progress of the project**

Water sampling and biogeochemical research were conducted from Khabarovsk to Nikoraevsk-na-Amure by the Research Vessel Ladoga in collaboration with the Institute of Water and Ecological Problems FEBRAS in the summer of 2005. Hydrological and biogeochemical research stations were established at the Greater and Lesser Khingan Ranges, Sanjian Plain, and Sikhote Alin in the Amur River basin. The observations were started in these stations in collaborations with the Institute of Applied Ecology CAS, Northeast Forestry University, Northeast Institute of Geography and Agricultural Ecology CAS, Nankai University, and the Institute of Water and Ecological Problems FEBRAS. Routine water sampling from Amur River both at Khabarovsk and Bogorodskoe, and continuous sampling of aerosol in Kamchatka were started with the help of the Federal Service for Hydrometeorology and Environmental Monitoring for detailed chemical analyses.

Digital layers on present topography, river system, geology, and land-uses were compiled for the whole Amur

River basin in collaboration with the Pacific Geographical Institute FEBRAS. The GIS will be used for numerical modeling describing hydro-biogeochemical processes to trace the flow of dissolved iron from the basin to the Sea of Okhotsk as boundary conditions. Background analyses on forestry and agricultural development were also started to understand possible driving forces that are accelerated by the land-use changes.

## **5. Full-Research Activity in 2005**

### **(1) Group 1**

Numerical simulation of polluted water from the Amur Liman to the Sea of Okhotsk was presented to predict a possible impact to the coast of Hokkaido after the explosive accidents of a Chinese factory at the Songhua Jyang basin. The discharged materials are reported to be benzene and nitrobenzene. Because of the volatility of the materials, we concluded the impact to the Sea of Okhotsk will not be very serious in this case.

### **(2) Group 2**

Planning of a research cruise in the Sea of Okhotsk in 2006 was discussed in several group meetings. The research cruise in the Amur Liman was cancelled due to delay of research permission and will be postponed until 2006.

### **(3) Group 3**

A research cruise was conducted by using the R/V Ladoga of IWEP/FEBRAS. It covered the Lower Amur, from Khabarovsk to Nikolaevsk-na-Amure. Preliminary analyses on collected water indicate a positive correlation between the concentration of dissolved iron and DOC, which supports our hypothesis that the complex of dissolved iron and organic matter plays an important role in transporting the iron to the Sea of Okhotsk. We also started monthly routine water samplings at Khabarovsk and Bogorodskoe.

### **(4) Group 4**

Extensive water sampling was conducted in the Greater and Lesser Khingan Ranges, Sanjian Plain, and Sikhote Alin in the Amur River basin. Preliminary analyses on concentration of dissolved iron indicate that it is higher in the tributaries flowing from wetlands and lower in the main river. It was also found that the concentration in various locations in the Sanjian Plain was not very high as we expected. This may indicate a possible impact of land-use changes which occurred in the Sanjian Plain in the last 20 years. This group also made an assessment of Anuy River and Ghasi Lake as potential observation sites for 2006.

### **(5) Group 5**

Background analyses on the expansion of an agricultural field at Sanjian Plain were made through intensive field research. Statistical data were also collected with regards to forestry and the forest area in the Khabarovsk region. It was found that the reclamation of paddy fields in the Sanjian Plain was already stopped to increase wetlands for conservation of nature.

### **(6) Group 6**

Satellite image interpretation and its ground truth were conducted to detect land-use changes in the Sanjian Plain and its vicinity. We also constructed a GIS of the whole Amur basin with a scale of 1:2,500,000. The system includes DEM, Geographical layer, Geological layer, Vegetation, and Land-use layers.

### **(7) Group 7**

An automatic aerosol sampling system was installed at Oktyabrsky village, on the west coast of the Kamchatka Peninsula to monitor air-borne aerosol coming from the continent. Samples were successfully collected for analyses in February.

### **(8) Group 8**

Relationships between Amur River discharge and sea-ice extent in the Sea of Okhotsk were analyzed with special reference to Arctic Oscillations. It was found that AO has a strong impact on both phenomenon. We also started to develop a hydro-geochemical model to simulate a possible impact of land-use changes on the discharge of

dissolved iron.

#### (9) Group 9

A numerical model was developed to simulate a possible impact of changing iron fluxes from the Amur River and the atmosphere on the biomass production in the Sea of Okhotsk. The model suggests that air-borne iron may play a more significant role at this stage. This model result will be changed in the future stage if we incorporate a possible mechanism of transporting iron through dense shelf water in the Sea of Okhotsk.

#### (10) International Workshop and Symposium

An International Symposium on the project was not held this year. We held a specific workshop aiming at a reconstruction of a time-series of iron deposition in the glacier. The workshop, "Prospects and Problems on Ice Cores Drilled at High Mountains" was held at Hokkaido University on February 4-5, 2005. Two Russian, one Swiss, 1 American, and 1 German glaciologists joined this workshop beside 20 participants from Japan.

#### (11) Project Meetings

A total of 2 project meetings were held at Kyoto and Sapporo during the fiscal year 2005. They were the meetings for "Land-Use Changes" (November 16-17 at Kyoto) and "Giant Fish Feeding Forest" (March 10-11 at Sapporo). Beside these meetings, numerous group meetings were held this year. Following is the table showing the member's activities abroad.

Itinerary	Destination	Purpose	Member
2005.6.6-13	Kamchatka	Discussion on aerosol monitoring with Hydromet Kamchatka	Shiraiwa, Uematsu, Minami
2005.6.10-17	Khabarovsk Nikolaevsk na Amur	Discussion on water sampling with Hydromet and assessment of R/V LADOGA	Nagao, Nishioka
2005.6.8-15	China, Sangjyang	Research trip to Sangjyang plain	You, Kaku
2005.7.3-15	Khabarovsk	Collecting Sediment at Slavyanka marshland	Takahara, Harashi
2005.7.20-22	Khabarovsk	Discussion on forestry with Institute of Economy	Kakizawa
2005.8.1-4	Hokkaido, Erimo cape	Research trip to Erimo-cape	Shiraiwa, Endo
2005.8.5-12	Sangjyang	Research trip to Sangjyang plain	Kaku
2005.8.9-26	Khabarovsk	Research cruise by R/V Lagoga in the Lower Amur	Nagao, Kodama, Seki, Nakamura, Krasnenko
2005.9.4-11	China, Haerbin	Research trip to Chinese national Farm and collecting data	Sakashita, Paku, Ichiki
2005.9.11-10.5	China, Jamus	Research trip to Jamus Farm	Paku, Ichiki
2005.9.11-18	Sangjyang	Research trip to Sangjyang plain	Kaku
2005.9.14-28	Khabarovsk, Sangjyang	Discussion on GIS with Pacific Institute of Geography and. Ground truth in the Amur river basin. Research trip to Sangjyang plain and discussion with IAE, CAS	Haruyama, Yamagata, Murooka, Masuda
2005.10.3-9	Khabarovsk	Research trip to the lower Amur river basin	You, Shibata
2005.10.10-21	Kamchatka	Installation of Aerosol Sampler in Kamchatka	Shiraiwa, Matoba, Narita
2005.10.23-28	China, nanjing	Discussion on agriculture with Nanjing Agriculture Univ.	Sakashita, Paku
2006.1.9-13	Khabarovsk	Discussion of forest management with Institute of Economys, RAS	Kakizawa, Yamazaki
2006.2.10-17	Khabarovsk	Discussion on water sampling with Institute of Water and Ecological Problems	Nishioka
2006.2.16-26	Kamchatka	Maintenances of Aerosol Sampler in Kamchatka	Matoba

## 6. Outcome

Kanamori, Syosaku, Yoshitomi, Okura, Shiraiwa, Takayuki and Yoshikawa, Kenji 2005 Snow pit studies and radio-

- echo soundings on Mt. McKinley 2004. *Bulletin of Glaciological Research* 22: 89-97.
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- Kar, T. K. and Matsuda, H. 2006 "Modelling and analysis of marine reserve creation" *Journal of Fisheries and Aquatic Science* 1: 17-31.
- Haruyama, Shigeko 2006 "Land Use and Land Cover of River Basin – Amur-Geographical View and Human Impact" *Report on Amur-Okhotsk Project No3. -Proceedings of the international Kyoto Symposium 2005-. Research Institute for Humanity and Nature*, pp. 117-124.
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- Morita, K., Morita, S. H., Fukuwaka, M., Saito, T. and Matsuda, H. 2005 Rule of age and size at maturity of chum salmon: implications of recent trends among *Oncorhynchus* spp. *Can J Fish Aqu Sci* 62: 2752-2759.
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- Ogi, M., K. Yamazaki and Y. Tachibana 2005 The summer northern annular mode and abnormal summer weather in 2003, *Geophys. Res. Lett.* 32, L04706, doi:10.1029/2004GL021528.
- Ogi, M. and Y. Tachibana 2006 Influence of the annual Arctic Oscillation on the negative correlation between Okhotsk Sea ice and Amur River discharge, *Geophys. Res. Lett.* 33, L08709, doi:10.1029/2006GL025838.
- Ohshima, Kay I., S. Riser and M. Wakatsuchi 2005 Mixed layer evolution in the Sea of Okhotsk observed with profiling floats and its relation to sea ice formation. *Geophysical Research Letters* 32, L06607, doi:10.1029/2004GL021823.
- Ohshima, Kay I., M. Wakatsuchi and S. Saitoh 2005 "Velocity field of the Oyashio region observed with the satellite-tracked surface drifters during 1999-2000". *Journal of Oceanography* 61: 845-855.
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- Ohshima, Kay I., T. Nakanowatari, S. Nishihashi, M. Wakatsuchi, M. Itoh and S. C. Riser 2006 "Sea ice production in the Okhotsk Sea and its relation to interannual variability of Okhotsk Sea and North Pacific Intermediate Water" *Proc. 21st International Symposium on Okhotsk Sea and Sea Ice*: 29-32.
- Ohshima, Kay I. 2005 Circulation and heat/salt transport in the Sea of Okhotsk and its relation to sea ice, Report on Amur-Okhotsk Project No. 3, *Proceedings of the International Kyoto Symposium 2005*: 23-30.
- Ono, Jun, Kay I. Ohshima, G. Mizuta, Y. Fukamachi and M. Wakatsuchi 2006 "Amplification of diurnal tides over Kashevarov Bank in the Sea of Okhotsk and its impact on water mixing and sea ice" *Deep Sea Research* 53: 409-424.
- Shiraiwa, T. 2005 "Report on Amur-Okhotsk Project No. 3" *Proceedings of the International Kyoto Symposium 2005* (ed.), pp147.
- Shiraiwa Takayuki 2005 "The Amur-Okhotsk Project" *The Japan Journal* 2(2): 30.

**Pre Research****Research axis: Human Activity Impact Assessment****Project number: 2-4PR****Project name: Human activities on urban subsurface environments****Project leader: TANIGUCHI, Makoto (RIHN)****HP: <http://www.chikyu.ac.jp/USE/>****■ Research objectives and topics****1. Research Objectives**

Securing water resources and clearing contaminated water caused by human activities in urban areas are global environmental issues in 21<sup>st</sup> century. Heat island phenomena created by human activities is also a big environmental problem in addition to global warming. These global environmental issues which are caused by urbanization, should be addressed strongly and prevented, because population increase and concentration occurs rapidly in urban areas.

Most global environmental studies have long been focused on the environmental issues above ground surface such as air pollution, global warming, seawater pollution, and decrease in biodiversity. Subsurface environmental issues are also important for human life in the present and future, but have been largely ignored because of the invisibility of the phenomena and difficulty of the evaluations.

Subsurface environmental problems such as subsidence due to excessive pumping, groundwater contamination, have occurred repeatedly in Asian major cities with a time lag depending on the development stage of urbanization. Therefore, we may be able to assess future scenarios if we can evaluate the relationships between subsurface environmental problems and the development stage of the city.

**2. Research Content**

This project will deal with; (1) Relationships between the development stages of the cities and subsurface environmental problems will be assessed by socio-economical analyses and reconstructions of urban areas by uses of historical records; (2) Serious problems in subsurface environments and changes in reliable water resources will be studied after evaluations of groundwater flow systems and changes in groundwater storage by uses of hydrogeochemical data and in-situ/satellite-GRACE gravity data; (3) We will also evaluate accumulations of the materials (contaminants) in subsurface and their transports from land to ocean including groundwater pathways by uses of chemical analyses of subsurface waters, sediments and tracers; and (4) Subsurface thermal contamination due to the "heat island" effect in urban areas will be evaluated by reconstruction of surface temperature history and urban meteorological analyses.

Tokyo, Osaka, Bangkok, and Jakarta are targeted as study cities, and Taipei, Manila and Seoul are selected as secondary study cities depending on the four sub-themes. The project will focus on the urban subsurface environments, however, we will treat the problems on a basin scale, because subsurface water, heat, and material transports are interconnected on this scale. We will target the relationships between subsurface environmental changes and human activities during the past 100 years.

**■ Project member (Affiliation · Position · Role)**

◎TANIGUCHI, Makoto (Research Institute for Humanity and Nature · Associate Professor · Project Leader)

○ADACHI, Itsu (Global Environment Department, Japan International Cooperation Agency · Group Leader · Analysis of social & water environments in Asian cities)

○EHARA, Sachio (Graduate School of Engineering, Kyusyu University · Professor · Analysis of subsurface temperature)

○ONODERA, Shin-ichi (Faculty of Integrated Arts and Sciences, Hiroshima University · Associate Professor ·

Analysis of material transports)

- KANEKO, Shinji (Graduate School for International Development and Cooperation, Hiroshima University · Associate Professor · Socio-economic analysis)
- KITAGAWA, Hiroyuki (Graduate School of Environmental Studies, Nagoya University · Associate Professor · Isotope analysis)
- SHIMADA, Jun (Faculty of Science, Kumamoto University · Professor · Groundwater analysis · Isotope analysis)
- NAKANO, Takanori (Research Institute for Humanity and Nature · Professor · Analysis of sedimentary environments)
- FUKUDA, Youichi (Graduate School of Science, Kyoto University · Associate Professor · Gravity satellite analysis)
- YAMANO, Makoto (Earthquake Research Institute, The University of Tokyo · Associate Professor · Measurements and analysis of ground- water temperature)
- YOSHIKOSHI, Akihisa (College of Letters, Ritsumeikan University · Professor · Reconstruction of city · Urban geography analysis)
- ICHINOSE, Toshiaki (Center for Global Environmental Research, National Institute for Environmental Studies · Chief Researcher · Analysis of urban climate)
- IMAI, Tsuyoshi (Faculty of Engineering, Yamaguchi University · Associate Professor · Environmental Engineering)
- UEMURA, Takeshi (National Institute of Polar Research · Assistant Professor · Gravity satellite analysis)
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- KAGAWA, Yuichi (Faculty of Humanities and International Studies Yokohama City University · Part-time Lecturer · Urban geography analysis)
- KATO, Masahiro (Faculty of Commerce, University of Marketing and Distribution Sciences · Associate Professor · Cultural Geography Urban study)
- KAWAMOTO, Kazuaki (Research Institute for Humanity and Nature · Assistant Professor · Analysis of climate/ water circulation in Asia)
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- SAKURA, Yasuo (Faculty of Science, Chiba University · Professor · Analysis of subsurface temperature)
- SUZUKI, Kazuya (JICA Thailand Office · Assistant Resident Representative · Groundwater analysis)
- TAKEDA, Kazuhiko (Graduate School of Biosphere Science, Hiroshima University · Associate Professor · Analysis of trace metals)
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- Zhang Junyi (International Development and Cooperation, Hiroshima University · Associate Professor · Analysis of transport movement)
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- TOKUNAGA, Tomochika (Graduate School of Engineering, The University of Tokyo · Associate Professor · Groundwater analysis)

- NAKAEGAWA, Toshiyuki (Meteorological Research Institute · Chief Researcher · meteorology)
- NAKAYAMA, Tomoe (Research Institute for Sustainable Humanosphere, Kyoto University · Special study researcher · Isotope analysis)
- NISHIJIMA, Jun (Graduate School of Engineering, Kyushu University · Assistant Professor · Groundwater research by gravity measurement)
- BAI, Yingjiu (Tohoku Univ. of Community Service and Science · Assistant Professor · Analysis of urban climate)
- HAYASHI, Takeshi (National Institute of Advanced Industrial Science and Technology · technical staff · Isotope hydrology)
- FUJIKURA, Ryo (Faculty of Humanity and Environment, Hosei University · Professor · Analysis of environmental system)
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- Fernando Siringan (National Institute of Geological Sciences, University of the Philippines · Professor · Hydrogeological Analyses)
- Gullaya Wattayakorn (Dept. of Marine Science, Chulalongkorn University · Associate Professor · Biogeochemical Analyses)
- Joseph M. Foronda (National Institute of Geological Sciences, University of the Philippines · Associate Professor · Groundwater Analysis)
- Lee Kang-Kun (School of Earth & Environmental Sciences, Seoul National University · Professor · Coastal Water Analyses)
- Rober Delinom (Division of Hydrology, Indonesia Institute of Science, Indonesia · Chief Researcher · Hydrogeological Analyses)
- Shaopeng Huang (Dept. of Geological Sciences, The University of Michigan · Associate Research Scientist · Analysis of subsurface temperature)
- Somkid Buapeng (Department of Groundwater Resources, Ministry of Natural Resources and Environment · Section Manager · Groundwater Monitoring)
- Sopit Piromlert (Dept. of Groundwater Resources, Ministry of Natural Resources and Environment · Chief Researcher · Groundwater analysis)
- William C. Burnett (Department of Oceanography, Florida State University · Professor · Oceanography)
- (◎ : Project leader, ○ : Core member)

## ■ Progress of the Project

### 1. Outline of Result

- (1) Preliminary field surveys at Seoul, Taipei, Bangkok, Jakarta, Tokyo and Osaka have been made.
- (2) International Symposium on "Human Impacts on Urban Subsurface Environment" was held, and proceeding was published (Oct, 18-20, 2005).
- (3) The MOUs between RIHN and Research Center for Geotechnology, Indonesian Institute of Science, and Institute of Earth Sciences, Academia Sinica, Taiwan, became effective.
- (4) Assessments of existing data in the study areas have been started.

- (5) Preliminary model developments for GRACE (Gravity Recovery and Climate Experiment) data to evaluate the changes in groundwater storage have been made.
- (6) Preliminary evaluations of material transports by groundwater to the coastal zone have been made.
- (7) Cooperations with international research agencies (UNESCO- GRAPHIC (Apr. 2006), GWSP-Asia (Aug. 2005) have been made.

## 2. Major Publications

### Scientific paper

- Okubo, Y., Y. Uchida, M. Taniguchi, A. Miyakoshi and J. Safanda 2005 "Statistical analysis for thermal data in the Japanese Islands" *Physics Earth Planetary Inter.* 152: 277-291.
- Miyakoshi, A., M. Taniguchi, Y. Okubo and T. Uemura 2005 "Evaluations of subsurface flow for reconstructions of climate change using borehole temperature and isotope data in Kamchatka" *Physics Earth Planetary Inter.* 152: 335-342.
- Taniguchi, M. and T. Uemura 2005 "Effects of urbanization and groundwater flow on the subsurface temperature in Osaka, Japan" *Physics Earth Planetary Inter.* 152: 305-313.
- Taniguchi, M. and I. Kukkonen 2005 "Thermally controlled processes and preserved thermal signatures within the Earth" *Physics Earth Planetary Inter.* 152: 221-222.
- Miyakoshi, A., M. Taniguchi, Y. Okubo and T. Uemura 2005 "Evaluation of subsurface thermal environment in the high latitude region – Effects of snow cover and global warming –" *J. Geotherm.* 27(2), pp. 163-172.
- Taniguchi, M., T. Ishitobi and K. Saeki 2005 "Evaluation of time-space distributions of submarine groundwater discharge" *Ground Water* 43(3), pp. 336-342.
- Taniguchi, M., T. Uemura and Y. Sakura 2005 "Effects of urbanization and groundwater flow on subsurface temperature in three megacities in Japan" *J. Geophys and Eng.* 2, pp. 320-325.
- Onodera, S. 2005 "Formation and flow of saline groundwater in the Yellow River delta, China" *Proceedings of 31<sup>st</sup>. IAHR Congress*, pp. 5375-5380, 2005.
- Saito, M. and Onodera, S. 2005 "Nitrate transport and reduction measures in coastal aquifer of and agricultural watershed, southern Japan" *Proc. of 31<sup>st</sup>. IAHR Congress*, pp. 5381-5388.
- Tijani, M. and Onodera, S. 2005 Surface and groundwater qualities in an urbanized catchment: scenario from a developing country *IAHS Publ* 297, pp. 506-516.
- Taniguchi, M., T. Ishitobi, J. Shimada and N. Takamoto 2006 "Evaluation of spatial distribution of submarine groundwater discharge" *Geophys. Res. Lett* 33, doi:10.1029/2005GL025288.
- Taniguchi, M. 2006 "Submarine groundwater discharge measured by seepage meters in Sicilian coastal waters" *Continental Shelf Res.*, doi:10.1016/j.csr.2005.12.002.
- Taniguchi, M., T. Ishitobi and J. Shimada 2006 "Dynamics of submarine groundwater discharge and freshwater-seawater interface" *J. Geophys. Res.* 111, C01008, doi:10.1029/2005JC002924.
- Taniguchi, M., T. Ishitobi and K. Saeki 2006 "Evaluation of time-space distributions of submarine ground water discharge" *Ground Water* 43(3), pp. 1-9.

## 3. Oral Presentation and Others

- Taniguchi, M., "Progress of GRAPHIC project", UNESCO-GRAPHIC meeting, Norwich, England, April 3, 2005
- Taniguchi, M., "Overview of hydrogeologic progress in SGD Studies", International Workshop on Submarine Groundwater Discharge, Seoul National University, Korea, August 1-2, 2005
- Wang, C., "Salt water intrusion and SGD using  $^{18}\text{O}$ ,  $^{14}\text{C}$ , and  $^3\text{H}$  tracers", International Workshop on Submarine Groundwater Discharge, Seoul National University, Korea, August 1-2, 2005
- Kim, G., "SGD and coastal eutrophication using radionuclide tracers", International Workshop on Submarine

- Groundwater Discharge, Seoul National University, Korea, August 1-2, 2005
- Siringan, F., "*Sedimentary record of red tides: potential connection to SGD*", International Workshop on Submarine Groundwater Discharge, Seoul National University, Korea, August 1-2, 2005
- Shimada, J., "*Seepage measurements of SGD*", International Workshop on Submarine Groundwater Discharge, Seoul National University, Korea, August 1-2, 2005
- Taniguchi, M., "Introduction of the GWSP-Asia Meeting", GWSP Asia Meeting August 29-31, 2005, Kyoto, Japan
- Taniguchi, M., "Project Introduction", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Kaneko, S., "Socio-economics in Asian cities", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Yoshikoshi, A., "Urban Geography of Asia", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Onodera, S., "Material transports from the Asian coastal cities", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Nakano, T., "Sediment environments in Asia", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Buapeng, S. and Wattayakorn, G., "Bangkok, Thailand", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Kim, G. and Lee, K., "Seoul, Korea", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Delinom, M., "Jakarta, Indonesia", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Siringan, F., "Manila, Philippines", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Wang, C., "Taipei, Taiwan", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Huang, S., "Penetration of human induced warming in the continental landmasses" Commentators: P2-4: Wang, Chung-Hu, RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Burnett, W., "Human Impacts on Land-Ocean Interaction" Commentators: P2-4: Siringan, F., RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Shimada, J., "Subsurface water environment in Asia", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Fukuda, Y., "Gravity and groundwater in Asia", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Yamano, M., "Subsurface thermal conditions in Asia", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Ichinose, T., "Heat Island in Asian cities", RIHN Pre-Symposium the second stage Oct. 18-20, 2005, Kyoto, Japan
- Taniguchi, M., "UNESCO-GRAPHIC in International Science Programs/Projects", Asian Water Cycle Symposium, University of Tokyo, Nov. 2-4, 2005.
- Taniguchi, M., "Groundwater Resources Assessment under the Pressures of Humanity and Nature", American Geophysical Union, December 13-17, 2005, San Francisco, CA, Session, H55
- Taniguchi, M., "Groundwater Resources Assessment under the Pressures of Humanity and Nature", Groundwater Resources and Human Security: Identifying Research and Capacity Development Needs, Jan 23-25, 2006, UNU-IEH (Institute for Environment and Human Security), Bonn, UNESCO/UNU
- Taniguchi, M., "Comments on local actions by the expert panel - Groundwater Resources Assessment under the Pressures of Humanity and Nature", 4<sup>th</sup> World Water Forum, Mar. 18-23, 2006, Mexico City, Session FT5.09
- Groundwater and risk management: coping with water scarcity, climate change and emergency situations.

## CD

- GRAPHIC-CD: Groundwater Resources Assessment under the Pressures of Humanity and Nature Brochure- CD
- RIHN-2-4PR-CD: Proceeding of the International workshop on "Human impacts on urban subsurface environment"

## Pre Research

**Research axis:** Human Activity Impact Assessment

**Project number:** 2-5PR

**Project name:** Erosion of genetic diversity as a social, ecological and environmental problem

**Project leader:** SATO, Yo-Ichiro (RIHN)

**Core members:** see No. 2

**HP:** <http://www.chikyu.ac.jp/sato-project/>

### 1. Background and Objectives

The present project deals with the loss of genetic diversity, genetic erosion, in man-made habitats of Eurasia and its neighboring regions during the latest 10,000 years, as a social, ecological and environmental problem. Genetic erosion in domesticated plants and their relatives has accelerated in the last 100 years, through habitat modification and increasing dependence on a narrow range of domesticated species and varieties. The project will focus on:

- a) The social ecological and environmental history of plant genetic diversity and genetic erosion.
- b) Models for understanding genetic erosion, to incorporate advances in biological, environmental, and social history.
- c) Recovering genetic diversity in man-made habitats.
- d) In situ preservation and development of genetic diversity.

### 2. Member of the Project

◎ SATO, Yo-Ichiro (RIHN, Professor, Plant genetics)

\* KATO, Kenji (Okayama University, Associate professor, Breeding)

\* KADOWAKI, Kouichi (National Institute of Agrobiological Sciences, Head of Team, Breeding)

\* SHINODA, Kenichi (National Science Museum, General manager, Anthropology)

\* NAKAMURA, Ikuo (Chiba university, Associate professor, Plant molecular genetics)

\* FUKUNAGA, Kenji (International Research Center for Japanese Studies, Research support promotion, Plant genetics)

\* MUGURUMA, Yumi (Institute of Culture of Tohoku, Tohoku University of Art & Design, Researcher, Folklore)

\* YANG, haiying (Sizuoka University, Associate professor, Social anthropology)

AKASAKA, Norio (Culture of Tohoku Research Center, Tohoku University of Art & Design, Head, Folklore)

AKIMICHI, Tomoya (RIHN, Professor, Ecological Anthropology)

ASHIKAWA, Ikuo (National Institute of Crop Science, Plant genetics)

ATSUMI, Susumu (Tokyo University of Science, Graduate Student, Geochemistry)

ABE, Kenichi (National Museum of Ethnology, Associate professor, Ethnology)

IKEBE, Makoto (Free-lance writer)

ISHIKAWA, Ryuji (Hiroshima University, Associate professor, Plant breeding study)

ISHIGURO, Naotaka (Gifu University, Professor, Molecular genetics)

INOUE, Katsuhiro (Department of Environmental Life, Shimane Prefecture Government, Director)

INOUE, Takashi (Japan Broadcasting Corporation Special Program center, Executive Producer)

INTOH, Michiko (National Museum of Ethnology, Professor, Ethnology · Archaeology)

UEDA, Shintaro (Tokyo University, Professor, Anthropology)

UDATSU, Tetsuro (Miyazaki University, Associate professor, Agronomy)

UCHIYAMA, Junzo (RIHN, Associate professor, Archaeology)

OTA, Syoji (University of Fukui Prefecture, Professor, Plant genetic resources)

OSADA, Toshiki (RIHN, Professor, Linguistics)

OGURA, Ichio (Oguraichio hensyukeikaku kenkyusho, Director)

- KASAMATSU, Hiroki (Shimane Mountainous Region Research Center, Chief researcher)  
 KITAGAWA, Junko (International Research Center for Japanese Studies, Research assistance member, Palynology)  
 KURODA, Yousuke (National Institute of Agrobiological Sciences, Special researcher, Plant genetics)  
 KOYAMA, Shuzo (Suita City Museum, Superintendent)  
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 SAITO, Kiyooki (RIHN, Professor)  
 SASANUMA, Tsuneo (Yokohama City University, Assistant, Genetics)  
 SATO, Tadashi (Tohoku University, Associate professor, Genetic ecology)  
 TAKEUCHI, Nozomu (RIHN, Research Fellow, Glacier biology)  
 TANNO, Ken-ichi (RIHN, Part-time researcher, Plant archaeology)  
 TSUJIMOTO, Hisashi (Tottori University, Professor, Plant genetics)  
 TOMINAGA, Toru (Kyoto Prefectural University, Professor, Agricultural ecology)  
 NAKAI, Izumi (Tokyo University of Science, Professor, Geochemistry)  
 NAKANO, Takanori (RIHN, Professor, Living thing of isotope, earth science)  
 NAKAMURA, Shinichi (Kanazawa University, Professor, Archaeology)  
 NASU, Hiroo (International Research Center for Japanese Studies, Research assistant member, Botany)  
 NISHIAKI, Yoshihiro (Tokyo University Digital Museum, Associate professor, Archaeology)  
 FUJIYAMA, Kou (Shimane Mountainous Region Research Center, Chief researcher)  
 HOSOYA, Aoi (Waseda University, Archaeobotany)  
 HOTTA, Mitsuru (Kagoshima Prefectural College, The President, Botany)  
 MATSUURA, Seiji (Kiyohara Breeding Farm, Tohoku Co., Chief, Plant breeding)  
 MATSUDA, Ryuji (Paleoenvironment Research Co., Director, Paleoenvironment)  
 MORI, Naoki (Kobe University, Associate professor, Plant genetics)  
 YASUDA, Yoshinori (International Research Center for Japanese Studies, Professor, Environment archaeology)  
 YUMOTO, Takakazu (RIHN, Professor, Plant ecology)  
 YOSHIZAWA, Yasuki (Kinokuniya Bookstore, Director)  
 WADA, Eitaro (Frontier Research Center for Global Change, Program Director, Geochemistry)  
 WATABE, Takeshi (Tokai University, Professor, Historical science)  
 \* George Willcox (Institute of Prehistorical Oriental Jales, Archaeology)  
 \* Martin K. Jones (Cambridge University, Professor, Archaeology)  
 \* Peter Matthews (National Museum of Ethnology, Associate professor, Plant archaeology)  
 Songkran Chitrakon (Biotechnology Research and Development Office, Science of plant genetic resources)  
 Tang Linghua (Agriculture Academy of Sciences, Plant breeding)  
 Li Jun (Cultural Heritage Bureau of XinJiang Uygur Autonomous Region, Vice-chief of Office)  
 Long Chunlin (Plant Resources Kunming Institute of Botany / Chinese Academy of Science, Professor, Ethnobotany)  
 Wei Wang (Institute of Archaeology Chinese Academy of Social Science, Deputy director, Archaeology)  
 (© : Project leader, \* : Core member)

### 3. Methodology

Methods will be adopted from the related disciplines of archaeobotany, palaeobotany, ethnobotany, ecology, and genetics. Target plants will be mainly wheat, taro and rice, which show annual, perennial and intermediate forms of reproduction, respectively. These have been staple-food plants in Eurasia and its neighboring regions since antiquity. In order to evaluate plant use and genetic diversity in the past, plant remains from archaeological sites will be analysed on the macroscopic, microscopic and molecular scales (*archaeobotany*). The study of ancient DNA

(DNA archaeology) will be one of the most important approaches. Change and diversity in man-made habitats will be evaluated through analyses of pollen, phytoliths, and diatoms (*palaeobotany and palaeoecology*). Where appropriate, radio-carbon ( $C_{14}$ ) dating will be carried out. The origin and the transportation of the seeds or other products excavated will be surveyed using stable isotopes. Plant diversity and genetic erosion in the historic age and the present will be evaluated through literature review, field surveys (*ethnobotany and ecology*) and analyses of DNA variation (*genetics*).

#### 4. Progress of the Project (from April 2005 to March 2006)

- ① We had core member meetings in May 2005 and March 2006 to discuss the plans and schedules of the project. We also had group a meeting of each for rice group and *mugi* group. We also had a symposium "Sustainable landuse at Mountain Region" at Shimane Mountainous Region Research Center. This project is related to "yakhata" (Shifting cultivation)" group of our project.
- ② In rice group, the genetic and archaeological studies on the origin of india rice is in progress. The sampling of the soil from the Ikeshima-Fukumanji paddy field site is also in progress. This work is aimed to study the historical change of rice cultivation. Macro remains, pollen and phytolith from the samples will be analyzed.
- ③ In mugi group, we attempted ancient DNA analysis of wheat samples from Xiao he mu yi ji site. These samples were also assumed to be hexaploid wheat by morphological analysis. We plan a boring in this resion based on the assumption that this area was covered by plants although it is now dessert. We are now considering a boring point in this region. In Syria, we carried out excavation and archaeobotanical analysis. Two members of the project, Drs. K. Tanno and G. Willcox published a paper on wheat domestication in "Science". Their finding is significant in adaptation of human beings to environments in the history of human beings. The oldest archaeobotanical records of pea and chickpea were also found by Tanno and Willcox and reported in an international journal.
- ④ Ethnobotanical reserches have been also carried out for taro and millets.

#### 5. Activities in Academic Societies

May 2005	Mirai no gakkou (Osaka) [in Japanese]
August 2005	Syoyojoyurinbunka to inasakubunka-higashi ajia niokeru bunmei no koubou (Paruru Kyoto) [in Japanese]
August 2005	Saito Forum 2005 Aim for the new city of life: The new city planning best use of the wealth of region-from DNA Archaeology-, Saito forum 2005 planning committee (Osaka) [in Japanese]

#### 6. Conference of Project

16-17, May, 2005	Project Conference for Core member, Kyoto city.
16, June, 2005	Project Conference for Group of Rice plant, Kyoto city.
21, July, 2005	Project Conference for Group of Rye plant, Okayama city.
13, Mar. 2006	Project Conference for Core member Kyoto city.

#### 7. Symposium

June 2005	Origin of Agriculture: 7th ESCA Harvard-Kyoto Roundtable Ethnogenesis of South and Central Asia, Domestication of Crops: what is common and what is differential among species? (Paruru Kyoto) [in Japanese]
November 2005	Symposium of Sustainable Land Use at Mountainous Region (Shimane Mountainous Region Research Center) [in Japanese]
February 2006	Silk road international symposium (Nara women University) [in Chinese and Japanese]
March 2006	Seminar of Mr. Idriss Abudurasul (RIHN) [in Chinese and Japanese]

**8. Fieldwork**

Yo-Ichiro, Sato

24-29, Apr, 2005 Urumqi, China (Observations for "Xaio hu me yi ji")

25-28, June, 2005 Vietnam (Observations for "JAPAN ROAD")

3-8, Sep, 2005 Urumqi, China (Project conference)

20-24, Feb, 2006 Thailand (Project conference)

Project member

16-25, July, 2005 Austria (FUKUNAGA Kenji) (Attendance for International botanical congress)

6, Aug-4, Oct, 2005 Syria (TANNO Ken-ichi) (Observations for Wheat)

31, July-14, Aug, 2005 Kunming, China (MATSUURA Seiji) (Observations for bean and squash)

18-29, Aug, 2005 Turkey (Peter Matthews) (Attendance for □ th International congress of ethnobotany)

19, Sep-3, Oct, 2005 Tohoku region, Japan (FUKUNAGA Kenji) (Observations for millet)

## **Feasibility Study**

**Research axis:** Human Activity Impact Assessment

**Project number:** 2-6FS

**Project name:** Diagnosis of chain interactions between humans and nature using environmental traceability method

**Project leader:** NAKANO, Takanori (RIHN)

### **1. Research Objective**

This project aims to clarify and evaluate the safety of the current conditions of the earth's surface environment, which is undergoing a dramatic and qualitative transition through man's widespread use of various subterranean resources. The project is based on the viewpoint of material circulation. The sources of materials contained in the atmosphere, water, and flora and fauna, as well as their dynamics, is environmental information indispensable to the livelihood of man, and the more uncertain this information is, the more difficult it is to make an accurate environmental diagnosis. The fact that most elements that compose both subterranean resources and the surface of the earth's environment ultimately originate from the geo-sphere also makes diagnosis difficult. Because global environmental concerns range across multiple target zones - the atmosphere, water, life forms, soil, and rocks - while existing natural sciences are delving deeper into each specialized area, the primary objective of the project is to establish a method of traceability that can track the materialistic relationships within and among the target zones with high precision.

As for geoenvironmental concerns, it is necessary to evaluate the entire global environment from a broad perspective, as the effects of human activities present themselves in various forms in the most unexpected areas. At the same time, it is necessary to make environmental assessments suited to each region and to raise local awareness of the reliability of such assessments, as the natural environment and human activities differ greatly according to region. The secondary objective of the project is to incorporate methods of traceability into environmental education, to clarify total environmental quality in Japan and its surrounding areas with clear cause-and-effect logic, and to construct environmental indicators and acceptable environmental limits suited to each region. By tracking the dynamics of certain substances, and diagnosing the environment and assessing its safety, the project aims to search for the ideal ways of utilizing underground resources.

### **2. Research Contents**

In this project, four groups will be set up (on atmosphere, water, life forms, and geological features) according to the main target zone of interest for each participating researcher. The groups will study various environmental issues that appear in each target zone, such as air and water pollution, loss of diversity among life forms, risks in food safety, and health problems. A chemical technology group will also be established to construct environmental traceability methods, so that relationships will be interlinked among each target zone. By organically integrating the information collected from each group, the influence of human activities on the entire environmental quality, and regional diversity in such influences shall be clarified with higher accuracy. In addition, a group on environmental education will also be set up, which will plan schemes to encourage the participation of undergraduate and graduate students in the project. Eventually it is hoped to create curriculums that include research methods, and to feed back any fruitful outcomes of the research to society.

This project commands various geo-chemical methods to clarify how a variety of substances came to be found in water, air, life forms, and rocks and soil. In particular, the use of information previously uncommon in environmental research, such as stable isotopes and geological data, is encouraged. There is a great variation of stable isotopes, each with its own unique traceability information. This project aims to integrate such information, and to construct a methodology that best suits environmental research.

- The group on atmosphere will study both substances that are generated within Japan (nitrous oxide, incinerated garbage, pollen, etc.) and those that are generated on the Asian continent and move across the border into Japan (acidic substances, heavy metal material, yellow sand, black carbon, etc.). The group will identify their sources and analyze their environmental load on each region, and shed light on how they spread over time.
- The group studying water will collect surface water throughout the country, and identify how substances falling from the atmosphere, as well as human activities, affect water quality. Inventories of food and fertilizers will also be analyzed to clarify what effects man has on eutrophication and heavy metal pollution, and how water pollution and health damage is related.
- The group studying life forms will identify the qualitative relations between environmental elements (mainly water) and underground life forms, fish, and plants including rice and other agricultural products. The effects of human activities on the diversity of life forms will be analyzed, and food safety will be evaluated.
- The group studying geological features will analyze the relationship between geological features and the quality of atmosphere, water, and life forms. Information on the use of underground resources in Japan, inventory analysis of imported subterranean resources, and future exploitations will be carried out, and the relationship between the geo-sphere and the surface environment will be clarified.
- The group studying environmental traceability technology will offer the technology and techniques necessary for the above research, and promote research coordination among groups.
- The group studying environmental education will plan and execute methods for incorporating the collection of samples, various experiments and analyses into college-level education curriculums, along with methods to utilize citizens' network in promoting research and giving back the results of this research to society.

### 3. Relationship with Other Programs

Though this project clearly belongs in the category of research Axis 2, "Human activity impact assessment", as its main purpose is to assess the effects of human activities on the environment, reflecting the quality of air and water in the Geographic Information System is closely related to research Axis 3, "Spatial scale". In addition, since environmental changes over the past 50 years will be reconstructed based on the environmental qualities in the GIS map, it is also related to research Axis 4, "History and time scale". Moreover, despite its short time span, the unraveling of the qualitative diversity in the natural environment through this project is also related to research Axis 1, "Environmental change impact assessment". The use of tracers is a method of natural science, but it is also true that the idea of safety assessment is an element of the traceability method. In this project, the interactive relationship between man and nature on the substance level is revealed, and our purpose is to create the concept of environmental traceability, which is equivalent to research Axis 5, "Concept framework for global environmental issues".

### 4. Project Member (Affiliation · Position · Role)

- ◎ NAKANO, Takanori (RIHN · Professor · Project leader)
- MASTUDA, Toshihide (Faculty of Physical Sciences and Engineering, Meisei University · Associate professor · Atmospheric Model)
- YANAGISAWA, Fumitaka (Department of Earth and Environmental Sciences, Faculty of Science, Yamagata University · Associate professor · Atmospheric Chemistry)
- KAWAHATA, Hodaka (Ocean Research Institute, the University of Tokyo · Professor · Hydro-geochemistry)
- FUKUSHIMA, Takehiko (Graduate School of Life and Environmental Sciences, University of Tsukuba · Professor · Aquatic Science)
- SHIKAZONO, Naotatsu (Faculty of Science and Technology, Keio University · Associate professor · Resource Geology)
- KANEKO, Yoshiyuki (Graduate School of Environment and Information Science, Yokohama National

University · Associate professor · Petrology)

- KANEKO, Nobuhiro (Graduate School of Environment and Information Sciences, Yokohama National University · Professor · Soil biology)
- TAYASU, Ichiro (Center for Ecological Reserch, Kyoto University · Associate professor · Isotope Ecology)
- YURIMOTO, Hisayoshi (Graduate School of Science, Hokkaido University · Professor · Cosmochemistry)
- YAMASHITA, Katsuyuki (Institute for study of Earth's Interior Center, Okayama University · Associate professor · Isotope Geochemistry)
- TANAKA, Tsuyoshi (Graduate School of Environmental Studies, Nagoya University · Professor · Educational Geochemistry)
- KAWANO, Yoshinobu (Faculty of Culture and Education, Saga University · Associate professor · Environmental Education)
- MURANO, Kentaro (Acid Deposition Research Team, National Institute for Environmental Studies · Leader · Acid Deposition study)
- HARA, Hiroshi (Tokyo University of Agriculture and Technology · Professor · Atmospheric Chemistry)
- NISHIKAWA, Masataka (National Institute for Environmental Studies · Leader · Asian dust chemistry)
- WATANABE, Kouichi (Toyama Prefectural University · Lecturer · Atmospheric Chemistry)
- SATO, Tsutomu (Graduate School of Engineering, Hokkaido University · Associate professor · Environmental Mineralogy)
- HAYASAKA, Tadahiro (RIHN · Professor · Atmospheric physics)
- KAWAMOTO, Kazuaki (RIHN · Assistant · Atmospheric physics)
- SHIMADA, Jun (Faculty of Natural Science, Kumamoto University · Professor · Hydrology)
- KONOHIRA, Eiichi (Graduate School of Environmental Studies, Nagoya University · Associate professor · Aquatic Science)
- YAMADA, Yoshihiro (Faculty of Agriculture, Kagawa University · Associate professor · Aquatic biochemistry)
- OHTE, Nobuhito (Graduate School of Agriculture, Kyoto University · Associate professor · Forest hydrology)
- TOKUCHI, Naoko (Field Science and Research Center, Kyoto University · Associate professor · Forest hydrology)
- BABA, Mitsuhsa (School of Vateriaary Medicene and Animal Science, Kitasato University · Lecturer · Agricultural biochemistry)
- SHINDO, Junko (National Institute for Agro-Environmental Sciences · Senior Resercher · Nitrogen Inventory Study)
- SHIBATA, Hideaki (Field Science Center for Northern Biosphere, Hokkaido University · Associate professor · Biogeochemictry)
- NAKAWO, Masayoshi (RIHN · Professor · Glaciology)
- TANIGUCHI, Makoto (RIHN · Associate professor · Hydrology)
- UCHIDA, Etsuo (Science and Engineering, WASEDA University · Professor · Resource Archeology)
- WATANABE, Koichiro (Faculty of Engineering, Kyushu University · Professor · Resource Geology)
- ISHIYAMA, Daizo (Faculty of Engineering and Resource Science, Akita University · Professor · Resource Geochemistry)
- IMAI, Noboru (Institute of Geology and Geoinformation, National Institute of Advanced Industrial Science and Technology · Group leader · Geochemistry)
- IMAI, Akira (Faculty of Engineering, Kyushu University · Associate professor · Resource Archaeology)
- YAMASHITA, Yoh (Field Science and Research Center, Kyoto University · Professor · Fish Biology)
- OKADA, Naoki (Graduate School of Agriculture, Kyoto University · Associate professor · Forest Biochemistry)
- SUZUKI, Atsushi (National Institute of Advanced Industrial Science and Technology · Senior Researcher · Coral Biogeochemistry)

- KOHMATSU, Yukihiro (RIHN · Assistant · Fish Biology)  
 TAKASO, Tokushiro (RIHN · Professor · Plant Biology)  
 YUMOTO, Takakazu (RIHN · Professor · Forest Ecology)  
 TAKEUCHI, Nozomu (Faculty of Science, Chiba University · Associate Professor · Glacial Biology)  
 OKUMIYA, Kiyohito (RIHN · Associate professor · Medical Science)  
 SATO, Yo-Ichiro (RIHN · Professor · DNA Biology)  
 HIRATA, Takafumi (Department of Earth and Planetary Science, Tokyo Institute of Technology · Associate professor · Trace element isotope Geochemistry)  
 OKAJIMA, Toshiya (Culture and Education, Saga University · Associate professor · Organic Geochemistry)  
 KUROSAWA, Masanori (Graduate School of Life and Environmental Sciences, University of Tsukuba · Lecturer · Mineralogy and Geochemistry)  
 NAKATSUKA, Takeshi (Institute of Low Temperature Science, Hokkaido University · Associate professor · Isotope Hydrology)  
 KITAGAWA, Hiroyuki (Graduate School of Environmental Studies, Nagoya University · Associate professor · Isotope Archeology)  
 ITO, Takashi (The College of Education, Ibaraki University · Associate professor · Environmental Education)  
 YOKOO, Yoriko (Faculty of Engineering, Doshisha University · Lecturer · Soil Geochemistry)  
 ITO, Makoto (Faculty of Science, Chiba University · Professor · Sedimentology)  
 OSADA, Toshiki (RIHN · Professor · Linguistics)  
 ARIMA, Makoto (Faculty of Education and Human Science, Yokohama National University · Professor · Petrology)  
 (◎ : Project leader, ○ : Core member)

## 5. Progress of the Project

Participants in the project have different research themes and use different research methods. To explain the objectives of this project, I gave a one-hour speech at the participants' 15 universities and research institutes. The RIHN held meetings in August and November this year based on these speeches. Nine speeches at the August meetings (10 minutes per speech) and 23 speeches at the November meetings (30 minutes per speech) were made to promote exchanges among the participants from various fields. Through these activities, we have confirmed that the composition of various stable isotopes is very useful for identifying materials generated in Japan or on the Asian continent and that we will be able to establish a research system using the routine analysis of the eight stable isotopes. RIHN believes that it will be able to play a leading role in this field because there are few global environmental research institutes in the world that can provide stable isotope data.

Although this is not a significant change, we have decided to carry out this project mainly in Japan and the surrounding oceans in view of the costs and difficulty of conducting a similar project in the entire East Asian region. Another reason for implementing the project in Japan is to stress uniqueness.

The inventory analysis for the use of natural resources is not always effective for metal elements, unlike nitrogen and other elements, for which the results are consistent qualitatively with the actual conditions of the atmosphere and rivers. The inventory analysis for the use of metal resources will be carried out only for a limited number of elements such as lead, sulfur, rare earths, and phosphorous.

Though this project had originally been called "Clarification of Changes in the Material Cycle System in East Asia Resulting From the Use of Geo-spherical Resources", it was pointed out during the research process that more emphasis should be placed on the construction of an Environmental Traceability Method and its application to environmental assessment rather than on geo-spherical resources. Therefore, the name of the project was subsequently changed to "Diagnosis of Chain Interactions between Man and Nature Using the Environmental Traceability Method".

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**Full-scale Research****Research axis: Spatial Scale****Project number: 3-1FR****Project name: Multi-disciplinary research for understanding interactions between humans and nature in the Lake Biwa-Yodo River watershed****Project leader: YACHI, Shigeo (RIHN)****HP: <http://www.chikyu.ac.jp/biwayodo/>****Research Objectives and Topics****1. Research Objectives**

We aim to develop a methodology for revealing interactions between human activities and nature in a watershed ("watershed diagnosis") and for consensus building through an interdisciplinary study and practice with the residents and administration in the Lake Biwa-Yodo River watershed.

A watershed is regarded as an essential spatial unit for the effective management of hydrological cycling, material cycling and ecosystems. It is, however, usually composed of a main river as well as various large and small tributaries branching out like a tree. This hierarchical (or nested) structure of its river systems, to which human social (decision making) systems are hierarchically structured in parallel (e.g., administrative districts, such as prefecture-cities-communities), causes the people that live in the watershed area where different elements exist, to experience their lives differently, thus, have different interests and opinions. Therefore, in the process of building consensus on managing a certain watershed, there will be much disagreement and opposition regarding what the subjects are. We regard this disagreement on the main watershed management issues between spatial scales as the most important watershed management issue, and aim to develop a methodology to overcome it. In other words, 1) we aim to develop a methodology to empowerment the residents to build a *bottom-up* vision of their water environment beneficiary for them, and 2) to develop a methodology to find a consistent solution in the conflict between the bottom-up vision of the residents and the top-down policy. On the basis of the project activities, we make proposals for the management of the Lake Biwa-Yodo River watershed.

**2. Research Topics**

We proposed "hierarchical watershed management" concept as an ideal model of watershed management to overcome the difficulties in consensus building arising from the nested structure of the watershed. The main objective of our project is to test the effectiveness of this idea through our study and practice in the Lake Biwa-Yodo River watershed. To tackle on this problem, we identify three levels (or spatial scales) in the Lake Biwa watershed, the social decision making of each level seems to have each influential effect on the Lake Biwa eutrophication. They are; "Shiga prefecture (or the Lake Biwa watershed)" as macroscopic-level, "Aisei land improvement district (or Inae area in Hikone city)" as meso-level, which is an agricultural area located in the east of the Lake Biwa, and the "towns in the Aisei improvement district" as microscopic-level, where the levels are embedded in the order of micro, meso, and macro. Setting these three levels as our main research sites, we organized four working groups (WGs); "material cycling", "social & cultural system", "ecosystem" and "watershed information & modeling". Focusing on water environmental issue, we are promoting synthetic study and practice with an interdisciplinary partnership at the above three levels (macro, meso, micro) of the Lake Biwa-Yodo River watershed. At each level, 1) we seek an effective method to promote "adaptive management" by stakeholders of each level to develop and use watershed diagnosis tools, such as models and indicators which are designed for each level. 2) we also aim to develop a methodology which enables stakeholders of the three levels to find and share the differences in how to see watershed and the way of thinking, for the mutual understanding between levels. Specifically, we seek for a way which enables both the empowerment of the residents to build a *bottom-up* vision of their water environment at the meso and micro levels

and a method for consensus-building between meso-micro levels and macro level towards reducing the pollution load by agricultural drainage, thus to the improvement of the Lake Biwa water environment. The followings are the activities of four WGs:

#### ■ Material Cycling Working Group (WG)

The material cycling WG elucidates the human disturbances on material cycling at various spatial scales by using mainly "stable isotope" techniques, extends and establishes "indicators" as a tool of watershed diagnosis methodology, and develops "environmental capacity" concept to evaluate the human load permissible in the watershed by using total available dissolved oxygen in the Lake Biwa.

#### ■ Social & Cultural System WG

The social & cultural system WG mainly focuses its activity at the meso and micro-levels (Aisei land improvement district and the towns in it), supports the residents and administration to make a regional environmental vision of the district by using sociological methods and information obtained by the project ("sub-project"), researches the environmental policy of the Shige prefecture to find the solution to balance the macro environmental policy and the beneficiary of the stakeholders at the meso and micro levels, develops important concepts of watershed management for residents participation and consensus building (e.g., governance, empowerment, adaptive management, etc.) by organizing workshops on these topics and through practice in the sub-project.

#### ■ Ecosystem WG

The ecosystem WG co-operates with the material cycling WG to survey biodiversity at the meso and micro levels to characterize each region, model the interactions between human activities and the Lake Biwa eutrophication at the macro level, collaborate with the watershed information & modeling WG to develop a platform for sharing and integrating information at the three levels of the watershed by GIS and modeling, develop tools which facilitate communication within and between levels for building consensus.

#### ■ Watershed Information & Modeling WG

The watershed information & modeling WG establishes common protocols for information sharing and processing among the four WGs and develops GIS and modeling as tools of our diagnosis methodology. This WG organizes other three WGs towards constructing an "open data base" for the sub-project and in compiling the project products.

#### ■ Unifying WG Meeting

It consists of the core members of the four WGs and aims to promote collaboration and integration of the project.

#### Relation with the Corresponding Research Program

The Lake Biwa-Yodo River watershed is a spatially large watershed, with huge population of 14 million, containing characteristic social systems depending on each spatial unit in the watershed.

By developing a total diagnosis methodology of a watershed, we hope to reveal inherent environmental problems in each watershed by the residents themselves as a basis to manage global environmental problems from the bottom-up scale.

When we zoom up (or down) the spatial scales of a large watershed as the Lake Biwa-Yodo River watershed, e.g., from a prefecture scale to those of cities or villages, focal environmental issues may differ. This means that scaling up of a management scale towards a watershed, brings about the heterogeneity and diversity in nature and human life. The resolution of conflicts within and between scales, thus, becomes a critical issue in watershed management. This issue, however, is essentially the same subject in many global environmental issues concerning management of spatially spread resources by multiple stakeholders. Thus, by pursuing a consensus-building methodology, this project aims to contribute to global environmental issue from the spatial scale axis.

## Project Members and the Collaborative Researchers

### Project Office

- ◎ YACHI, Shigeo (RIHN, Associate Professor, Project Leader)
- SHIONO, Takako (RIHN, Administrative Assistant, secretary to P3-1)

### (1) Material Cycling WG

- TAYASU, Ichiro (Center for Ecological Research (CER), Kyoto University, Associate Professor, Chief of the material cycling WG)
- NAKANO, Takanori (RIHN, Professor, diagnosis indicators)
- IGETA, Akitake (RIHN, Technical Assistant, diagnosis indicators)
- UEDA, Takaaki (former CER member, sampling)
- OKAJIMA, Toshiya (Faculty of Culture and Education, Saga University, Associate Professor, water quality analysis)
- SHIMIZU, Isamu (CER, Professor, diagnosis indicators)
- SUGIMOTO, Takashige (Institute of Oceanic Research and Development, Tokai University, Professor, RIHN visiting Professor, Yodo River adviser)
- NAKAMURA, Masahisa (Research Centre for Sustainability and Environment, Shiga University, Professor, non-point source adviser)
- NAKAMOTO, Nobutada (Faculty of Textile Science and Technology, Shinshu University, Professor, water quality adviser)
- NARITA, Tetsuya (former CER member, ecosystem research)
- HYODO, Fujio (RIHN, JSPS Research Fellow, diagnosis indicators)
- HOSONO, Takahiro (RIHN, Technical Assistant, diagnosis indicators)
- MATSUI, Kiyoshi (Nara University of Education, Professor, diagnosis indicators)
- YAMADA, Yoshihiro (Faculty of Agriculture, Kagawa University, Associate Professor, agricultural drainage diagnosis)
- WADA, Eitaro (Japan Agency for Marine-Earth Science and Technology, Program Director, watershed diagnosis indicator)

### (2) Ecosystem WG

- YACHI, Shigeo (RIHN, Associate Professor, chief of the ecosystem WG)
- ISHII, Reiichiro (RIHN, Research Fellow / Japan Agency for Marine-Earth Science and Technology, Researcher, ecosystem modeling and field research: after July 1, 2005)
- IWATA, Tomoya (Yamanashi University, Assistant, watershed ecosystem adviser)
- USHIMARU, Atsushi (Faculty of Human Development, Kobe University, Associate Professor, ecological research adviser)
- KATO, Motomi (Center for Marine Environmental Studies, Ehime University, COE Researcher, ecosystem modeling)
- KANAO, Shigefumi (Faculty of Environmental Science, University of Shiga Prefecture, Student, ecological research)
- KOHMATSU, Yukihiko (RIHN, Assistant Professor, ecological research)
- TAYASU, Ichiro (CER, Associate Professor, facilitator of the material cycling WG and ecosystem WG)
- NAKAJIMA, Hisao (College of Science and Engineering, Ritsumeikan University, Professor, ecosystem modeling)
- NAGATA, Toshi (CER, Professor, adviser on aquatic ecosystem)

FUJITA, Noboru (CER, Assistant Professor, human activity and biodiversity relationship)

MARUYAMA, Atsushi (Faculty of Science and Technology, Ryukoku University, Assistant Professor, ecological research)

MITSUHASHI, Hiromune (Museum of Nature and Human Activities, Hyogo, Research Fellow, adviser on GIS-based regional ecosystem conservation methodology)

YAMAMURA, Norio (CER, Professor, ecosystem modeling & database)

### **(3) Social & Cultural System WG**

○ WAKITA, Ken-ichi (Faculty of Sociology, Ryukoku University, Associate Professor, chief of the social and cultural system WG)

○ TANAKA, Takuya (RIHN, Technical Assistant, social research)

IMADA, Miho (RIHN, Technical Assistant, social research)

OHNO, Tomohiko (Graduate School of Global Environmental Studies, Kyoto University, Part time Assistant, social research)

KAKIZAWA, Hiroaki (Faculty of Agriculture, Hokkaido University, Associate Professor, adviser on watershed management issue)

KASHIO, Tamaki (RIHN, Technical Assistant, agricultural policy)

KATO, Junzo (Faculty of Human Sciences, Osaka International University, Lecturer, adviser on social psychology)

SAKAGAMI, Masaji (Faculty of Social and Information Sciences, Nihon Fukushi University, Lecturer, environmental economics)

TAMURA, Norie (Graduate School of Agriculture, Kyoto University, Research Assistant / AMITA Institute for Sustainable Economies, Analyst: after September 1, 2005, social research)

NONAMI, Hiroshi (School of Sociology, Kwansei Gakuin University, Associate Professor, social psychology research)

HIROSE, Yukio (Graduate School of Environmental Studies, Nagoya University, Professor, adviser on social psychology)

MITSUMATA, Gaku (School of Economics, University of Hyogo, Lecturer, social research)

### **(4) Watershed Information & Modeling WG**

○ YACHI, Shigeo (RIHN, Associate Professor, chief of the watershed information & modeling WG)

○ HARA, Yuuichi (Watershed information division, Pacific Consultants Corporation, watershed information and technical adviser)

ITOH, Kenzo (Iwate Prefectural University, Faculty of Software and Information Science, Professor, GIS modeling adviser)

NAITO, Masaaki (Kyoto Institute for Eco-sound Social Systems, general adviser)

Prima Oky Dicky Ardiansyah (Iwate Prefectural University, Faculty of Software and Information Science, Lecturer, GIS modeling)

(◎ : Project leader, ○ : Core member)

### **Progress of the Project (from April 2005 to March 2006)**

We made a favorable progress in research in the Lake Biwa watershed. We also made a favorable progress in research in the Yodo River watershed, the downstream of the Lake Biwa watershed. A synthetic report on the critical issues on water quality in the Yodo River watershed was completed. The details are as follows:

## (1) Research Activities at each scale

### ■ The Yodo River Watershed

#### 【WG collaboration】

We intensively discussed issues on water environment in the Yodo River watershed. We made a synthetic report on the critical issues on water quality.

### ■ The Lake Biwa Watershed (macro spatial scale)

#### 【Material cycling WG】

##### Material cycling WG

- 1) observed pathway of agricultural drainage from tributary rivers to the lake Biwa in April-May and compared between east (Hikone area), west (Kamo area, Shiga) and south (Akanoi area).
- 2) monthly measured isotope ratios of POM and nutrients in river water and compared with those parameters at vertical profile of the lake Biwa (off Ohmi-Maiko).
- 3) measured methane production from tributary rivers and agricultural drainage as an indicator of oxidation-reduction potential of sediments, compared carbon and nitrogen isotope ratios of living organisms along Yasu-River and Ane-River from head water to down stream.
- 4) measured nitrogen stable isotope ratios of sediments, POM and nitrate along Kizu river, Uji river, Katsura river, Kamo river (Kyoto) and Yodo river, and made a GIS map of Yodo river watershed.

#### 【Social & cultural system WG】

- 1) Social survey on communication in a river basin management and social capital

We carried out the social survey on communication among local residents, policy makers, and experts and social capital for river basin management: Social survey on water quality conservation in Lake Biwa - Yodo river system. This survey was based on the questionnaire survey in the 2004 fiscal year on local water environment and conservation of it in Inae district. We have sent out questionnaires through the post to 3200 residents aged above twentieth living in seven cities and a town in the Yodo river system. We are planning on summarizing and analyzing the result of this survey in the 2006 fiscal year.

#### 【Ecosystem WG】

Ecosystem WG analyzed models on regime shifts to evaluate the human activities on the Lake Biwa ecosystem.

### ■ The Lake Biwa Watershed (meso and micro spatial scale)

#### 【WG collaboration】

- 1) "Agriculture and water environment" workshop and socio-psychological experiment

To know the effects of information on the management of muddy water, "agriculture and water environment" workshops were held in 6 (2 in this fiscal year) rural communities in Aisei land improvement district. At the workshop, we explained the effects of the turbid water and held discussion with the farmers on water management. Three different types of explanations were designed; (1) scientific explanation (scientific persuasion), (2) rousing the memories of old days (emotional persuasion), (3) both of (1) and (2). Material cycling WG and Ecosystem WG have cooperated with Social & cultural system WG to make a presentation for the workshops.

#### 【Material cycling WG】

Material cycling WG measured carbon and nitrogen isotope ratios of *Elodea nuttallii* in Aisei district (along Bunroku river, Nomazu river, Godo river and agricultural drainages) as an integrated indicator of eutrophication and made a GIS map of Aisei district.

#### 【Social & cultural system WG】

- 1) Study of social psychology on consciousness and action considering the environment

We studied the influence of providing information on the present state of the river basin environment and

conservation of it to consciousness and action considering environment. We arranged four types of presentation and showed them to residents in six villages in the workshop we had held in their community center. This was a basic study to test the availability of adaptive management, which is a main concept of our project, in the field. On the other hand, this study was the practical attempt of providing scientific explanations of the environment and discussing historical and cultural things of the society with the participants. Material cycling working group and ecosystem working group made great efforts to help planning questionnaire survey and making the presentations for workshops.

More concretely, we have done the following series of the surveys. At first, after finishing "Social Survey on Environment of Lake Biwa (in January, 2005)", we held workshops, which we called "A Workshop on Agriculture and Water Environment (from March to April, 2005)", in each of six villages in our study site. In this workshop, we explained current status of agricultural muddy water and its influences on water environment and discussed historical and cultural aspect of local water environment in their villages. After it, we have done two social surveys for participants of workshops: "Questionnaire Survey of Impression on the Workshop (in April, 2005)" and "Questionnaire Survey of Paddy Field and Lake Biwa (in June, 2005)". We have discussed that providing environmental information has effect to promote environment-conscious action.

To evaluate the effectiveness of providing the information, we have surveyed a group of paddy fields to observe the outflow of agricultural muddy water from April to June in 2005.

#### 2) Analysis of agricultural structure and prospective farmers based on Agriculture Census

In the background of muddy water problem, there is the situation of farming management in each village. Although these villages are located in same district, they have various strategies to keep their farming in their future. The difference of their vision is depending on not only the size of farm field but also their own history of agricultural development. For example, it is defined by the condition of the village when farmers decided to start a land improvement project. We have done statistical analysis on agriculture in Inae area especially focusing attention on prospective farmers.

#### 3) Study on Cooperative Maintenance Activities of the Canal Networks in Inae area

Since 2003, we have paid notice to maintenance activities of the canal networks as a collective action and tried to describe the true state of them. In 2005, we add some data to survey we had already done and made a report on it.

#### 4) Study on simple measuring method of agricultural muddy water

This is one of the studies to consider the availability of adaptive management. We gathered water samples from the small rivers and drainages in Inae area during paddling and transplanting season. Then, we measured transparency and SS of them. We examined the transparency meter as a simple device to monitor muddy water in the practical field.

#### 【Ecosystem WG】

##### 1) Spatial pattern and time series analysis of water temperature in waterways in the Aisei land improvement district

Water temperature is a basic data to know the potential use of waterways by animals and plants and to detect the changes in human activities on water management. We analyzed the time series of water temperature data sets collected by about 70 loggers set in the waterways in the Aisei land improvement district.

##### 2) Fish distribution survey

Fish distribution survey was carried out to know the characteristics of each waterway.

### ■ Across Scales (across hierarchies)

#### 【WG collaboration】

##### GIS database

Watershed information & modeling WG assisted three WGs to collect their research data convert into digital data on GIS database and promoted to analyze it.

### [Watershed information & modeling WG]

Ecosystem WG and Watershed information & modeling WG collaborated on a GIS-based scenario approach which aims to find method to facilitate communication within and between scales by using GIS.

### Modification on the original research plan

We need no modification of the project plan.

### Outcomes

#### (1) A new watershed diagnosis method reveals the relationship between Lake Biwa and rivers

The results of newly developed watershed diagnosis methods including stable isotope ratios and rare elements, suggest that small rivers in the eastern area of the Lake Biwa watershed which has high farming activity, may have a large impact on the water quality of Lake Biwa. This result on the watershed scale is also supported by detailed water quality analysis before and after the peak of agricultural drainage flow. A mechanism of water quality formation created through human activity is now revealed.

#### (2) A synthetic image of the agricultural drainage issues in the Lake Biwa watershed

Agricultural drainage flow combined with other kinds of human waste could cause a drastic change called *regime shift* in the Lake Biwa ecosystem. As background to the agricultural drainage issue, lies a drastic change of Japan's agricultural policy and agricultural community structure, which has seen an increase part-time farmers and a decrease in young farmers.

#### (3) A critical issue of water quality in the Yodo River watershed

In the Yodo-River watershed, which includes a large urban area, housing waste affects the regional water environment and ecosystems at the estuary of the Yodo River and the Osaka Bay. It is revealed that water quality improvement policy which depends mainly on technological means, e.g., sewage plants has limitation in water quality improvement of the Osaka Bay.

### Future Perspective

We are presenting a proposal on for the Lake Biwa-Yodo River watershed management based on our watershed management scheme which contains watershed diagnosis indicators, methods for information feedback to stakeholders and enhancing communication between scales, such as environmental consciousness survey and GIS-based scenario approaches. Active research to complement our project research is also being launched under the leadership of community residents. The implications of the project results are to be disseminated through an international workshop, presentations at communities and project reports.

### 1. Articles

#### [In Japanese]

Igeta, Akitake., Yamada, Yoshihiro., Tayasu, Ichiro and Wada, Eitaro 2005 "Suiden chitai ni okeru shou suikei no suishitsu keisei tokusei: Biwako ryuiki no Hebisunagawa ni okeru rei" *Abstracts of 70<sup>th</sup> Meeting on Japanese Society of Limnology*. p204.

Imada, Miho 2006 "Hikone shi inae chiku ni okeru suiro souji jittai chousa (Report of the field study on the co-operative maintenance activities of the canal networks in Inae area of Hikone city)" *Project 3-1 Working Paper No. 16*.

Kashio, Tamaki 2006 "Inae chiiki no nougyo kouzou henka to ninaite no kanousei -nougyo sensasu bunseki kara mita chiiki nougyo no henka to nousei (Changing agricultural structure and perspective of farm management: A case of Inae area, Shiga prefecture, Japan)" *Project 3-1 Working Paper No. 15*.

Nonami, Hiroshi and Kato, Junzo 2005 "Nouka wo taisho toshita kankyo hairyo gata nousagyo no fukyu puroguramu -biwako engan ni okeru nougyo dakusui sakugen no kokoromi (A social psychological program to diffuse

- environmental-consciousness agricultural work for farms: Reduction of muddy water into Lake Biwa)". *Project 3-1 Working Paper No. 14.*
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- Tanaka, Takuya., Igeta, Akitake., Yamada, Yoshihiro and Yachi, Shigeo 2005 "Chiiki jyuumin ga okonaeru kan'i na kansoku de nougyou dakusui no eikyou hyouka ha dokomade kanou ka: Suiden chitai ni okeru shoukasen no suishitsu kanri ni muketa kan'i kansoku no kanousei" *Abstracts of 70<sup>th</sup> Meeting on Japanese Society of Limnology.* p193.
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- Tanaka, Takuya., Sakagami, Masaji and Ohno, Tomohiko 2006 "Mijikana mizube to sono hozon ni kansuru ishiki chousa (Report on questionnaire survey of local water environment and its conservation)" *Project 3-1 Working Paper No. 17.*
- Tayasu, Ichiro 2005 "Seitaiken no kankyou shindan - antei douitai apurouchi (Tokusyu: Ryuuiiki seitaikai no hozon, syuufuku senryaku) (An environmental diagnosis on watershed ecosystems - stable isotope approach.)" *Nihon seitai gakkaiishi (Japanese Journal of Ecology)* 55: 183-187.
- Wakita, Ken'ichi 2005 "Biwako nougyou dakusui mondai to ryuuiiki kanri: 'Kaisouka sareta ryuuiikanri' to koukyouken tositeno ryuuiiki no souchutu (Lake Biwa agricultural drainage problems and watershed management: Hierarchical watershed management and creation of a watershed as a public sphere)". *Annals of Sociology.* Tohoku Sociological Society. No. 34, 77-97.
- Wada, Eitaro and Yoshikawa, Chisato 2005 "Seibutsukai ni okeru chisso, tanso douitaihi no yuragi ni kansuru kenkyuu- sono 40 nenshi" *Gekkan Kaiyo Gogai* 40: 234-249.
- Wada, Eitaro 2005 "Biwako, Yodogawa suikei no shindanhou" Ishikawa, Mikiko., Kishi, Yuji and Yoshikawa, Katsuhide (eds.) *In: Ryuuiiki puraninngu no jidai,* Gihodo. pp. 149-172.
- Wada, Eitaro 2005 "Seibutsu chikyuu kagaku toha donna gakumon ka?" Minagawa, Masao and Yoshioka, Takahito (eds.) *Chikyuu kagaku kouza* 5, Baifukan. pp. 1-31.
- Wada, Eitaro 2005 "Seibutsu chikyuu kagaku no kongo ni mukete" Minagawa, Masao and Yoshioka, Takahito (eds.) *Chikyuu kagaku kouza* 5, Baifukan. pp. 201-208.
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- Yamada, Yoshihiro 2005 "Antei douitai hi wo sihyou to shita kasen seitaikai no jyouka kinou no kaiseki oyobi sono hyouka hou no kakuritsu" *Report of the grantees of Foundation of River & Watershed Environment Management.* pp. 1-21.
- Yamada, Yoshihiro., Ogasawara, Takako., Igeta, Akitake., Nakajima, Sachi and Yachi, Shigeo 2005 "Biwako syuusuiiki ni oite kendakubutsu ga ryuunyu kasen ni ataeru eikyou: omoni nougyou kasen ni cyuumoku shite" *Abstracts of 70<sup>th</sup> Meeting on Japanese Society of Limnology.* p78.
- Yamada, Yoshihiro and Nakajima, Sachi 2005 "Damu ko ni okeru fueiyouka no hyouka no tameno atarashii syuhou" *Suigenchi kenkyu kaigi kenkyu seika houkokusho.* pp. 1-101.

[In English]

- Nakano, Takanori., Nishikawa, Masataka., Mori, Ikuko., Shin, Kichoel., Hosono, Takahiro and Yokoo, Yoriko 2005 "Source and evolution of the perfect Asian dust storm in early April 2001: implications of the Sr-Nd isotope

ratios". *Atmospheric Environment*, v. 39, pp. 5568-5575.

Nakano, Takanori., Tayasu, Ichiro., Wada, Eitaro., Igeta, Akitake., Hyodo, Fujio and Miura, Yuuta 2005 "Sulfur and strontium isotope geochemistry of tributary rivers of Lake Biwa: implications for human impact on the decadal change of lake water quality". *Science of the Total Environment* 345: 1-12.

**Full-Research****Research axis:** Spatial Scale**Project number:** 3-2FR**Project name:** Interactions between natural environment and human social systems in subtropical islands**Project leader:** TAKASO, Tokushiro (RIHN)**Core members:** see No. 3**1. Research Objectives and Topics**

Islands throughout the world are faced with water shortages, loss of topsoil, river and oceanic pollution, disappearing biodiversity and other environmental problems. Islands tend to see these problems worsen rapidly because of their closed systems in limited geographical areas. Environmental problems involving islands therefore generally require immediate attention. This project, which focuses on Iriomote Island in Okinawa Prefecture as a model, is designed to solve environmental problems facing islands.

The main subjects of our environmental research are geography and the water balance, functions and maintenance of forest and coral reef ecological systems. Our focus in human activity study is economic activities. By pursuing these subjects, we look at interaction between natural environments and human activities on subtropical islands, and will consider social systems for islands to harmonize human activities with the natural environment.

From the outset, the project was designed to be conducted mainly through field studies in close cooperation with local people. The opening of our branch office in Iriomote's Sonai district in fiscal 2005 made it easy to take this approach. We learned that the role of community centers on the island was even larger than we had expected. We have been in close contact with community centers and local elementary and junior high schools.

The natural environment on Iriomote Island is in imminent danger. We must place our top priority on its preservation. It is not only nature that is at risk on the island. The island's traditional performing art and culture are equally at risk because of shortages of young people who take over the tradition. Some of the performing arts will have to be recorded as there will be no one to perform them before long. Communities on the island exist in their own unique ways under various social circumstances. While proceeding with the project, we are taking such circumstances into consideration. We started the project with the assumption that the establishment of economic infrastructure is the key to solving environmental problems on Iriomote Island. We have added subjects that we believe will directly make a difference in solving these problems.

**2. Relation with Research Program**

This project used Iriomote Island as a model because the island is in a crisis situation both in terms of natural environment and traditional culture. The objective of the project is to provide the islanders with information to help them build a solid economic infrastructure and make them independent.

We believe environmental problems on the island were caused mainly by a lack of environmentally friendly industries that could allow islanders to make a living. We also believe that the islanders' lack of reliable information about their environment is partly to blame for the problems.

We believe the outcome of our research on Iriomote Island will be applicable to other islands. We are currently working on finding the cause of the environmental problems. The findings will give important clues to solving environmental problems on other islands at home and abroad.

### 3. Project Members

Name	Affiliation	Position	Role
◎TAKASO, Tokushiro	Research Institute for Humanity and Nature	Professor	overall care of project analysis of pollination mechanism
○MAEKADO, Akira	Faculty of Law and Letters, Univ. of the Ryukyus	Professor	analysis of water balance, study of soil erosion
YOSHIMURA, Kazuhisa	Graduate School of Sciences, Kyusyu Univ.	Professor	chemical analysis of water
HIROSE, Takashi	Faculty of Law and Letters, Univ. of the Ryukyus	Associate Prof.	analysis of water balance
NAKANO, Takanori	Research Institute for Humanity and Nature	Professor	stable isotope analysis of water
○INOKURA, Yoji	Faculty of Agriculture, Kagoshima Univ.	Associate Prof.	analysis of water balance
SUZUKI, Atsushi	National Institute of Advanced Industrial Sciences and Technology	Head Researcher	chemical analysis of sea water
NAGAO, Masayuki	National Institute of Advanced Industrial Sciences and Technology	Chief Researcher	chemical analysis of sea water
SETOGUCHI, Hiroaki	Graduate School of Human and Environmental Studies, Kyoto Univ.	Associate Prof.	analysis of introduced plants
YONEKURA, Koji	Graduate School of Life Sciences, Tohoku University	Assistant Prof.	analysis of plant diversity
NOMURA, Naofumi	Graduate School of Human and Environmental Studies, Kyoto Univ.	Research Assistant	analysis of introduced plants
PENG, Ching-I	Academia Sinica, Taiwan, Institute of Botany	Head Researcher	analysis of plant diversity
CHIANG, Tzen-Yuh	Faculty of Biology, Cheng-Kung University	Professor	analysis of plant diversity
NAKASHIZUKA, Tohru	Research Institute for Humanity and Nature	Professor	numerical analysis of forest ecosystem
HAGIWARA, Akio	Graduate School of Science and Engineering, Univ. of the Ryukyus	Professor	analysis of forest ecosystem study of pine forests
○KUBOTA, Yasuhiro	Faculty of Education, Kagoshima University	Associate Prof.	analysis of forest ecosystem
ENOKI, Tsutomu	Faculty of Agriculture, Univ. of the Ryukyus	Assistant Prof.	analysis of forest ecosystem study of mangrove forests
KAWAKUBO, Nobumitsu	Faculty of Applied Biological Sciences, Gifu University	Associate Prof.	pollination ecology

KIMOTO, Yukitoshi	Research Institute for Humanity and Nature	Researcher	pollination ecology, plant morphology
HIDAKA, Toshitaka	Research Institute for Humanity and Nature	Director	analysis of animal behavior
IZAWA, Masako	Faculty of Science, Univ. of the Ryukyus	Associate Prof.	ecology analysis of ecosystem requirements of Iriomote cat
NAKANISHI, Nozomi	Research Institute for Humanity and Nature	Research Assistant	ecology analysis of ecosystem requirements of Iriomote cat
KOHNO, Hiroyoshi	Okinawa Regional Research Center, Tokai University	Researcher	analysis of animal behavior
UEDA, Keisuke	Faculty of Science, Rikkyo University	Professor	analysis of bird diversity, ecology and genetics of endemic bird species
OTA, Hidetoshi	Tropical Biosphere Research Center, Univ. of the Ryukyus	Professor	study of impacts of introduced animals on ecosystem
SEKINO, Tatsuki	Research Institute for Humanity and Nature	Associate Prof.	limnological and ecological studies using information technology
MAETA, Yasuo	Professor Emeritus, Shimane University	Professor Emeritus	study of pollination symbiosis and life cycle of bees
TADAUCHI, Osamu	Graduate School of Bioresource and Bioenvironmental Studies, Kyusyu Univ.	Professor	entomology
MIYANAGA, Ryuichi	Faculty of Life and Environmental Science, Univ. of Shimane	Associate Prof.	study of pollination symbiosis and life cycle of bees
HAYASHI, Masami	Faculty of Education, Saitama University	Professor	analysis of insect diversity and ecology
○ARAMOTO, Mitsunori	Tropical Biosphere Research Center, Univ. of the Ryukyus	Professor	study of forest bioresources
NAKAZATO, Nagahiro	Okinawa Regional Research Center, Tokai University	Lecturer	study of forest bioresources
○SAKAI, Kazuhiko	Tropical Biosphere Research Center, Univ. of the Ryukyus	Associate Prof.	ecological study of coral and coral reef
KUWAMURA, Tetsuo	Faculty of Liberal Arts, Chukyo University	Professor	ecological study of fish
NAKASHIMA, Yasuhiro	College of Economics, Nihon University	Professor	study of fish in coral reef

ONISHI, Nobuhiro	Graduate School of Asian and African Area Studies, Kyoto University	Researcher	ecological study of fish
SEKI, Satoko	Tropical Biosphere Research Center, Univ. of the Ryukyus	Researcher	ecological study of fish
○OSHIRO, Hajime	Faculty of Law and Letters, Univ. of the Ryukyus	Professor	island economics
KABIRA, Nario	Faculty of Law and Letters, Univ. of the Ryukyus	Professor	economical analysis of agriculture
TAIRA, Tsuyoshi	Faculty of Law, Okinawa International University	Lecturer	study of public finance
FUJITA, Yoko	Faculty of Law and Letters, Univ. of the Ryukyus	Associate Prof.	economical analysis of industries, study of ecotourism
HAGIWARA, Natsuko	Faculty of Environmental and Information Studies, Musashi Institute of Technology	Associate Prof.	environmental sociology
OTSUKA, Yoshiki	Faculty of Environmental and Information Studies, Musashi Institute of Technology	Associate Prof.	economical analysis of industries, study of transportation
MURAYAMA, Seiichi	Graduate school of Agriculture, Univ. of the Ryukyus	Professor	historical analysis of crop production
ASAOKA, Koji	Okinawa Prefectural University of Arts	President	folklore
YANAGI, Yoshikuni	Institute, Attached, Okinawa Prefectural University of Arts	Professor	study of dyeing and weaving
MARUTA, Tsutomu	Faculty of Arts and Crafts, Okinawa Prefectural University of Arts	Associate Prof.	study of ceramics soil analysis for ceramics
○SATOI, Yoichi	Faculty of Law and Letters, Univ. of the Ryukyus	Associate Prof.	historical analysis of land use
TATARA, Masaya	Iriomote Wildlife Center, Ministry of Environment	Conservation expert	administration of environmental conservation

(◎ : Project leader, ○ : Core member)

#### 4. Outcomes

We learned that the following are keys to solving environmental problems on Iriomote Island: 1) local people need a solid economic infrastructure to build self-esteem and become independent, and 2) information that is instrumental in solving problems taken up by the project should be shared with locals. The following are what we achieved on specific fronts.

#### Water balance and water quality (land area and ocean area)

- Our observations so far have indicated that the island's soil and forests do not hold much water because rainfall changes water flows on the island more rapidly than we had expected. (Water levels rise and fall rapidly.) The finding suggests the need for wise use of water.
- Rain that falls on the island, other than that brought by typhoons, has been proven to be acidic (pH<5.6). Further analyses are underway to identify the substances that cause the acid rain and the origin of the substances.
- Seawater studies have found that land-derived substances have an impact on coral reefs along coasts immediately after rain.

#### Functions and maintenance mechanisms of forest ecology/interaction among organisms

- Broadleaved evergreen trees are likely to die or have their growth stunted by typhoons. Our studies have shown a high turnover rate in the population by typhoons.
- Our studies on mangrove forests along the Nakara River indicate that salts in soil and disturbance by tides and river water affect the dynamism of the forests.
- We have produced a list of foreign plants (108 species of foreign plants have taken root on Iriomote Island) and conducted risk assessments on each of them. We have identified high-risk species and their methods of proliferation and advised locals about how to get rid of them.
- Pollination mechanisms of mangroves and other plants have been analyzed using image technology. Such videos and pictures are used as teaching materials.
- In areas where land improvement is carried out, we have found that Iriomote cat lives in forests along the remaining mountain streams and patches of forests. We have also found that in this environment the cat is active at hours when most humans are not.
- We have attached an acceleration data logger to the brown booby to monitor how the birds feed themselves, flap their wings and rest, and what they do while flying over the ocean. The device was also used to keep track of brown booby chicks and how they expand their area of activity after first leaving the nest. The knowledge will be used for protecting the bird.
- We have clarified close cooperation between flowers and pollen-carrying insects on Iriomote Island and related the partnership to structures of the flowers. We have observed 87 plant species and 75 kinds of insects including foreign species.

#### Functions and maintenance mechanisms of coral reef/interaction among organisms

- Our monitoring has revealed that the coral reef around Iriomote Island has a high cover degree, is highly diverse in terms of species and has the potential to overcome at least small disturbances.
- Lack of herbivorous animals (mainly fish) has led to the death of small corals that are unable to grow when overarched by algae.

#### Research for developing new industries

- Soil from the Urauchi River and the Shirahama forest road can be used as premium potter's earth. Soil samples from the Takana district tend to expand when burnt, giving them many applications.
- We have used mountain peaches to conduct coloring and mordanting tests of plant dyes (dye density test, test of different mordants and their density, colorfastness test). We will use the results of the tests as references.

#### Research on island economy and decision-making in communities

- We have conducted surveys to find out how people perceive the relationship between their lives and the natural environment, their relationship with nature, garbage disposal systems and marine pollution. We have interviewed locals and gathered reference materials to help us understand the system of how the land is used.
- Iriomote Island gets a significant amount of fresh and processed food supplies from outside the island. The island's food system is similar to that of the suburbs of Ishigaki Island – a major resort in the region. Our studies have shown the island has access to more diverse transportation systems and media than before.

Databases and pictorial library (visit the following websites)

- Iriomote literature database (<http://iriomote.chikyu.ac.jp/>)
- Pictorial library of Iriomote- people and nature (<http://www1.gifu-u.ac.jp/~kawakubo/iriomote/index01.html>).

## 5. Publications

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- Maeta Y., Hannan M. A. and Miyanaga R. 2004 Nest architecture of *Megachile yaeyamaensis* Yasumatsu et Hirashima (Hymenoptera, Megachilidae). *Chugoku Kontyu* 17: 35-38.
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- Maeta Y., Miyanaga R. and Hannan M. A. 2004 Discovery of nine species of bees from southernmost islands, Japan (Hymenoptera, Apoidea). *Chugoku Kontyu* 17: 27-30.
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- Oshiro H. 2005 Toward construction of the resource-circulating type system in islands; composting of livestock exertion. *Journal of Island Studies* 5: 15-36.
- Satoi Y. 2005 On the documents related on the "Magiri-shima kai," (in Japanese) In Taketomichoshi Henshu Iinkai (Editorial Board of the History of Taketomi Town) and Choshi Henshushitu (Editorial Office of the History of Taketomi Town) (eds.), *Taketomichoshi (The History of Taketomi Town.)* Vol. 10. Modern I. Naha.
- Tangmitcharoen S., Takaso T., Siripanadilox S., Tasen W. and Owens J. N. 2006 Behavior of major insect pollinators of teak (*Tectona grandis* L. f.): a comparison of clonal seed orchard versus wild trees. *Forest Ecology and Management*. 222: 67-74.
- Tangmitcharoen S., T. Takaso, S. Siripanadilox, W. Tasen and J. N. Owens 2006 Insect biodiversity in flowering teak (*Tectona grandis* L. f.) canopies: comparison of wild and plantation stands. *Forest Ecology and Management*. 222: 99-107.
- Ueda K. 2005 Birds feed on the fruits of *Mallotus japonicus* in Iriomote Island. (in Japanese) *Journal of the Yamashina Institute for Ornithology* 36: 133-135.
- Yano H. and Ueda K. 2005 Nesting of Ruddy kingfishers in artificial polystyrene cylinders. (in Japanese) *Japanese Journal of Orthology* 54: 49-52.

**Feasibility study****Research axis:** Spatial Scale**Project number:** 3-3FS**Project name:** Environmental change and the Indus civilization**Project leader:** OSADA, Toshiki**HP:** <http://www.chikyu.ac.jp/Indus/>**Research Objective and Contents****(1) Research Objective:**

Environmental problems are resulted from the human activity because human being utilized and changed natural environment repeatedly since ancient times. Generally, studies of environmental problems are focused on climate, vegetation, water and/or air pollution and so on. In other words only few studies have given an attention to humanity. We can learn from the ancient epic, Gilgamesh or Vedic because the humanity is universal through times in contrast to the development of scientific technologies. In our project we will cast light on the humanity. Our project aims to understand the Indus Civilization and its environment in a holistic manner. Especially, we will concentrate pursuing the cause of downfall of Indus civilization because environmental problems are one of the main reasons for it.

**(2) Contents of Research:**

The Indus Civilization is spread out over 680,000 sq. km. of northwestern South Asia. Indus people established the cities like Mohenjo-Daro and Harappa from 2500 BC to 1900 BC. The Indus cities were declined around in 1900 BC. It means that the decline of Indus civilization relied upon the archaeological fact of downfall of Indus cities.

To examine the socio-cultural aspect of Indus Civilization, the objects of our studies are mainly divided into two folds; i.e., the excavated culture and the inherited culture. For the former, we have already started excavating at Kanmer, Kachchh, Gujarat, India in collaboration with Indian archaeologists. We would like to reconstruct the socio-cultural aspects of the Indus Civilization by the closely examination of excavated materials. For the latter, Indologists and cultural anthropologists will analyze the inherited culture from their own data.

**Project Member**

- ◎ OSADA, Toshiki (RIHN, Professor, Project leader)
- UNO, Takao (International Research Center for Japanese Studies, Professor, Excavation leader)
- EINO, Shingo (Tokyo University, Professor, Vedic Study)
- OHTA, Shoji (Fukui Prefectural University, Professor, Analysis of Wheat)
- KODAMA, Nozomi (Kumamoto Univieristy, Associate Professor, Dravidian languages)
- GOTO, Toshifumi (Tohoku University, Professor, Old Indo-Aryan languages)
- SHOGAITO, Masahiro (Kyoto University, Professor, Historical linguistic methodology)
- TANAKA, Masakazu (Kyoto University, Professor, Indian folk culture)
- Jeewan Singh Kharakwal (RIHN, Visiting Professor, Excavation in India)
- UESUGI, Satoshi (Kansai University, Lecturer, Excavation assistant)
- KOISO, Manabu (Tokai University, Lecturer, Excavation assistant)
- TAKAHASHI, Takanobu (Tokyo University, Professor, Dravidian culture)
- DOYAMA, Eijiro (Osaka University, Assistant Professor, Vedic text analysis)
- TOGAWA, Masahiko (Hiroshima University, Associate Professor, Indian folk culture)
- FUJII, Masato (Kyoto University, Professor, Vedic culture)
- MATSUI, Takeshi (Tokyo University, Professor, Pakistan folk Culture)
- MIURA, Reiichi (Kyoto University, Research Associate, Cultivated plants)

YAMASHITA, Hiroshi (Tohoku University, Professor, Dravidian culture)

(◎ : Project leader, ○ : Core member)

### Progress of the Project (2005)

Last year, the evaluation committee has questioned the feasibility of linguistic methodology and good results of archaeological excavation. For former, in addition to linguistic method, we will introduce the geological methodology to understand the situation and cause of lost Sarasvati river. For latter, we have a good result from the Kanmer excavation site, Kachchh, Gujarat in India. We are confident that the excavation at Kanmer will be successful. Thus our project has been sanctioned by the evaluation committee.

Our budget is limited in this year. Thus we concentrated observing the Indus sites in Gujarat and excavating at Kanmer site, Kachchh, Gujarat in India. As a result, we have recovered the Indus citadel, Indus seal and etc. As for the Indus sites in Gujarat, it is different from the Indus sites in the Indus basin like Mohenjo-Daro and Harappa. We are sure that the trade route to Mesopotamia will be understood by the investigation of these sites and areas.

We have organized the Pre-symposium in collaboration to the Department of Sanskrit and Indian Studies, Harvard University. In this symposium, the world renowned Indus researchers like Professors Kenoyer, Parpola have attended. Thus we made a communication with these researchers. We hope this is a starting point for a good network among the Indus researchers.

### Outcome in 2005 and Future Plan

#### 1. General Remarks:

- (1) We have started excavating at Kanmer, Kachchh, Gujarat, India after getting the excavating license from the Archaeological Survey of India. The excavation team is headed by our core member, Dr. Kharakwal. As a result of the first year excavation, we have recovered the citadel, Indus seal, the botanical remnants like rice, barley, wheat, the animal bones, the accessories made by carnelian, agate, the cubic measurement made by stones and etc.
- (2) We have made the DEM (Digital Elevation Map) for the distribution of all Indus sites.
- (3) We have organized the Pre-symposium with the Sato project in collaboration to the Department of Sanskrit and Indian Studies, Harvard University in June, 2005.
- (4) We have published the Proceedings of Pre-symposium in February, 2006.

#### 2. Future Plan:

The Indus sites are widely distributed. Our project will be focused on the Indus sites along the Ghakkar-Hakra River which is dried up. Thus we will make another excavation site in India and new excavation site in Pakistan in this river side in collaboration to the Indian and Pakistan archaeologists. Further, we need the geological research on the Ghakkar-Hakra river. We try to confirm the dating and causes of the dried Ghakkar-Hakra. Then we should investigate the relationship between Indus civilization and the Ghakkar-Hakra.

### Results

#### 1. List of Major Publication in Japanese

Osada, Toshiki 2005 "Languages never exist without their scripts in South Asia", *Gekkan Gengo* 34(10): 50-51. (in Japanese)

Osada, Toshiki 2005 "Report on the Pre-symposium of RIHN and 7<sup>th</sup> ESCA Harvard-Kyoto Roundtable", *ILCAA Newsletter* 115: 56-60. (in Japanese)

Osada, Toshiki 2006 "Report on the field research in Gujarat, India", *Human and Water* 0: 28-29. (in Japanese)

## 2. List of Major Publication in English

- Osada, Toshiki 2005 "A historical note on inclusive/exclusive opposition in South Asian languages —borrowing or retention or innovation?", *Mon-Khmer Studies* 34: 79-96.
- Osada, Toshiki (ed.) 2006 *Proceedings of the Pre-symposium of RIHN and 7<sup>th</sup> ESCA Harvard-Kyoto Roundtable*. Research Institute for Humanity and Nature.
- Osada, Toshiki 2006 "How many Proto-Munda words in Sanskrit? -with special reference to agricultural vocabulary", In Toshiki Osada (ed.) *Proceedings of the Pre-symposium of RIHN and 7<sup>th</sup> ESCA Harvard-Kyoto Roundtable*. Kyoto: Research Institute for Humanity and Nature.
- Nicholas Evans and Toshiki Osada 2005 "Mundari: The myth of a language without word classes", *Linguistic Typology* 9: 351-390.
- Nicholas Evans and Toshiki Osada 2005 "Author's response: Mundari and argumentation in word-class analysis", *Linguistic Typology* 9: 442-457.

## 3. Symposium, Seminar and Meetings:

Pre-symposium "Ethnogenesis in Central and South Asia"

Co-organized by Osada and Sato Projects and the Department of Sanskrit and Indian Studies, Harvard University.

June 6, 2005.

13:00 Welcome speech T. Hidaka (Director General of RIHN)

Session 1: The Indus Civilization (Convener: J. Kharakwal, JRN Rajasthan U.)

13:30-14:00 J. M. Kenoyer (U. of Wisconsin)

The Origin, Context and Function of the Indus Script: Recent Insights from Harappa

14:00-14:30 S. Farmer (Palo Alto); and S. A. Weber, T. Barela, R. Sproat, M. Witzel

Temporal and Regional Variations in the Use of Indus Symbols: New Methods for Studying Harappan Civilization

14:30-15:00 R. Mughal (Boston U.)

The HAKRA Cultural Horizon in the Greater Indus Valley

15:15-15:45 Ihsan Ali (Peshawar U.)

Excavation of Gandharan Graves in Chitral, Pakistan

15:45-16:15 P. P. Joglekar (Deccan College);

Faunal Studies in India: Methodological Issues and Prospects

16:15-16:45 A. Parpola (Helsinki U.) & Victor I. Sarianidi

A New Indus Seal Excavated at Gonur (Turkmenistan) in November 2004

June 7, 2005.

Session 2: The Origin of Agriculture (Convener: Y. I. Sato, RIHN)

9:00-9:30 P. Bellwood (Australian National U.)

Early Farmers: Issues of Spread and Migration with Respect to the Indian Subcontinent

9:30-10:00 Y. I. Sato (RIHN)

Domestication of Crops: What is Common and What is Different? -*Fudo* and Agriculture-

10:15-10:45 Zhijun Zhao (Institute of Archaeology, Chinese Academy of Social Science)

New Data for the Study on the Origin of Agriculture in China

10:45-11:15 P. J. Matthews (National Museum of Ethnology)

The Domestication of Nutrient Cycles: a Unifying Principle for Thinking About the Origins of Agriculture?

Session 3: Agricultural vocabulary (Convener: T. Osada, RIHN)

13:30-14:00 M. Witzel (Harvard U.)

South Asian Agricultural Terms in Old Indo-Aryan

14:00-14:30 F. C. Southworth (U. of Pennsylvania)

Proto-Dravidian Agriculture

14:45-15:15 T. Osada (RIHN)

How many Proto-Munda words in Sanskrit? —with special reference to agricultural vocabulary—

15:15-15:45 D. Fuller (Univ. College, London)

Silence before Sedentism and the Advent of Cash-Crops: A Status Report on Early Agriculture in South Asia from Plant Domestication to the Development of Political Economies (with an Excursus on the Problem of Semantic Shift among Millets and Rice)

June 8, 2005.

Session 4: Anthropology (Convener: K. Shinoda, National Science Museum)

9:00-9:30 P. A. Underhill (Stanford U.)

Interpreting Patterns of Y Chromosome Diversity: Pitfalls and Promise. A Case Study from SW Asia

9:30-10:00 N. Saitou (National Institute of Genetics & Graduate U. for Advanced Studies)

Relationship between Genetic and Linguistic Differentiation of People in Eurasia

10:00-10:30 M. J. Hudson (U. of Tsukuba)

Ono's Tamil-Yayoi Theory Again

10:45-11:15 F. Jin (Chinese Academy of Sciences)

Factitiousness Selection? Concerning about Formation of Majority Han Chinese

11:15-12:00 R. Villems (Tartu U. / Pres., Estonian Academy of Sciences)

Haploid Genomics: Recent Progress in Complete mtDNA Approach in Archaeogenetics Genetics and Mythology—An Unexplored Field

Session 5: Comparative mythology (Convener: M. Witzel, Harvard U.)

13:30-14:00 A. Yoshida (Gakushuin U.)

Dumezil and Comparative Studies of Eurasian Myths

14:00-14:30 N. Allen (Oxford U.)

INDO-EUROPEAN Epics and Comparative Methods: Pentadic Structures in Homer and the MAHABHARATA

14:30-15:00 T. Goto (Tohoku U.)

Asvin- and Nasatya- in the Rgveda and their Prehistoric Background

15:15-15:45 M. Witzel (Harvard U.)

Creation Myths

15:45-16:15 W. V. Binsbergen (African Studies Centre, Leiden)

Mythological Archaeology: Situating sub-Saharan African cosmogonic myths within a long-range intercontinental comparative perspective

**Full-Research****Research axis:** History and Time Scale**Project number:** 4-1FR**Project name:** Historical evolution of adaptability in an oasis region to water resource changes**Project leader:** NAKAWO, Masayoshi (RIHN)**HP:** <http://www.chikyu.ac.jp/oasis/>**Outline of Research Project****(1) Research Objectives**

In oasis regions scattered over arid and semi-arid regions in central Eurasia, people's lifestyles have evolved in accordance with changes in water resources, which changes are primarily associated with global changes. Nomadic activities and agriculture have had a close and complex relation to each other in history. As agriculture has become predominant, stock farming has become less intense; but, lately agriculture itself has been subjected to severe problems owing to recent so-called desertification. The present research project aims at reconstructing a history of the interaction between people and nature, in particular by examining the adaptability of the ecosystem, the human lifestyle from social and cultural points of view, in response to changes in the water circulation system, for the last 2000 years in arid regions. In this way, disclosing the past evolution of the culture and the sense of value, we may learn something important for creating new manners of living that could assure future capability.

**(2) Contents and Methodology**

The major research field is in and around the Heihe region in western China, where present processes in water circulation, including those with human activities, is to be examined by scientific and socio-economic in situ investigations. At the same time, the history of the region is to be reconstructed by examining historical documents, and varieties of proxies such as ice cores from glaciers, tree-ring samples, lake sediment cores. The water circulation system in the basin, that is, water resources as well as demand or use, is to be studied also. The project is to reveal the temporal evolution of the water circulation system, owing to changes in the amount of precipitation, of used water, say for irrigation during river and groundwater discharge, and the subsequent changes in evapo-transpiration. It is thus intended to reveal the historical change of the interaction between people and nature by focusing on water.

**(3) Project Members excluding Members in Foreign Institutions**

◎ NAKAWO, Masayoshi	RIHN	supervision
○ ENDO, Kunihiko	Nihon University	historical reconstruction
○ KATO, Yuzo	RIHN	historical reconstruction
○ KUBOTA, Jumpei	RIHN	process studies
○ KONAGAYA, Yuki	National Museum of Ethnology	process studies
○ SATO, Atsushi	National Institute for Disaster Prevention and Earth Science	historical reconstruction
○ SUGIYAMA, Masaaki	Kyoto University	historical reconstruction
○ SOMA, Hidehiro	Nara Women's University	historical reconstruction
○ TAKEUCHI, Nozomu	RIHN	historical reconstruction
○ FUJII, Yoshiyuki	National Institute of Polar Research	historical reconstruction
○ FUJITA, Koji	Nagoya University	process studies
○ WATANABE, Tsugihiko	RIHN	process studies
AISINGIORO, Ulhicun	Ritsumeikan Asia Pacific University	historical reconstruction
AKIYAMA, Tomohiro	Nagoya University	process studies

AZUMA, Kumiko	National Institute of Polar Research	historical reconstruction
ARAKAWA, Shintaro	Tokyo University of Foreign Studies	historical reconstruction
IGURO, Shinobu	Otani University	historical reconstruction
ISHII, Yoshiro	Okayama University	process studies
ITO, Tatsuya	Fukui University of Technology	historical reconstruction
INOUE, Mitsuyuki	RIHN	historical reconstruction
UETAKE, Jun	Tokyo Institute of Technology	historical reconstruction
UJIGASHI, Yasuyuki	Fukui University of Technology	historical reconstruction
OHTA, Keiichi	The University of Shiga Prefecture	process studies
YANG, Haiying	Shizuoka University	process studies
OZAKI, Takahiro	Kagoshima University	process studies
ONO, Hiroshi	Kyoto Tachibana Women's University	process studies
KINOSHITA, Tetsuya	RIHN	historical reconstruction
KOHSHIMA, Shiro	Tokyo Institute of Technology	historical reconstruction
KOHNO, Mika	National Institute of Polar Research	historical reconstruction
KODAMA, Kanako	Nagoya University	process studies
KOBAYASHI, Osamu	Ehime University	historical reconstruction
KONYA, Keiko	Hokkaido University	process studies
SAKAI, Akiko	Nagoya University	process studies
SATOW, Kazuhide	Nagaoka Institute of Technology	process studies
SATOH, Takayasu	Osaka University	historical reconstruction
Kicengge	RIHN	historical reconstruction
SHIRAISHI, Noriyuki	Niigata University	historical reconstruction
SHIRAIWA, Takayuki	RIHN	historical reconstruction
Shinjilt	Kumamoto University	process studies
SUGIYAMA, Kiyohiko	Komazawa University	historical reconstruction
SEGAWA, Takahiro	Tokyo Institute of Technology	historical reconstruction
TAKAHASHI, Shigehiro	Nagoya University	process studies
TAMAGAWA, Ichiro	Gifu University	process studies
TSUJIMURA, Maki	Tsukuba University	process studies
NAITO, Nozomu	Hiroshima Institute of Technology	process studies
NAKAZAWA, Fumio	Shinshu University	historical reconstruction
NAKATSUKA, Takeshi	Hokkaido University	historical reconstruction
NAGANO, Takanori	RIHN	process studies
NAKAMURA, Kenji	Nagoya University	process studies
NAKAMURA, Tomoko	Tohoku University	process studies
NARAMA, Chiyuki	Nagoya University	historical reconstruction
NARITA, Hideki	Hokkaido University	historical reconstruction
HAMADA, Masami	Kobe University	historical reconstruction
HIYAMA, Kuniharu	Nagoya University	process studies
HIROBE, Muneto	Okayama University	process studies
Huhubator	Showa Women's University	process studies
FURUMATSU, Takashi	Kyoto University	historical reconstruction
HORI, Kazuaki	Meijo University	historical reconstruction
HORI, Sunao	Kohnan University	historical reconstruction

Mailisha	Rikkyo University	process studies
MATSUKAWA, Takashi	Otani University	historical reconstruction
MATSUDA, Yoshihiro	Nagoya University	process studies
MATODA, Sumito	Hokkaido University	historical reconstruction
MIKI, Naoko	Okayama University	process studies
MURATA, Taisuke	Nihon University	historical reconstruction
MORIYA, Kazuki	RIHN	historical reconstruction
MONDA, Yukako	Okayama University	process studies
YATAGAI, Akiyo	RIHN	process studies
YAMAGUCHI, Satoru	National Institute for Disaster Prevention and Earth Science	process studies
YAMAZAKI, Yusuke	Kyoto University	process studies
YAMANAKA, Ichiro	Kyoto University	historical reconstruction
YAMAMURO, Shin'ich	Kyoto University	historical reconstruction
YUBA, Tadanori	Kyoto Tachibana Women's University	historical reconstruction
YOSHIKAWA, Ken	Okayama University	process studies
YOSHIDA, Setsuko	Shikoku Gakuin University	process studies
YOSHIMOTO, Michimasa	Kyoto University	historical reconstruction
WATANABE, Mitsuko	RIHN	historical reconstruction

(◎ : Project leader, ○ : Core member)

#### (4) Progress

○ April 1st, 2005 to March 31st, 2006

Enormous amount of documents in the Qing dynasty preserved in the First Historical Archives of China has been compiled. In particular, weather reports from more than 70 stations in the Heihe Basin have been examined based on which a data base on the amount of precipitation and snow depth was initiated to create. They are to be compared with ice core and tree ring precipitation data.

A Chinese movement of promoting so called "Ecological Migration", which is the relocation of people for preserving/restoring local ecosystems, was found to play an important role in the water circulation system in the Heihe Basin. An international symposium on environmental immigration was organized in Beijing, and the immigration was discussed in detail last year. A book on the "Ecological Migration" was published in Japanese by the Showado Publishing Company, as one of the outcomes of the symposium. The book was translated into Chinese, and published by the Inner Mongol University Publishing Company. Its English version is now in preparation for publication.

Oasis Project Session was organized in the Pre-symposium for the RIHN Inaugural International Symposium, and the Proceedings of the session was published as a volume of the series of the Project Report on an Oasis Region. Two Inter Project Sessions, "Human History in the Changing Climate" and "Challenging for Better Human/Water Relationships", were also implemented in cooperation with another RIHN projects.

Also, Khara Khoto edition of the NHK Silk Road series was on air for general public in October 2005, which reported several outcomes of the Oasis Project. A couple of general books or general journals were hence published by a couple of publishing companies, and the members of the project contributed to those publications as well.

#### (5) Outcome

The output of the project includes Project Report on an Oasis-region Vol. 5 (Nos. 1 and 2) and, in addition to individual publications, which are not listed here. A movie entitled "Wondering the Heihe Water Basin" was

produced, with the total length of 16 minutes, both with Japanese and English narrations. They are available as a DVD.

**Full-Research****Research axis:** History and Time Scale**Project number:** 4-2FR**Project name:** A trans-disciplinary study on the regional eco-history in tropical monsoon Asia: 1945-2005**Project leader:** AKIMICHI, Tomoya (RIHN)**HP:** <http://www.chikyu.ac.jp/ecohistory/index/htm>**■ Aim and Contents****1. Aim of the Study**

This research project aims to study interactions between people who inhabit in the tropical monsoon Asian region (Yunnan of southwestern China, Thailand and Laos) and their surrounding environment, as the eco-historical consequence during the past several decades since the WW II. This region is known as having diverse ecological habitats including wetland, plains, valleys, basins, and mountain areas, and typical seasonal monsoon climate in which a hundred and more ethnic groups have lived holding unique historical and cultural traditions. Under the exposure to changes in political regimes, the second Indo-China War, and due to impacts of modernization, economic globalization, and population growth that have swept during the past 50-60 years, it becomes a matter of significant concern as to how people have coped with these external impacts, and how they have survived under these upheaval. Indeed, these external influences have overwhelmed not only people's subsistence and social life, but also their health and nutrition. Our research focuses on this point that how people have coherently struggled, coped with, and adapted to the changing environmental, economic, and socio-political conditions. To clarify these problems, we focus on subsistence complex, nutrition and health, and resource management in local societies as eco-sensitive aspects of human culture, and to examine the integrated figure among them as the regional eco-history.

**2. Methodology and Study Areas**

In this project, we address three eco-sensitive domains; e.g., subsistence complex, nutrition and health, and resource management. Methodologies we adhere include anthropology, human geography, history, agro-forestry and fisheries sciences, DNA and stable isotope analyses, botany, information sciences and ecology.

To update, in order to demonstrate interactive consequences between three analytical domains, we have conducted intensive fieldworks in collaboration with six research groups of the project. Study groups and their study areas are (1) Agro-Forestry Group (Northern Laos), (2) Plains Ecology Group (Central Laos), (3) Human Ecology Group (Central-South Laos), (4) Northern Thailand Groups (North Thailand), (5) China Group (Yunnan Province, Southwestern China), (6) Material Culture and Information Retrieval Group. The China Group is further divided into three; (5-1) History Group, (5-2) Forestry Group, and (5-3) Eco-History Group by Chinese scholars at Yunnan University.

**3. Present Status and Results**

We have successfully accumulated in-depth data from studies and appropriate guidelines for the goal. Among some minority groups of such as the Akha, Hmong, Tai Lue, and Lao Lum, transformation process and community-based resilient behaviors have been clarified in the realm of subsistence system as the deterioration of forest, reduction of fallow period under rapid external influences since 2000. In the central-south of Laos, high frequencies of water-borne infections and diabetes have been detected in rural population, the latter perhaps being due to rapid change in food intake and life style. In the southern Laos, a new project on the fish conservation zone in harmony with community development has been proposed since 2000. In northern Thailand, ethnic relations among the Mrabuli, Yao and Hmong, have significances in the analysis of migration history, subsistence complex and patterns

of infiltration of cash economy. From studies made by thirty-two Chinese scholars during these few years we can expect the first volume of "Ecohistory in Yunnan". From the stone inscription analysis in various communities along the south of Yuanjiang river, it was revealed that the community-based conservation practices already existed as early as the early 19<sup>th</sup> century. Other than these, we are also striving to establish eco-historical archives by combining (1) the compilation of the eco-chronicle, using historical County Gazettes in Yunnan Province and Laos, (2) composition of RCC (Rice Culture Complex) and FCC (Fishing Culture Complex) and their geographical and ecological distributions, (3) analyses of proxies in terms of eco-history, using examples such as bamboo, rubber, lac, opium, water buffalo, water weed, sugar cane and other NTFPs (non-timber forest products), and (4) analyses of research documents and records of Southeast Asia, accumulated by Japanese scholars during the post-war periods.

In the last year, we have organized seven international workshops in Japan, China, and Laos, including "History and the Environment" with the participation of Professor G. Condominas. From studies mentioned above, we hope to present integrated view on the regional eco-history this year through the symposia, publications and books. We have organized international workshops and conferences in Yunnan University, Kunming, China (June, 2005), Oudom Xay, northern Laos (August, 2005, March, 2006), Vientiane (August, 2005), and Savannakhet, central Laos (December, 2005). In the first international conference for the Lao Study held in the north Illinois, USA, five members of the project presented papers.

#### 4. Future Prospect

Our project has only two years left. In order to integrate individual research outcomes, and to link them together, we propose joint study program which can help integrate as the trans-disciplinary study of the regional eco-history as a goal. Also, it is urgently necessary to complete the eco-chronicle editing, development of RCC and FCC information, and the development of spatio-temporal database for the basic information set. For the publication, we plan to publish (1) illustrated book on the resources in tropical monsoon Asia, and (2) books (five volumes). Finally, our research finding will be presented in the international conference in the final year.

#### ■ Publications

##### In Japanese

##### Single author

Nonaka, Kenichi 2005 *Ethnoentomology -Insect Eating and Human-Insect Relationship*. Tokyo: University of Tokyo Press.

Research Project 4-2, RIHN (ed.) 2005 *A Transdisciplinary Study on the Regional Eco-History in Tropical Monsoon Asia: 1945-2005: 2004 Annual Report*. 66 articles and reports included. Kyoto: Research Institute for Humanity and Nature. (some in English)

##### Articles

Adachi, Yoshinao, Miyagawa, Shuichi and Sengdeuane, Sivilay 2005 "Adaptation of Rice Cultivation to the Natural and Socio-Economic Environment of Vientiane Plain, Laos" *Proceedings of the 15th Annual Meeting of the Japan Society of Tropical Ecology* 42.

Adachi, Yoshinao, Miyagawa, Shuichi and Sengdeuane, Sivilay 2006 "Geographical Distribution of Rice Varieties and Yield in a Rain-fed Rice Growing Village of Vientiane Plain, Laos" *Jpn. J. Trop. Agr.* 50 (Extra issue 1): 51-52.

Akimichi, Tomoya, Nomoto, Kan-ichi, Akasaka, Norio and Taguchi, Hiromi 2005 "Folk system of Sato-yama and Sato-umi Transformation and new construction of relationships between human and nature" *Kikan Tohoku-Gaku* 2005-5: 6-27.

Akimichi, Tomoya 2005 "Rethinking the commons: between the supernatural and the natural world" *Public Finance*

- and *Public Policy* 27(2): 27-30.
- Akimichi, Tomoya 2005 "Changing forest and red junglefowl: Ethnic minorities in Yunnan, China and Laos" In IKEYA Kazunobu (ed.), *Forest people in tropical Asia-environmental anthropology of resource use*, Kyoto: Jinbun-shoin, pp. 123-148.
- Akimichi, Tomoya 2006 "Trochus connection-eco-history of the coral reef resource use in the Western Pacific" In INTOH Michiko (ed.), *Anthropology of the environment and resource use*, Tokyo: Akashi-shoten, pp. 15-35.
- Fujita, Yuko and Ohtsuka, Taisuke 2005 "Diatoms from paddyfields in northern Laos" *Diatom* 21: 71-89.
- Kashinaga, Masao 2005 "Book Review; Ito Masako, 2003, Creation of 'Ethnicity' and the Nation State 'Vietnam': the modern history of ethnic 'Tay' and 'Nung' on the border between Vietnam and China, Tokyo: Sangensha" Research Group for the Study of Society and Culture of Vietnam (ed.) *Study of Society and Culture of Vietnam* 5/6: 355-360.
- Kashinaga, Masao 2005 "Insect eating of the Thai in Vietnam" Research Group for the Study of Society and Culture of Vietnam (ed.) *Study of Society and Culture of Vietnam* 5/6: 185-204.
- Kashinaga, Masao 2006 "Transmission of the Tai Dam writing system in Vietnam" *Language and Society* 9: 29-51.
- Kashinaga, Masao 2006 "Introduction of the project, written cultures in mainland Southeast Asia" *Minpaku-tsushin* 111: 18-19.
- Kono, Yasuyuki 2005 "Wisdom of forest use: people in northern mountain Laos" *Kagaku* 75(4): 462-465.
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- 4/9/2005 Nonaka, Kenichi "Subsistence complex in the wetland ecotone in the Vientiane Plain, Lao PDR" AAG, Denver.
- 6/15/2005 Nonaka, Kenichi "Subsistence complex and diversified resource use in Xaythani district. Lao PDR." International Symposium for resource management, Kunming, China.
- 6/17/2005 Abe, Ken-ichi "Alchemy of forest: The impact of commercialization on environment and local communities in Nu jiang (Upper Salween) River," International Workshop: Mainland Southeast Asia in Transition: Resource and Eco-history, Yunnan University.
- 8/23/2005 Matsumura, Y., Inaoka, T., Ataka, Y., Kawabe, T., Moji, K., Boupha, B. "Adult health conditions in changing rural community in Lao PDR." The 17th IEA World Congress of Epidemiology, Bangkok.
- 9/11-15/2005 Habe, Shigehisa, Nakamura, Satoshi, Si, Tran Duc, Odermatt, Peter and Dreyfuss, Gilles "Distribution of Paragonimus species in the crab host at Vientiane Capital in Lao People's Democratic Republic." Medicine and Health in the Tropic, Marseille.
- 11/6/2005 Fujita, Yuko and Ohtsuka, Taisuke "Diatoms from paddy fields in mountainous area in northern Laos."
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- 3/1/2006 Ajisaka, T. "Cladophora glomerata and Spirogyra spp. in Laos," Eco-history study project in Vientiane Plain-water, resources-use and daily life in Xaytani district -in Lao PDR, NAFRI Workshop.

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International workshop on "Indigenous Eco-knowledge and Development in Northern Laos."

### Domestic

- 5/12/2005 Nonaka, Kenichi "Stink-bug is tasty" The Society of Biosophia Studies, Aso.
- 6/12/2005 Akimichi, Tomoya "The future of the eco-commons: from the Mekong river to the Wallacean Sea"  
Keynote speech, The Japan Society of Tropical Ecology, Kyoto.
- 6/12/2005 Nonaka, Kenichi "Resource use in wetland and paddy field in Vientiane Plain, Lao PDR." The  
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- 9/18/2005 Miyagawa, Shuichi, Adachi, Yoshinao, Sivilay, Sengdeane and Nonaka, Kenichi "Typology of  
villages in Vientiane Plain, Lao PDR." The Association of Japanese Geographers, Ibaraki University.
- 10/14-15/2005 Habe, Shigehisa, Nakamura, Satoshi, Odermatt, Peter, Si, Tran Duc and Veasna, Duong  
"Paragonimiasis in Lao PDR." 46th Annual Meeting of Japanese Society of Tropical Medicine, Kyoto, Japan.
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Society of Tropical Medicine, Kyoto, Japan.
- 10/25/2005 Akimichi, Tomoya "People and Fish in Laos: ten years of the freshwater resource management"  
Aquaculture Study Group in Laos, University of Tokyo, Tokyo.
- 11/10/2005 Nonaka, Kenichi and Ikeguchi, Akiko "Miscellaneous animal use and living space in Vientiane  
Plain, Lao PDR." Human Geographical Society of Japan, Kyushu University.
- 11/22/2005 Naito, Daisuke and Abe, Ken-ichi "Changing forest use in indigenous community in relation to  
rural development" Conference on Forestry and Forest Products Research 2005: Investment for Sustainable  
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- 1/21/2006 Abe, Ken-ichi "Regional perspectives for global issues: Forest history in China. 2005 Sokendai  
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Sea, Thailand. 2005 Sokendai International Symposium Academic and Cultural Exchange in Asia, Sokendai,  
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monitored by coliform test paper kit" 76th Annual Meeting of Japanese Society of Hygiene, Ube.

## Feasibility Study

**Research axis:** History and Time Scale

**Project number:** 4-4FS

**Project name:** Neolithisation and modernisation: landscape history on East Asian inland seas

**Project leader:** UCHIYAMA, Junzo (RIHN)

**HP:** <http://www.chikyu.ac.jp/neo-map/index.html>

## Research Objectives and Topics

### 1. Research Objectives

This project aims at reconsidering the notion of "cultural landscape protection" by way of reconstructing the historical landscape (hereinafter *LS*) change on East-Asian inland seas during the two most notable revolutionary periods in the history of human-nature relations, i.e. Neolithisation (hereinafter *NLS*) and Modernisation (hereinafter *MDS*), through the analyses of sustenance activities, trade and mental or cultural structures (political system, art, literature, festivals etc), climatic and topographical analysis in eight regions on the shores of Japan and East China Sea (Fig. 1). The primary goals of the project are to:

- (1) Reconstruct the changes in the naturally and culturally conditioned spheres of *LS*.
- (2) Explicate the functioning of inland seas as a network creating cultural unity and diversity.
- (3) Reconsider the idea of "cultural landscape" in order to put the cultural landscape protection policies into a new perspective. Comparing *NLS* and *MDS* processes can give us a better understanding of possible future developments and solutions to present environmental issues.

### 2. Topics and Methodology

Considering that the concept of a "cultural landscape" has become an important issue in government and international protection programs (e.g. the nomination of national landscape treasures by *Bunkacho*, the Agency of Cultural Affairs of Japan, and UNESCO World Heritage sites), it is crucial to understand the cultural formation mechanisms of protected landscapes and the processes that sustain them. Compared to Europe, *LS* studies that take cultural elements into account in an equal measure with natural ones, are still rare in East Asian research initiatives.

The project focuses mainly on the East Asian inland sea, i.e. the Japan Sea Rim and the East China Sea Rim. Historically, inland sea coastal areas were densely populated and played a major role as worldwide trading spots and collision spots for various cultures and civilisations. Throughout the duration of this research project, results will be compared to those of the *LS* research in the North European inland seas, this being the second inland sea area belonging to the humid temperate zone considered in this project.

Eight research areas were chosen around the East Asian inland seas to represent the full variety of cultural and natural settings. Each area had to fulfil the following requirements:

- (1) They must be located on the border of various environments;
- (2) Be important cultural or trading centres throughout history;
- (3) Have important natural resources for trade purposes or act as a doorway to mainland areas;
- (4) Have important archaeological sites associated with them and an ample amount of historical records.

The selected research areas are: 1. Hokuriku, 2. Biwako and 3. Northern Kyushu for mainland Japan, 4. Hokkaido and 5. Ryukyu for marginal Japan, 6. Nak-tong River for Korea, 7. Northern Zhejiang for China, and 8. Primorye for Far-East Russia.

In order to foster interdisciplinarity, the research groups are organised according to regions rather than by research subjects.

Since *LS* is a holistic phenomenon that entails both a cultural and a natural side, and develops through the influence of human practices and interactions with the natural environment, a large part of *LS* research has to be

based on qualitative rather than quantitative research methods. Specific research methods would depend on each discipline and on one of the highlighted periods of study (NLS or MDS).

As a basis for studies on both NLS and MDS, a geographical database will be created for each region for both of the periods with available cartographical data in the form of both historic and modern maps, information on the distribution and spatial structure of archaeological sites, and other related archaeological data. Land use, settlement patterns and population dynamics will be mapped on the basis of cartographic data, historical documents, pollen analyses, and other environmental and ecological datasets. In terms of the NLS studies, further qualitative analysis will be conducted based on archaeological data. The analysis of LS change during MDS will contain both the analysis of visual and material culture and that of the perceived image of the LS as represented in written descriptions and pictorial representations.

Comparisons and synthesis of overall results will be carried out through frequent workshops and seminars both in Japan and Europe, where LS studies, as a discipline, have been part of mainstream academic research for at least three decades.

### Progress of the Project

To clarify the conceptual background of the project, biweekly seminars were held at RIHN on the notion and concept of LS, and LS studies conducted in Northern Europe. On October 19<sup>th</sup>, a symposium session entitled "Bridging Times and Seas: Historical LS change on the shores of Northern Inland seas" was organised under the RIHN International Inaugural Pre-symposium in cooperation with RIHN project 5-3PR to investigate the notion of "inland seas" within the framework of LS studies.

Preliminary fieldwork was carried out in Hokuriku (Toyama, Shinanogawa, the Jadeite Coast), Northern Kyushu (Ongagawa, Aso), Biwako, Hokkaido (Asahikawa) and the Northern Zhejiang areas in order to determine the possibility and direction of further research activities.

As a result of this conceptual research, preliminary fieldwork and research on the methodology of LS studies, a consensus was reached to launch the project under the dual themes of "LS" and "inland seas" (instead of the previous theme of "The Great River System"). This focus helped to define research areas as described above and to organise research groups according to regions rather than research disciplines. Core concepts and research areas have been discussed with a number of specialists in Japan and abroad during project meetings and seminars.

Negotiations for international collaboration have been held with the Sainsbury Institute for the Study of Japanese Arts and Culture (UK; hereinafter: SISJAC), Leiden University (the Netherlands), Tallinn University and the University of Tartu (Estonia), Chun-nam Universities (Korea) and the Zhejiang Provincial Archaeological Society (China).

### Outcome and Future Topics

#### 1. Outcome up to Now

- a) The focal terms of the project (landscape, inland seas, Modernisation, Neolithisation) were defined. Biweekly landscape seminar was held to discuss the notion of landscape and landscape research in Western academia.
- b) Research areas were defined and the research groups formed for all the regions except Russia.
- c) Symposium session entitled "Bridging Times and Seas: Historical LS change on the shores of Northern Inland seas" was organised under the RIHN International Inaugural Pre-symposium in cooperation with RIHN project 5-3PR.
- d) Preliminary field work was carried out in Hokuriku (Toyama, Shinanogawa, the Jadeite Coast), Northern Kyushu (Ongagawa, Aso), Biwako, Hokkaido (Asahikawa) and the Northern Zhejiang areas.
- e) The research outcome was presented at a workshop entitled the *Life Journey of Carp Species* at the Lake Biwa Museum on November 20<sup>th</sup>, 2005.

- f) Six project members presented the research outcome at the World Archaeological Congress Osaka Intercongress 2006 on January 12-15, 2006.
- g) A joint workshop "The nature and environmental perception on the Japan Sea – the history of landscape formation" was held in Toyama, in collaboration with the Japan Sea Research Project of Toyama University on February 11, 2006.
- h) An internet homepage for the project has been launched both in Japanese and English (<http://www.chikyu.ac.jp/neo-map/index.html>).

## 2. Future Topics

- a) The NEOMAP project has still not formed a research team for the Russian Far East. At present, negotiations are under way with Russian specialists in Japan and Russia.
- b) LS studies for an integrated perspective that unites both the soft and hard sciences, are still a relatively weak discipline in Asia. Frequent workshops and the continuation of biweekly LS research seminars are seen as a means for creating a common theoretical framework.
- c) The synthesis of humanistic research with the natural sciences is another difficulty. Frequent seminars and work groups organised by regions rather than disciplines would be an ideal solution.

## Publications (non-Japanese)

- Grier, C., Kim, J. and Uchiyama, Junzo (Eds.) 2006 *Beyond Affluent Foragers: Rethinking Hunter-Gatherer Complexity*. Oxford: Oxbow Books.
- Nakamura, Shin-ichi 2005 Le riz, le jade et la ville: Évolution des sociétés néolithiques du Yangzi. *Annales: economies, sociétés, civilisations* 60-5, pp. 1009-1034.
- Haruta, Naoki 2005 "By-Laws: Records of Legal Control on the Environment Medieval Japan" *The Haskins Society Journal, Japan*: 7-11.
- Fukusawa, Hitoshi 2006 High-resolution reconstruction of paleo-environments by varved maar sediments in Japan and the Easter Island: On future prediction of climate changes and proposal for conservation of sustainable environments. *Special Volume of Journal of Korean Society of Greenland and Environment* 4-8. Korean Society of Greenland and Environment.
- Yasuda, Yoshinori and Fukusawa, Hitoshi 2005 "Coincide of the collapse of Maya Civilization and the Bal- He- Kuk Kingdam in Korean Peninsula" *Monsoon*, 6: 22-25.

## In Japanese with English Abstract

- Fukusawa, Hitoshi and Yamada, Kazuyoshi 2005 "The linkage of Asian monsoon activities and glacial-interglacial cycles recorded in loess and lacustrine deposit" *Chishitsugaku zasshi* 111(11): 679-692.
- Fukusawa, Hitoshi 2005 "The history of relations between alpinism and post-medieval environmental warming caused by annual lacustrine layers" *Gekko chikyuu* 27(9): 665-662.
- Iida, Taku et. al. 2005 Folk Knowledge about mollusk species in Northern Amami Oshima and Kasari Bay: Human-Nature Relationship through elicitation data. *Bulletin of the National Museum of Japanese History* 123, pp. 153-183.
- Nishitani, Masaru 2005 Towns with Markets: The Interaction of Various Ethnic Groups from the Persepctive of Trade. *Bulletin of the National Museum of Japanese History* 121, pp. 333-394.
- Takaoka, Hiroyuki 2006 "The Transformation of Ghosts and the Transformation of Cities: A Tentative Theory for Modern and Contemporary Folklore" *Bulletin of the National Museum of Japanese History* 132, pp. 99-120.

### Symposiums, Workshops, Public Lectures and Seminars

- ◆ *RIHN Inaugural Pre-Symposium session 'Bridging Times and Seas: Historical landscape change on the shores of Northern inland seas'*. 19 October 2005, Pa-lu-lu Praza, Kyoto in cooperation with RIHN project 5-3PR.

Kull, Kalevi (Estonia) "Cultures of Leaving no Trace: the case of wooded meadow"

Palang, Hannes (Estonia) "Layered Landscapes"

Kaner, Simon (UK) "The Evolution of Landscapes Over the Long Term: perspectives from Britain and Japan"

Uchiyama, Junzo "Why Did Shell-Middens Disappear? – Culture roles in the landscape shift in prehistoric foraging societies"

Lindström, Kati "Mental and Physical Relief in Landscape: Eight Omi Landscapes and the environmental perception of its present inhabitants"

Nakamura, Oki "Landscape studies in Japanese archaeology"

- ◆ World Archaeological Congress Osaka Inter-Congress, Osaka, January 12-15, 2006

Session 2 Comparative archaeology of interactions with neighbouring areas.

Chairs: Koji MIZOGUCHI and Simon KANER

Session 5

S5-05 Onishi, Hideyuki. "Potter's technique as socio-cultural product: practice and learning of folk technique in the Philippine Highlanders' society, northern Luzon."

Session 6 Interactions between hunter-gatherers and farmers in prehistory and history

Chair: Kazunobu IKEYA and Hidefumi OGAWA

S6-04 Hosoya, Leo Aoi. "What leads a subsistence shift?: an ethnoarchaeological approach to the Jomon-Yayoi transition"

S6-05 Ikeya, Kazunobu. "Kalahari model and symbiotic relationship between hunters and farmers"

Session 13 Transcendental representations: tradition, iconoclasm and symbiosis in representations of humans and animals forms Chair: Simon KANER

S13-05 Kaner, Simon. "Creativity and duplicity in the representation of humans and animals."

S13-06 Bausch, Ilona. "Middle Jomon clay figurines in central Japan: fragmentation and sharing practices."

Session 14

S14-09 Fukasawa, Yuriko. "Ainu archaeology as ethnohistory"

- ◆ "The nature and environmental perception – the history of landscape formation." The 4th Open Seminar of the Project for the Japan Sea Studies in the fiscal year of 2005, 11 February 2006, Toyama University

Chair: Nakai, Sei'ichi

Uchiyama, Junzo "The Neolithisation and Modernisation on the East Asian Inland Seas" [in Japanese]

Lindström, Kati "The landscape description and philosophy in pre-modern Japanese literature" [in Japanese]

- ◆ Workshop "Life Journey of Carp Species" at the Lake Biwa Museum on November 20, 2005.

- ◆ General Meetings

1st General meeting, July 29, 2005

2nd General meeting, March 12, 2006

- ◆ Landscape seminar

Landscape seminar I, May 26, 2005

Presentator: Lindström, Kati "Estonian cultural landscape: its persistence and change"

Landscape seminar II, June 9, 2005

Presentator: Uchiyama, Junzo "Why landscapes of the past are important for the future"

Landscape seminar III, June 23, 2005

Presentator: Murakami, Yumiko "Stonehenge – Contested Landscapes"

Landscape Seminar IV, July 7, 2005

Presentator: Saito, Haruo "On Possession and Place"

Landscape Seminar V, July 21, 2005

Presentator: Lindström, Kati "What is good about Biwako?"

Landscape Seminar VI, September 30, 2005

Presentator: Onishi, Hideyuki "The urbanisation of Asahikawa and the ecosystem of Ainu people during the pre-modern period."

Landscape Seminar VII, October 28, 2005

Presentator: Murakami, Yumiko "The Articulation of Territory"

Landscape Seminar VIII, November 10, 2005

Presentator: Momoki, Akiko "The history of wolves as a landscape in Europe"

Landscape Seminar IX, December 22, 2005

Presentator: Uchiyama, Junzo "A Phenomenology of Landscape"

Landscape Seminar X, March 8, 2006

Presentator: Saito, Haruo "Law's Territory"

Landscape Seminar XI, March 22, 2006

Presentator: Ibuki, Naomi "The Future Eaters & Sustainable Landscapes"

**Feasibility study****Research axis:** History and Time Scale**Project number:** 4-5FS**Project name:** Historical interactions between the hybrid societies of ethnic groups and the natural environment in a semi-arid region in central Eurasia**Project leader:** KUBOTA, Jumpei (RIHN)**HP:** [http://www.chikyu.ac.jp/rihn/pro/2004\\_4-5.html](http://www.chikyu.ac.jp/rihn/pro/2004_4-5.html)**Outline of Research Project****1. Research Objectives**

With the exception of those people who lived in oasis areas, people in the semi-arid region, which spreads widely over Central Eurasia, once lived a predominately nomadic lifestyle. During the long transition of the rise and fall of various ethnic groups and countries, the Yuan Dynasty dominated the whole of Eurasia as a loosely controlled unity during the 13th and 14th centuries. In 18th century, a tight and well-defined border divided the region between Russia and Qing. At the same time, the people in this area experienced a great change in their lifestyle, caused by the migration of farmers, the settlement of once nomad activities and agricultural development in association with the expansion of Russia and Qing. For nomadic peoples living in semi-arid regions, relocation was one of the major means for adapting environmental changes, demographic expansion and political conflicts between groups. Settlement policies and borders prevent these people from their way of adaptation. Finally, with the weakening of the Soviet Union, the Russian side was divided into many republics. Behind the various environment problems in this world, man-made trans-boundary problems, between countries or ethnic groups, religions, agriculture and nomadism, or between cities and the surrounding areas, could have cause another environmental problems. This project aims to study and clarify the historical interaction of human activities and natural systems in the semi-arid region of Central Eurasia, focusing on such trans-boundary problems.

**2. Contents and Methodology**

The area of study is the Ili River watershed which flows from China to Kazakhstan, terminating at Balkhash Lake as well as the surrounding areas, including Kyrgyzstan and Uzbekistan. The project consists of two research groups: one will set out to clarify historical changes in both human activities and natural systems by analyzing historical documents as well as a variety of natural proxies, and the other group to investigate the present processes of human activities and natural systems for interpreting the historical information. The project will focus on;

- 1) to clarify historical changes, the rise and fall of nomadic groups and countries, their removal, changes in subsistence, the use of natural resources and climate change through the analysis of historical documents and archeological investigations as well as various natural proxies such as ice cores, lake sediment samples, tree rings and wind-brown deposit.
- 2) to investigate the present status of the area and the effects of human activities on the natural environment, including their social, religious and cultural background.
- 3) to compare upstream and downstream areas in terms of historical changes and their present status, looking at areas that used to be the same but have developed differently, to understand the meaning of boundaries in the context of environmental issues.

**3. Members of the Project**

©KUBOTA, Jumpei (RIHN, Associate Professor, Supervision)

\* FUJITA, Koji (Nagoya University, Associate Professor, Age determination of ice cores)

\* FUNAKAWA, Shinya (Kyoto University, Associate Professor, Pedology)

- \* KATO, Yuzo (RIHN, Assistant Professor, Chinese documents)
  - \* HYASHI, Toshiyuki (Soka University, Professor, Archaeology)
  - \* KONAGAYA, Yuk (National Museum of Ethnology, Professor, Nomadic system)
  - \* MATSUYAMA, Hiroshi (Tokyo Metropolitan University, Associate Professor, Climate change)
  - \* SOMA, Hidehiro (Nara Women's University, Professor, Remote sensing)
  - \* SUGIYAMA, Masaaki (Kyoto University, Professor, Chinese and Persian documents)
  - \* TAKEUCHI, Nozomu (Chiba University, Associate Professor, Biology in snow and ice)
  - \* UYAMA, Tomohiko (Hokkaido University, Associate Professor, Russian and Kazhk documents)
  - \* YOSHIDA, Setsuko (Shikoku Gakuin University, Associate Professor, Nomadic system)
  - \* YOSHIKAWA, Ken (Okayama University, Professor, Forest Ecology)
  - CHENG, Zhi (RIHN, JSPS Postdoctoral Fellow, Manchurian documents)
  - ENDO, Kunihiko (Nihon University, Professor, Lake sediment analysis)
  - ENDO, Takahiro (RIHN, Assistant Professor, Water resources management)
  - FURUMATSU, Takashi (Kyoto University, Assistant Professor, Tibetan documents)
  - HORINO, Haruhiko (Osaka Prefecture University, Associate Professor, Irrigation system)
  - HORI, Sunao (Konan University, Professor, Chinese and Uigur documents)
  - INOUE, Mitsuyuki (RIHN, Research Fellow, Chinese documents)
  - INOUE, Takashi (NHK, RIHN Visiting Professor, Archaeological Research)
  - KOBAYASHI, Osamu (Ehime University, Associate Professor, Dendrochronology)
  - KOZAN, Osamu (Yamanashi University, COE Researcher, Hydrological modeling)
  - LEE, Aeria (RIHN, RIHN, Visiting Fellow, Migration)
  - NAKAWO, Masayoshi (RIHN, Professor, Ice core analysis)
  - MURAKAMI, Nobuyuki (Tsukuba University, Chinese documents)
  - NARAMA, Chiyuki (Nagoya University, JSPS Postdoctoral Fellow, Glacier change)
  - NODA, Jin (University of Tokyo, Graduate Student, Russian documents)
  - OJI, Toshiaki (Ritsumeikan University, Professor, Oasis system)
  - ONUMA, Takahiro (Tsukuba University, Graduate Student, Chinese and Russian documents)
  - ONO, Hiroshi (Kyoto Tachibana University, Professor, Persian documents)
  - SHIRAISHI, Norio (Niigata University, Professor, Archaeology)
  - TSUZHIMURA, Maki (Tsukuba University, Lecturer, Isotope analysis)
  - YATAGAI, Akiyo (RIHN, Assistant Professor, Precipitation)
  - YAMOTO, Ryuji (University of Tokyo, Graduate Student, Agricultural economics)
  - WATANABE, Mitsuko (RIHN, Research Fellow, Remote sensing)
- (© : Project leader, \* : Core member)

#### 4. Progress of the Project

- 1) Four meetings of the project members were held. During these meetings, we discussed and refined the framework, objectives and methods of the project. The outcome of these meetings has been published as a research report.
- 2) We visited universities and research institutes in Beijing, Urumqi, Almaty and Tashkent to have preliminary discussions with regard to the possibility of cooperative research. The universities and institutes we visited generally agreed to cooperate with us in the future.
- 3) Three preliminary field trips were made in August and September. During these field trips, we confirmed the availability and accessibility of various types of proxies, i.e., drilling sites for ice cores and lake sediments, historical remains, and so on. Also, we gathered a large variety of basic knowledge with regard to the present status of the study area.

## 5. Outcomes (2005)

We summarized reports and articles as Project report on an Oasis-region, Vol. 5, No. 3, 77pp (*in Japanese*).

**Full-Research****Research axis: Conceptual Framework for Global Environmental Issues****Project number: 5-1FR****Project name: Global water cycle variation and the current world water resources issues and their perspectives****Project leader: KANAE, Shinjiro (RIHN)****Core members: see No. 3****1. Research Objectives and Topics**

This research project focused on water as one of the most common factors in global environmental studies. A population increase in conjunction with continuous desire for high QOL necessitates more increases in water demand for human life, food production and industry, resulting in more intense use of water resources in the world. It is recently called "water crisis in the 21<sup>st</sup> century." Although much information on water issues is that scientifically reliable information and groundless prejudice are distributed with confusion. Another problem is such that only a little information is dispatched by Asian countries including Japan. In Asia, not only the "too little water problems," but also the "too much water problems" are vital. This project aims to clarify the true nature of world water issues and present perspectives in the future, from Japan as a part of Asia. As a result of this project, the following products will be expected: a prediction of the world water resources supply/demand probably to the next IPCC report, a report of fresh water resources for the Millennium Assessment of the United Nations, and a way for settlement of regional water issue in Asia. Furthermore, by examining new concepts of water resources, such as Virtual Water, we aim to encourage awareness on water issues and establishing guidelines for sustainability development in society in terms of water.

This project, including in the axis of Conceptual Framework for Global Environmental Issues, wishes to stand on incredulity whether the world water crisis really exists. Then, this project can reveal true aspects of world water crisis, one after another. This project must be of use, from the viewpoint of RIHN which seeks sustainability development and future possibility of the world.

**2. Relation with Research Program**

The "Conceptual Framework for Global Environmental Issues" is a relatively new axis which was changed from "Integration" in this institute. Since this project has been attempting to develop a new concept and new information related to global water issues, this change is very relevant for us. Quantification of "virtual water", one of the main outcomes of this project, needs to be investigated more in deep from the viewpoint of its concept. It will be a next subject in near future, and probably will be a good topic among the projects in the program.

**3. Leader Name concerned with the Project, Joint Researcher Name (Affiliation)**

(Researchers were so many that joint researchers' name were excluded except core members)

◎KANAE, Shinjiro (RIHN)

\* ARAMAKI, Toshiya (Asian Institute of Technology): Demand analysis and modelization of urban water

\* ENDO, Takahiro (RIHN): A new integrated basin management through forest, river and sea

\* HIRAKAWA, Yukiko (Graduate School for International Development and Cooperation, Hiroshima University): International political governance with respect to water

\* HIRABAYASHI, Yukiko (Faculty of Engineering, Yamanashi University): The impact of global warming on hydrological cycles

\* KAWASHIMA, Hiroyuki (Graduate School of Agricultural and Life Sciences, The Univ. of Tokyo): Agricultural water demand model considering an international grain price

- \* KIM, Wonsik (National Institute for Agro-Environmental Science): Observation of water cycles in Asia
- \* KITSUREGAWA, Masaru (Institute of Industrial Science, The Univ. of Tokyo): Development of global environmental water information library
- \* KURAJI, Kooichiro (Graduate School of Agricultural and Life Sciences, The Univ. of Tokyo): Water management in forest area and local community
- \* MATSUMOTO, Jun (Graduate School of Science, The Univ. of Tokyo): Seasonal change of Asian monsoon and the relation with society
- \* MATSUMOTO, Mitsuo (Faculty of Humanities and Economics, Kochi University): Water laws in Asia
- \* OKI, Taikan (Institute of Industrial Science, The Univ. of Tokyo): Global water cycles and virtual water trade
- \* OHTE, Nobuhito (Graduate School of Agriculture, Kyoto Univ.): Observation and modelization of water cycle process in forest area
- \* SATOMURA, Takehiko (Graduate School of Science, Kyoto Univ.): Modelization of water cycle in mesoscale
- \* SHIBAZAKI, Ryosuke (Center for Spatial Information Science, The Univ. of Tokyo): Land use change model considering water and provision demand
- \* SHIRAKAWA, Naoki (Institute of Engineering Mechanics and Systems, University of Tsukuba): Demand analysis and modelization of environmental water
- \* YASUOKA, Yoshifumi (Institute of Industrial Science, The Univ. of Tokyo): Remote sensing for hydrology and vegetation

(© : Project leader, \* : Core member)

#### 4. Progress of the Project

From the viewpoint of virtual water, the sustainability of Ogallala Aquifer, where is the key region for the security of water and food of Japan and the whole world, is estimated. It is clarified that the sustainability of water of Ogallala Aquifer may be fragile within the period from few decades to around a hundred year, although water of Ogallala Aquifer is less likely to dry up immediately. The significant part of the impact will return to the United States and the effect for the world may be less, nevertheless some degree of influence will be exerted to Japan from the aspect of livestock products.

On the other hand, we preformed the assessment of water resource in the 21st century from the various climate model outputs submitted to IPCC, in consideration of their uncertainty. It is expected that total population under water stress in the world may become twice of the present condition by 2050. Essentially, the prediction of world population is more effective to the assessment of world water resource than the prediction of global warming. However, it is revealed that the much uncertainty of warming prediction is shown over the arid or semiarid area. Therefore, the prediction of water stress in the future remains the uncertainty over the same area.

In addition, with the outputs from a highest resolution climate simulation for IPCC, we evaluated the change in floods and droughts from the 20th century to the 21st century. Consequently, West Europe, Southeast Asia, Sahel, South America, around Texas and so on were recognized as the area where both floods and drought will be possible to be enhanced. Moreover, the prediction of heavy rain inducing flood have been examined as the measure of flood. We found we still had not been acquiring enough knowledge about the mechanism of heavy rain around Bangladesh and India, where frequent floods occur. Whereas, we are also thinking measures against water shortage. Especially, we are focusing water right market. This institution is sometimes called "water bank." Since it was firstly introduced in United States, Chile and so on, it has been prevailing in other countries. In this project, we are making a comparative study about national water law amendments for creating water right market.

## 5. Outcome

### (1) Outline

- Global water resources assessment was carried out, and some of the core members were awarded the Tison Award of IAHS in 2003 owing to the assessment.
- The quantification of the virtual water trade in the world was carried out. Since this outcome was published/introduced not only in academic papers but also in general magazines, books, newspapers and TV programs, we have already taken our basic role as one project of the axis of conceptual study.
- Floods and droughts of the globe for 100 years in the 20th century were simulated successfully. The change in the 21st century has been simulated.
- A global terrestrial nitrogen cycle model was developed, and calculated the variation of nitric acid in rivers in the past few decades.

### (2) Publication

- Hirabayashi, Y., S. Kanae, I. Struthers and T. Oki 2005 "A 100-year (1901-2000) global retrospective estimation of the terrestrial water cycle" *J. Geophys. Res.* 110(D19): D19101, doi:10.1029/2004JD005492.
- Ichiyanagi, K., K. Yoshimura and M. D. Yamanaka 2005 "Validation of changing water origins over Indochina during the withdrawal of the Asian monsoon using stable isotopes" *SOLA* 1: 113-116.
- Kim, W., S. Kanae, Y. Agata and T. Oki 2005 "Simulation of potential impacts of land use/cover changes on surface water fluxes in the Chaophraya river basin, Thailand" *J. Geophys. Res.* 110(D8): D08110, doi:10.1029/2004JD004825.
- Komatsu, H. 2005 "Forest categorization according to dry-canopy evaporation rates in a growing season: Comparison of the Priestley-Taylor coefficient values from various observation sites" *Hydrological Processes* 19(19): 3873-3896.
- Komatsu, H., Hotta, N., Kuraji, K., Suzuki, M. and Oki, T. 2005 "Classification of vertical wind speed profiles observed above a sloping forest at nighttime using the bulk Richardson number" *Boundary-Layer Meteorology* 115(2): 205-221.
- Lei, H., Yang, D., Sun, F., Kanae, S., Miyazaki, S. and Shen, Y. 2005 "Field experiment and analysis of the energy-water balances for the winter wheat in Weishan Irrigation District along the downstream of the Yellow River" *Proceedings of the International Symposium on Sustainable Water Resources Management and Oasis-Hydroshpere-Desert Interaction in Arid Regions*.
- Shen, Y., C. Tang, J. Xiao, T. OKI and S. Kanae 2005 "Effects of Urbanization on water resource development and its problems in Shijiazhuang, China" *Proceedings of a symposium held during the Seventh IAHS Scientific Assembly IAHS Publ.* 293: 280-288.
- Yang, D., G. Ni, S. Kanae, C. Li and T. Kusuda 2005 "Water resources variability from the past to future in the Yellow River, China" *IAHS Publication* 295: 174-182.
- Hanasaki, N., S. Kanae and T. Oki 2006 "Development of global integrated water resource model based on Bucket-type land surface process model" *Annual Journal of Hydraulic Engineering* 50: 529-534. (in Japanese)
- Yamada, T., S. Kanae and T. Oki 2006 "Seasonality of land surface influence on the variation of precipitation" *Annual Journal of Hydraulic Engineering* 50: 541-546. (in Japanese)

### (3) Symposia

1 International Conference "Executive Authority Confederacy Forum on Hydro-informatics Harmonious Solidity" (4<sup>th</sup> to 6<sup>th</sup> November 2005, in Thailand)

Opening (coordinator: Prof. Atsane Kotrakul)

- New project for hydro-meteorology in South-East Asia and introduction of promising young researchers 'posters',

Prof. Oki Taikan

- Post-GAME program challenge for the future, Prof. Jun Matsumoto
- Thai project for post-GAME, Prof. Hansa Vathananukij

Keynote Lectures (coordinator: Prof. Uruya Weesakul)

- Numerical simulation of rainfall event in Thailand, Prof. Takehiko Satomura
- Six years continuous rainfall observation in Mae Chaem, Prof. Koichiro Kuraji
- Introduction of Phimai observatory, Prof. Michio Hasizume
- Strategy for land surface flux monitoring in tropical monsoon climate, Prof. Masakazu Suzuki
- Precipitable water vapor change at Khonkaena and Kogma, Prof. Mikio Satomura
- Crop growth modeling using remote sensing, Prof. Honda Kiyoshi
- Analysis of water use in each domestic purpose for its forecast, Prof. Toshiya Aramaki

Technical Session I (coordinator: Prof. Auaychai Jeerachon)

- Review of hydro-meteorological change studies, Prof. Saisunee Budhakooncharoen
- Relationship among NAM Model parameters and drainage basin characteristics for river basins in northeastern part of Thailand, Prof. Udomasak Isarangkura
- Analysis of drought for preparation of drought warning system, Prof. Uruya Weesakul
- LIDAR survey on Thailand, Dr. Sukit Visershsin
- Palmer meteorological drought classification using techniques of geographic information system in Thailand, Dr. Somchai Baimoung

Technical Session II (coordinator: Prof. Suvimol Sajavanich)

- National disaster warning center activities, Mr. Chanchai Suvanpimol
- Management strategies for endocrine disrupting chemicals in the aquatic environment: analytical methods and treatment techniques, Dr. Monthon Thanuttamavong
- Groundwater resources situation in Thailand, beyond quantity, there is still quality, Dr. Aksara Putthividhaya
- Chaing Mai flood damage and early warning system, Mr. Sutep Junkhiaw
- Modis/Terra satellite spectacular upon regulated river basin, Prof. Hansa Vathananukij
- General Discussion, Prof. Oki Taikan, Prof. Hansa Vathananukij
- Closing Technical Sessions, Prof. Nipon Tangtham

**Full-Research****Research axis:** Conceptual Framework for Global Environmental Issues**Project number:** 5-2FR**Project name:** Interactions between the environmental quality of a watershed and the environmental consciousness: with reference to environmental changes caused by the human use of land and water resources**Project leader:** YOSHIOKA, Takahito (RIHN)**Core members:** see No. 3**HP:** <http://www.chikyu.ac.jp/idea/>**1. Research Objectives and Contents****(1) Research Objectives**

It is essential for constructing the human society, which has sustainability and assures the possibility for future generations, to preserve and utilize the global environment, as a whole. Assuming that the global environmental issues are based on the interaction between humans and the nature, understanding the essence of sense of value for environments is important for solving the environmental issues. In the 5-2 IDEA project, the relationship between the environmental consciousness and the environmental qualities will be elucidated. A material-cycling model of watershed environments is developed for estimating and predicting the response of the environments to the artificial impacts on the land and water-resource uses. A tool for analyzing relationships between the environmental quality and the environmental consciousness, "Interactive Device between Environments and Artifacts (IDEA)" will be developed. Tools and procedures developed in this project will be proposed as a methodology, in which people can take a responsible approach to the solution of environmental issues.

**(2) Contents of the Project**

① Development of a response-prediction model of a watershed environment to the changes in land and water resource uses (Response-prediction model working group: RPM WG)

We will construct a response-prediction model for the forested-catchment environment to simulate environmental changes caused by a virtual impact to the watershed environment. The response-prediction model is composed of several sub-models on water and material cyclings in the watershed environment.

② Elucidation of the relationship between the environmental quality and the view of environmental value in the formation process of environmental consciousness (IDEA working group: IDEA WG)

The IDEA WG, which is composed of both social and natural scientists, discusses the structure of the IDEA as the main framework of the project and implements social surveys on the environmental consciousness.

1) Survey on people's interests in a forest-agricultural-aquatic system

Interests in the watershed environment are studied based on the interviews and questionnaires. Results of the analyses are used for selecting and scoping virtual impacts applied for the scenario questionnaire.

2) Scenario questionnaire

Relationships between people's environmental consciousness and environmental change are analyzed using the responses to the questionnaires regarding the environmental change scenarios generated by the response-prediction model. The relationship between people's environmental consciousness and environmental qualities estimated from the scenario questionnaire will be fed-back to the next questionnaire, in order to determine whether the relationship shows the direct interaction between environmental consciousness and environmental quality or not.

## 2. Relation with Research Program

Program of the Research axis "Conceptual Framework for Global Environmental Issues" is "Theoretical and empirical analysis for building conceptual framework of global environmental issues". Concepts on the people's sense of values associated with the environment, such as environmental consciousness and value judgment on the environment, are the basic concepts on the global environmental issues. The theoretical and empirical surveys on them, however, have been still immature. In this project, we have taken up these concepts from the viewpoints of humane-sociology and natural science. We will develop the interdisciplinary methodology to identify the environmental quality affecting the people's environmental consciousness and contribute for building the conceptual framework of the global environmental issues.

## 3. Project Members

### ○ Project leader

YOSHIOKA, Takahito Research Institute for Humanity and Nature, Assoc. Prof.

### ○ Core members

FUJIHARA, Kazutoshi Institute of Environmentology, Head, View of value and mutual agreement

HINO, Shuji Faculty of Science, Yamagata University, Assoc. Prof., Lacustrine material cycling

KOBA, Keisuke Interdisciplinary Grad. Sch. Science and Engineer, Tokyo Institute of Technology, Assoc. Prof.,  
Development of analytical procedures for environmental valuation

KONOHARA, Eiichi Grad. Sch. Environ. Stud. Nagoya University, Assoc. Prof., Modeling of material cycling

NAGATA, Motohiko Fac. Humanities and Social Sci., Mie Univ., Assoc. Prof., Environmental sociology and psychology

NAKATA, Kisaburo Fac. Oceanography, Tokai Univ., Prof., Model of lacustrine processes

OHTA, Nobuhito Grad. Sch. Agriculture, Kyoto University, Assoc. Prof., Models for water and material cycling

SEKINO, Tatsuki Research Institute for Humanity and Nature, Assoc. Prof., Development of IDEA

SHIBATA, Hideaki Field Science Center for Northern Biosphere, Hokkaido University, Assoc. Prof., Dynamics of watershed ecosystems

SUGIMAN, Toshio Integrated Human Studies, Kyoto University, Prof., Social Psychology

TAKAHARA, Hikaru Grad. Sch. Agr. Kyoto Prefecture University, Prof., Pollen analysis of forest vegetation

TOKUCHI, Naoko Field Science Education and Research Center, Kyoto University, Assoc. Prof., Assessment of forest cutting

YASUE, Koh Faculty of Agriculture, Shinshu University, Assoc. Prof., Annual tree-ring analysis

ZHENG, Yuejun Research Institute for Humanity and Nature, Assoc. Prof., Statistical survey of environmental consciousness

### ○ Cooperative research members

FENG, Fong-Long Research Institute for Humanity and Nature, Guest Prof., Environmental valuation using GIS Technique

HAYAKAWA, Kazuhide Lake Biwa Environmental Research Institute, Shiga, Senior, Lacustrine material cycling

IGARASHI, Masataka Center for Environmental Science, Hokkaido, Res. Staff, Nutrient dynamics

IKEGAMI, Yoshiyuki Field Science Center for Northern Biosphere, Hokkaido University, Assist. Prof., Vegetation and land-use analyses

ISHIKAWA, Yasushi Center for Environmental Science, Hokkaido, Res. Staff, Analysis of lake ecosystem

KAKIZAWA, Hiroaki Grad. Sch. Agriculture, Hokkaido University, Assoc. Prof., Ecosystem management

KITAGAWA, Hiroyuki Grad. Sch. Environ. Stud. Nagoya Univ., Assoc. Prof., Palaeoenvironment analysis

MAKI, Daisuke AMITA Institute for Sustainable Economics, Director, Ecological anthropology

MIKAMI, Hidetosi Center for Environmental Science, Hokkaido, Res. Staff, Isotopic analysis of lake ecosystem

OKADA, Naoki Grad. Sch. Agriculture, Kyoto University Assoc. Prof., Annual tree-ring analysis

OHNISHI, Fumihide TAKENAKA Corporation, Environmental valuation using GIS technique

SHOJI, Graduate School of Agriculture, Hokkaido University, Assist., Prof., Contingent valuation method

TAKANO, Keishi Hokkaido Institute of Public Health, Res. Staff, Plankton population dynamics

YAMANE, Takuji University of Human Environments, Assoc. Prof., Environmental economics

YOSHIDA, Toshiya Field Science Center for Northern Biosphere, Hokkaido University, Assist. Prof., Land plant population dynamics

#### **4. Progress of the Project (From April 2004 to March 2005)**

##### **(1) Response-prediction Models**

Using existing field data and those obtained by the project activity, the simulation results from sub-models of the response-prediction model were compared with observations. The PnET-CN model for material cyclings in the forest ecosystem can simulate forest environmental changes, although hydrologic processes should be considered in the model. It was suggested that effects of acid rain and global warming, as well as those of human activities such as forest cutting, were estimated by the model.

##### **(2) Attitude Survey**

Questionnaire on people's interests in a forest-agricultural-aquatic system was conducted to determine ranges of type and scale of virtual impact to the environment. Procedure for preparing the questionnaire was considered to keep high versatility and applicability to other environments. Assuming several parameters based on direct and indirect use values, we can analyze people's interests in the watershed environment from the viewpoints of environmental values and people's attitudes. The survey supported that the framework of the project based on the environmental valuation was valid for analyzing the relationship between people's environmental consciousness and environmental qualities. Further analyses of the questionnaire will be continued.

#### **5. Modifications on the Original Research Plan**

The response-prediction model was changed from PnET-BGC to PnET-CN and the development of the transformation module was postponed. However, the overall activity of the project was not changed.

#### **6. Outcomes (2005)**

##### **(1) Outline of Outcomes**

###### **① Development of a response-prediction model**

###### **1) Carbon and nitrogen cyclings in forest environments**

To estimate material cycles and vegetation dynamics, we chose and run the PnET-CN model, using measured data as an input. We found that the PnET-CN model could be applicable to our project though there are some discrepancies between observations and simulation results. It was suggested that some modifications might be needed in hydrological processes for the application to our study sites. As preliminary predictions, effects of the intensity of logging on stream chemistry were simulated for the forest in the Lake Shumarinai watershed. Although logging affected the stream chemistry, the 25% logging was estimated to only slightly increase the stream  $\text{NO}_3^-$ . The model results also suggested that the effect of the increase in atmospheric nitrogen deposition on the stream  $\text{NO}_3^-$  concentration was compensated by the increase in atmospheric  $\text{CO}_2$  concentration. In the simulation results for the forest in Wakayama and Nara prefectures, the patterns of the biomass increment reaching a plateau and the decrease of leaf nitrogen concentration with forest age seemed to be simulated well.

###### **2) Rainfall-runoff model**

Performance of the hydrological sub model in the PnET-CN model was examined using the dataset from a

Japanese temperate forest under Asian Monsoon climate. Although the PnET-CN model reproduced the monthly discharge of the stream water, the model was not able to simulate sufficiently the seasonal variation in the stream  $\text{NO}_3^-$  concentration in the catchment. In order to develop a robust model for ecosystem scale water and nutrient cycles, more realistic hydrologic sub model must be built in the model. The simulation using the Hydrologic Cycle (HYCY) model developed for the Japanese forested watershed was able to reproduce the seasonal pattern of the monthly  $\text{NO}_3^-$  concentration.

A method for the description of rainfall-runoff phenomena from sub-basins was considered to propose a new rainfall runoff model based on the assumption that retention capacities in the soil has a great effect on the runoff phenomena. The simulation results agreed fairly well with observed data collected at two small catchments in the Lake Shumarinai watershed.

### 3) Nutrient loading from agricultural fields

Nutrient loading from influent rivers to Lake Shumarinai has been investigated since the beginning of the project.

### 4) Flow model of lake water and biogeochemical material cycling in lake environments

The development of a model to simulate the flow of lake water was completed. Water temperature and flow rate in each water layer were simulated. The flow model will be combined with the biogeochemical model.

## ② Attitude survey for elucidating relationships between the environmental quality and the people's view on environmental value: IDEA WG

### 1) Transformation module

Transformation rules and synonym database for the performance testing were generated using the results of keyword questionnaire survey conducted in 2002. Before the implementation of the module, the details of the functions that the module needs to perform were identified. Since the module needs to be frequently reconstructed based on the results of the performance test, Microsoft Access 2003, in which changing the database structure and the user interface is relatively easy, was used as the database management software in this implementation.

### 2) Attitude survey

#### 2)-1. Interviews to residents in the Lake Shumarinai watershed and nearby city and town

Evaluation grid method on the transcripts from the interviews for residents, who live in and around the Lake Shumarinai watershed, suggested the following sequence in the people's environmental perception: Causes → environmental changes → recognition of environmental change → value judgment on environmental changes.

This sequence matched the basic assumption of the project.

#### 2)-2. Survey on people's interests in a forest-agricultural-aquatic system

Questionnaire on people's interests in a forest-agricultural-aquatic system was conducted to determine ranges of type and scale of virtual impact to the environment. Procedure for preparing the questionnaire was considered to keep high versatility and applicability to other environments. The questionnaire was distributed to 120 sites and 1800 residents in Japan. (<http://www.chikyu.ac.jp/idea/QS/interestQS.htm>, in Japanese). Factor analyses of the questionnaire revealed that people seemed to evaluate environments similarly, with respect to the categories such as direct use value, indirect use values and environmental functions.

## (2) Publication

Fukuzawa, K., Shibata, H., Takagi, K., Nomura, M., Kurima, N., Fukazawa, T., Satoh, F. and Sasa, K. 2006 "Effects of clear-cutting on nitrogen leaching and fine root dynamics in a cool-temperate forested watershed in northern Japan" *Forest Ecology and Management* 225: 257-261.

Konohira, E. and Yoshioka, T. 2005 "Stream dissolved organic carbon and nitrate concentrations - an useful index indicating carbon and nitrogen availability in catchments" *Ecological Research* 20: 359-365.

- Mostofa, K. M. G., Yoshioka, T., Konohira, E., Tanoue, E., Hayakawa, K. and Takahashi, M. 2005 "Three-dimensional fluorescence as a tool for investigating the dynamics of dissolved organic matter in the Lake Biwa watershed" *Limnology* 6: 101-115.
- Ogawa, A., Shibata, H., Suzuki, K., Mitchell, M. J. and Ikegami, Y. 2006 "Relationship of topography to surface water chemistry with particular focus on nitrogen and organic carbon solutes within a forested watershed in Hokkaido, Japan" *Hydrological Processes* 20: 251-265.
- Sekino, T. and Yoshioka, T. 2005 "Diagrammatic representation of environmental monitoring data" *Korean Journal of Limnology* 38: 76-83.
- Shibata, H., Kuboi, T., Konohira, E., Satoh, F. and Sasa, K. 2005 "Retention processes of anthropogenic nitrogen deposition in a forest watershed in northern Japan" In Zhu, Z., Minami, K. and Xing, G. (eds.) *Proceedings of the 3rd international nitrogen conference*. Science Press USA Inc., pp. 626-630.
- Shindo, J., Konohira, E., Yoshioka, T., Okamoto, K. and Kawashima, H. 2005 "Nationwide estimation of nitrogen load and nitrogen concentration in natural stream water" *Environmental Science* 18: 455-463 (in Japanese with English abstract).
- Yamashita, M. and Ichikawa, A. 2006 "Proposal of rainfall-runoff model for forested sub-basins applying to distributed model" *Annual Journal of Hydraulic Engineering, JSCE*, 50: 307-312 (in Japanese with English abstract).

### (3) Symposium and Lecture Meeting

- ① "Tourism and environmental management in China: Problem and provision" (March 22, 2006, at RIHN)  
Chair person: ZHENG Yuejun (RIHN)  
"Diversion to ecotourism and agro-industry for environmental preservation in China" Prof. Yu Yiwu (Zhejiang Forestry University, China)
- ② "Biogeochemistry in watershed environments: simulation models based on material cycling and hydrologic processes" (September 21, 2005, in the 70th meeting of the Japanese Society of Limnology held at Osaka Kyoiku University)  
Convener: YOSHIOKA Takahito (RIHN) and YOH Muneoki (Tokyo University of Agriculture and Technology)  
Chair person: TATENO Ryunosuke (RIHN)  
"Prospects of simulation models in watershed studies" YOSHIOKA Takahito (RIHN)  
"Biogeochemical model in forest ecosystem; Application and problem of PnET model" SHIBATA Hideaki (Hokkaido University)  
"The influence of forest disturbance and examination of applying the PnET model for the long term influences" TOKUCHI Naoko (Kyoto University)  
"Necessity for consideration on hydrological controls of biogeochemical cycling to develop a catchment scale ecosystem model" OHTE Nobuhito (Kyoto University)  
"Comment: Nationwide survey of the stream hydrochemistry" KONOHIRA Eiichi (Nagoya University)  
"Quantitative approach and problems of river hydrological simulation models" YAMASHITA Mitsuo (Fukuoka University)  
"Biogeochemical model coupled with hydrodynamic model in lake environment" NAKATA Kisaburo (Tokai University)  
"Comment: Lacustrine material cyclings" HINO Shuji (Yamagata University)  
"Comment: Evaluation of environmental qualities" TANAKA Hiroaki (Kyoto University)

**Pre-Research****Research axis:** Conceptual Framework for Global Environmental Issues**Project number:** 5-3PR**Project name:** A new cultural and historical exploration into human-nature relationships in the Japanese Archipelago**Project leader:** YUMOTO, Takakazu (RIHN)**Core members:** see No. 3**1. Research Objectives and Contents:**

The Japanese Archipelago has been extremely densely populated since the Neolithic Age, and most of the natural environment has been strongly influenced by human activities. The life patterns of humans have, in turn, been shaped by their use of biological resources, by their fauna and flora. Moreover, although the Japanese biota is derived from life forms which migrated from the continental mainland during periods when sea levels were lower, it has been further augmented by human beings, who have introduced additional species at various times. However, in spite of the intensive intervention by humans in the natural environment, there is still a rich biota in the Japanese Archipelago, which includes, for example, an abundance of indigenous species of angiosperm and freshwater fish. Because of this, it has been widely assumed that human-nature relations in pre-modern Japan were governed by some kind of traditional wisdom that prevented people from exhausting biological resources; or even that it was the moderate human activity itself that preserved the abundant biota and sustainability of biological resources in Japan.

However, the question of exactly how stable the coexistence between the nature and humans was in the past has not been resolved. Could it be that even in the Japanese Archipelago there has been a history of exhausting biological resources? If the wisdom and will to use biological resources in a sustainable way existed, how common were they? Moreover, could there have been any major social changes that occurred as a result of exhausting certain biological resources?

Although each of these questions has been tackled within the limits of one historical period, region, or one academic discipline, they have not been researched using a trans-disciplinary approach, over an area that would represent the whole Japanese Archipelago, or over a time span that encompasses the whole period from the earliest human habitation of Japan to modern times. The objective of the present project is to reconstruct as historical processes. It will examine, first, how the natural environment has been changed since the late Paleolithic Age, when human beings are first known to have existed in the Japanese Archipelago; second, how the biota has changed during that process; and third, what kind of perceptions, knowledge and skills the humans possessed, concerning both nature in general, and specific life forms. Our aim is to present a foundation for contemplating how human-nature relations should be developed, and to suggest concrete measures for preventing mass extinction of species in the near future.

**2. Relation to Research Axis:**

The Japanese Archipelago extends over 3000 km from North to South, and includes subarctic, cool temperate, warm temperate and subtropical climatic zones. It is evident that, even during the global environmental changes that have taken place over the past 100,000 years, these various climatic zones were present. As a result, the characteristics of the natural environment and the human subsistence activities within the Japanese Archipelago varied greatly, as did the relationships between nature and human activity. Under the influence of climatic change and human activities, the distributions of individual species of plants and animals in the Japanese Archipelago and its surrounding landmasses have been constantly changing. Populations have repeatedly divided, expanded and diminished in response to changes in the availability of suitable habitat. Where suitable habitat was not available, the species became extinct.

The knowledge and skills that humans have developed concerning individual species can be considered to

contain both the idea that biological resources should be used sustainably, and the desire to harvest without fear of exhausting the resources. Although ethnological research has highlighted phenomena such as public management of lands and resources, and environmental preservation through limited harvest, it is still unclear when, in which region and among whom the philosophy of preservation was put into practice, or under which social conditions it became an influential way of thinking. Throughout the period of human habitation, the Japanese Archipelago has been blessed with a warm climate and abundant rainfall, and consequently abundant biological resources. But what is the history of overuse and exhaustion of those resources? And how did individual species fare in this historical process? These are the central issues of the present project.

The three main problems to be investigated here are as follows.

- 1) How did new subsistence/economic systems (human-nature relationships concerning food, shelter, clothing, tools, fuel, fodder, fertilisers, medicine, rituals) emerge and spread?
- 2) How were these subsistence/economic systems maintained, and how and why did they end? What kind of social system (social structure, economic foundation, system of spatial organisation, technical system, perception of nature) supported the subsistence/economic system, and, after it ends, how does the social system change?
- 3) What becomes of the biological resources that were connected to the system after it ends? Do they become entirely extinct or remain as relics?

Answering the above questions can contribute to the conceptual framework for global environmental issues.

### 3. Project Members:

Name	Affiliation	Position	Role
◎ YUMOTO, Takakazu	Research Institute for Humanity and Nature	Professor	Project Leader
<b>1) Analysis of ancient vegetation and changes in the distribution of plants and animals</b>			
○ MURAKAMI, Noriaki	Graduate School of Science, Kyoto University	Associate Professor	Analysis of the distribution and genetic constitution of living plants (sub-leader of plant geography WG)
○ SHIMIZU, Isamu	Center for Ecological Research, Kyoto University	Professor	Analysis of the distribution and genetic constitution of living animals
○ TAKAHARA, Hikaru	Faculty of Agriculture, Kyoto Prefectural University	Professor	Reconstruction of historical environmental from plant remains (sub-leader of paleo-ecosystem WG)
○ YAMAGUCHI, Hirofumi	Graduate School of Agriculture and Biological Sciences, Osaka Prefecture University	Professor	Analysis of the distribution and genetic constitute of domesticated plants
FUJII, Noriyuki	Faculty of Urban Liberal Arts, Tokyo Metropolitan University	Assistant Professor	Analysis of the distribution and genetic constitution of living plants
HASE, Yoshitaka	Faculty of Science, Kumamoto University	Professor	Reconstruction of historical environments from plant remains
IGARASHI, Yaeko	Laboratory for the Study on North Paleo-environment	Director	Reconstruction of historical environments from plant remains
MINAKI, Mutsuhiko	Faculty of Commercial Sciences, University of Marketing and Distribution Sciences	Professor	Reconstruction of historical environments from plant remains

MOMOHARA, Arata	Faculty of Horticulture, Chiba University	Associate Professor	Reconstruction of historical environmental from plant remains
MORITA, Yoshimune	Research Botanical Garden, Okayama University of Science	Associate Professor	Reconstruction of historical environments from plant remains
NAKAYAMA, Yuichiro	Graduate School of Life and Environmental Sciences, Osaka Prefecture University	Assistant Professor	Analysis of the distribution and genetic constitute of domesticated plants
KANAUCHI, Atsuko	School of Arts and Letters, Meiji University	Part-time Lecturer	Reconstruction of historical environments from plant remains
KITO, Norio	Faculty of Education, Hokkaido University of Education	Associate Professor	Reconstruction of historical environments from plant remains
SETOGUCHI, Hiroaki	Graduate School of Human and Environmental Studies, Kyoto University	Associate Professor	Analysis of the distribution and genetic constitution of living plants
SUKA, Takeshi	Nagano Environmental Conservation Research Institute	Researcher	Analysis of the distribution and relations between animals and humans
TOMARU, Nobuhiro	Graduate School of Bioagricultural Sciences, Nagoya University	Associate Professor	Molecular plant geological studies on the Fagaceae plants
TACHIDA, Hidenori	Graduate School of Science, Kyushu University	Professor	Analyses on population genetics of plants
TANAKA, Hiroyuki	Primate Research Institute, Kyoto University	Assistant Professor	Analysis of the distribution and genetic constitution of living animals
TAMURA, Minoru	Graduate School of Science, Osaka City University	Associate Professor	Analysis of the distribution and genetic constitution of living plants
TSUMURA, Yoshihiko	Forestry and Forest Products Research Institute	Head of Genome Analysis Laboratory	Molecular plant geological studies on conifers
USHIMARU, Atsushi	Faculty of Human Development, Kobe University	Associate Professor	Analysis of the distribution and relations between plants and humans
YAMANE, Kyoko	Graduate School of Life and Environmental Sciences, Osaka Prefecture University	Assistant Professor	Analysis of the distribution and genetic constitute of domesticated plants

## 2) Reconstruction of human ecology based on population estimates and the diets

○KATAYAMA, Kazumichi	Graduate School of Science, Kyoto University	Professor	Analysis of human diets based on old human bones (sub-leader of old human bones)
○NAKAI, Seiichi	Faculty of Humanities, University of Toyama	Associate Professor	Historico-linguistic analysis of the human-nature relationships

○ NAKANO, Takanori	Research Institute for Humanity and Nature	Professor	Stable isotope analysis of human-nature relations in the past and the present
○ TAYASU, Ichiro	Center for Ecological Research, Kyoto University	Associate Professor	Stable isotope analysis on human-nature relations in the past and the present
KITO, Hiroshi	Faculty of Economics, Sophia University	Professor	Studies on historical population dynamics
YONEDA, Minoru	National Institute for Environmental Studies	Chief Researcher	Stable isotope analysis on human-nature relations in the past and the present

### 3) Reconstruction of human-nature relations in the past, and the analysis of the social systems behind them HOKKAIDO

○ TAJIMA, Yoshiya	Faculty of Economics, Kanagawa University	Professor	Historical studies on human-nature relationships (sub-leader of Hokkaido WG)
FUMOTO, Shinichi	Faculty of Education and Human Sciences, Niigata University	Associate Professor	Historical studies on human-nature relationship
KOJIMA, Kyoko	Showa Women's University	Part-time Lecturer	Historical studies on human-nature relationships, Ainu cases.
KOSUGI, Yasushi	Graduate School of Letters, Hokkaido University	Associate Professor	Archeological studies on human-nature relationship
MIURA, Yasuyuki	Historical Museum of Hokkaido	Curator	Historical studies on human-nature relationship
NAKANO, Yasushi	Graduate School of Humanities and Social Sciences, University of Tsukuba	Lecture	Ethnological studies on human-nature relationship
USHIRO, Hiroshi	Historical Museum of Hokkaido	Section Manager	Historical studies on human-nature relationship

### TOHOKU

○ IKEYA, Kazunobu	National Museum of Ethnology	Associate Professor	Ethnological study and research on the human-nature relations (sub-leader of Tohoku WG)
IZAWA, Kosei	Faculty of Science and Engineering, Teikyo University of Science and Technology	Professor	Analyses on human-nature relationships and the distribution of mammals
KIKUCHI, Isao	Department of Cultural Studies, Miyagi Gakuin Women's University	Professor	Historical analysis of the human-nature relationships
MAKITA, Akifumi	Faculty of Bioresource Sciences, Akita Prefectural University	Associate Professor	Analysis of the distribution and relations between plants and humans

MITO, Yukihisa	Faculty of Education, Aichi University of Education	Part-time Lecturer	Cultural studies on human-nature relationships
OKA, Keisuke	Faculty of Policy Management, Tohoku Bunka Gakuen University	Professor	Ethnological studies on human-nature relationships
CHUBU			
○SHIROUZU, Satoshi	Faculty of Law, Chuo-Gakuin University	Associate Professor	Historical studies on human-nature relationships (sub-leader of Chubu WG)
ARAGAKI, Tsuneaki	Tokyo National College of Technology	Part-time Lecture	Historical studies on human-nature relationships
HASEGAWA, Hirohiko	School of Arts and Letters, Meiji University	Part-time Lecture	Geographical studies on human-nature relationships
MORIMOTO, Sanae	Faculty of Economics, Okayama Shoka University	Lecture	Environmental economics of the commons
NAKAZAWA, Katsuaki	Nagano National College of Technology	Associate Professor	Historical studies on human-nature relationships
SEKIDO, Akiko	Faculty of Education, Gunma University	Associate Professor	Anthropo-geographical studies on human-nature relationships
TAGUCHI, Hiromi	Faculty of Art, Tohoku University of Art and Design	Professor	Ethnological analysis of the human-nature relationships
YOSHIMURA, Satoko	National Museum of Japanese History	Assistant Professor	Ethnological analysis of the human-nature relationships
KINKI			
○OSUMI, Katsuhiko	Forestry and Forest Products Research Institute	Senior Management Officer	Analyses on human-nature relationships (sub-leader of Kinki WG)
FUKAMACHI, Kazue	Faculty of Human and Environmental Studies, Kyoto Prefectural University	Associate Professor	Ecological analyses on human-nature relationships
ITO, Hiroki	Forestry and Forest Products Research Institute	Chief Researcher	Analyses on human-nature relationships and the distribution of plants
OGURA, Junichi	Faculty of Humanities, Kyoto Seika University	Professor	Reconstruction of historical environments from plant remains
OKU, Hirokazu	Forestry and Forest Products Research Institute	Chief Researcher	Analyses on human-nature relationships
SAKUMA, Daisuke	Osaka Museum of Natural History	Chief Curator	Historical analysis of the human-nature relationships
KYUSHU			
○IINUMA Kenji	Faculty of Humanities, Beppu University	Professor	Study on environmental history (sub-leader of Kyushu WG)
DANJO, Tatsuo	Faculty of Humanities, Beppu University	Professor	Ethnological analysis of the human-nature relationships

GOTO, Munetoshi	Faculty of Humanities, Beppu University	Professor	Archeological analysis of the human-nature relationships
HARUTA, Naoki	Faculty of Education, Kumamoto University	Associate Professor	Studies on the historical documents of human-nature relations
HATTORI, Hideo	Graduate School of Social and Cultural Studies, Kyushu University	Professor	Historical studies on human-nature relationships
NAGAMATSU, Atsushi	Miyazaki Municipal University	Associate Professor	Ethnological analysis of the human-nature relationships
NAKAYAMA, Akinori	Faculty of Humanities, Beppu University	Associate Professor	Geographical analysis of the human-nature relationships
SHIMOMURA, Satoshi	Faculty of Humanities, Beppu University	Professor	Archeological analysis of the human-nature relationships
TACHIBANA, Masanobu	Faculty of Humanities, Beppu University	Professor	Archeological analysis of the human-nature relationships
RYUKYU			
○ ANKEI, Yuji	Faculty of International Studies, Yamaguchi Prefectural University	Professor	Ethnological study and research on the human-nature relations (sub-leader of Ryukyu WG)
ANKEI, Takako	Faculty of Medicine, Yamaguchi University	Part-time Lecturer	Ethnological analysis of the human-nature relationships
KATO, Makoto	Graduate School of Human and Environmental Studies, Kyoto University	Professor	Analysis of the distribution and relations between animals and humans
KINOSHITA, Naoko	Faculty of Letters, Kumamoto University	Professor	Archeological analysis of the human-nature relationships
MORIGUCHI, Mitsuru	Okinawa International University	Part-time Lecturer	Analysis of the distribution and relations between animals and humans
TOGUCHI, Ken	Faculty of Law and Letters, University of the Ryukyus	Part-time Lecturer	Geographical analyses on human-nature relationships
TOYAMA, Masanao	Okinawa Culture Promotion Foundation	Chief Curator	Ecological analyses on human-nature relationships
<b>4) Theoretical modeling of human-nature relations</b>			
○ ABE, Hiroshi	Graduate School of Human and Environmental Studies, Kyoto University	Associate Professor	Philosophical study on human-nature relations
○ IMAMURA, Akio	Research Institute for Humanity and Nature	Research Fellow	Ecological studies on human-nature relations
○ MATSUDA, Hiroyuki	Graduate School of Environment and Information Sciences, Yokohama National University	Professor	Theoretical study on the extinction of species
○ YAHARA, Tetsukazu	Graduate School of Sciences, Kyushu University	Professor	Empirical study on conservation of species

(◎ : Project leader, ○ : Core member)

## Progresses in Pre-Research

### Organizing working groups and targeting core sites in six districts

We have re-organized six district-based working groups targeting core sites (shown in parentheses), Hokkaido (Central and Eastern Hokkaido), Tohoku (Kitakami), Chubu (Akiyama-Tsumari), Kinki (Kyoto-Tanba), Kyushu (Kuju-Aso), Ryukyu (Okinawa Island and Amami-oshima Island), each of which possesses characteristic climate, vegetation, flora and fauna, and traditional life style of people, and includes ca. 100 km X 100 km area of agricultural and forestry villages, and mountains. Also, we organized three method-based working groups targeting paleo-ecosystem, plant-geography, and old human bones. We do not organize the working group on animal-geography because several research projects are undergoing by 21 Century COE program in Kyoto University, Ryukyu University and Hokkaido University; nor human population estimates which were already done by a project of International Research Center for Japanese Studies. Each working group held several meetings to review the pre-existing information and to discuss the approaches, expected results and time-table of the project.

### Publication and symposia

- 1) "Threats to World Heritages by Sika Deer" (edited by T. Yumoto and H. Matsuda) Bun-ichi Sogo Shuppan, published in May 2006 (in Japanese).
- 2) "Bridging Time and Seas: Historical Landscape Change on Seashore of Northern Inland Sea" Pre-symposium of RIHN, held in October 2005, Kyoto (in English).
- 3) "Environmental History in Kinki District from Jomon to Yayoi Period: From Undated Information of Archeology and Historical Botany" Plenary Symposium in Annual Meeting of Japanese Association of Historical Botany, held in December 2005, Kyoto (in Japanese).

**Feasibility study****Research axis:** Conceptual Framework for Global Environmental Issues**Project number:** 5-4FS**Project name:** Effects of environmental change on interactions between pathogens and humans**Project leader:** KAWABATA, Zen'ichiro (RIHN)**Core members:** see the text**HP:** <http://www.chikyu.ac.jp/z/>**Research Objectives and Contents****1. Research Objectives**

Recent worldwide outbreaks of infectious diseases in wild animals, livestock and humans, pose an enormous threat to human life and are an extremely serious environmental issue. Predicting and averting the danger of an epidemic makes it vital to study not only disease mechanisms but also the background human and environmental aspects for the emergence of pathogenic organisms. Our goal is to assess the circle of interactions between human-caused environmental change, the resulting harmful biological agents, and the ripple effect of epidemics transmitted by the agents on human activity. Through this research, we seek to comprehend the source of these diseases and develop strategies for human coexistence with pathogens to create a safer, more secure and environment-friendly society.

**2. Research Content****1) Focus of the research to achieve the objectives**

Microorganism-induced infectious diseases remain invisible until infections become apparent. Epidemic outbreaks are difficult to predict because by their nature they appear unexpectedly and disseminate quickly.

In fulfilling our objectives, therefore, we want to devise ways of foreseeing epidemics by visualizing the environmental conditions that trigger the emergence of infections. We will also find out what aspects of human and environmental activity might help prevent a widespread outbreak.

We assume that a pandemic occurs when pathogenic microbes emerge, inducing stress responses in host cells and establishing contact with them. Based on this assumption, our research focuses on environmental factors that play a part in these processes as well as on the impact of human activity on the ecosystem. We will approach real-life environmental issues to explore some potential epidemic models developed from the cyclical interactions among human-induced environmental change, harmful biological agents, infectious diseases and human activity. In addition, in order to design the concept model, we will analyze intensively this interaction cycle in specific domestic research sites and apply the results to other domestic and overseas areas.

**2) Specific field of the research and intensive research sites**

This research specializes in the environmental effects of human activity in terms of eutrophication, freshwater habitat degradation and biodiversity loss. The harmful biological agent is Koi Herpes Virus (KHV). The host is the carp and the disease is epidemics. We will study the ripple effect of the disease on economy and culture aspects of human activity. We will also evaluate how the disappearance of carp will affect their ecosystems. To carry out an effective assessment of these ecological processes, we will launch a comprehensive research program involving separate projects, for example, developing a method of measuring water quality with micro-biochips that make easy and quick measurements of eutrophication; applying stable isotopes for analyzing food web, focusing on carp as a indicator of decline in aquatic ecosystems; monitoring mutations in the koi herpes virus and its impact on the dynamics of ecological patterns; measuring stress levels in carp; developing a mathematical model of an explosive outbreak of infectious disease, and finally utilizing carp for pioneering a new field of research. We will begin an intensive study at Lake Biwa, hoping to apply the findings of the ecological cycle to Lake Kasumigaura and other

virus-affected freshwater areas in Japan as well as in China, Sri Lanka, Indonesia and the United States. We will perform this study in partnership with researchers and research institutions from other countries.

### Related Contents in Research Program

Although this research project deals with the impact of human activity, we will also pursue this study to achieve another goal. Assuming that human-triggered environmental change causes widespread outbreaks of epidemics, we aim to suggest how we can establish peaceful coexistence between diseases and humans; the topic actually related to our concept studies in this research.

### Project Members (Affiliation, Position, Role)

- ASANO, Kota (Graduate School of Human and Environmental Studies, Kyoto University, Associate Professor, Model for economical effects)
- ITAYAMA, Tomoaki (National Institute for Environmental Studies, Researcher, Nano-technological measurements)
- UCHII, Kimiko (Center for Ecological Research, Kyoto University, Graduate student, Intestinal microbes ecology)
- UEKI, Masaya (Center for Ecological Research, Kyoto University, Graduate student, Antibody analysis)
- ENDO, Ginro (Faculty of Engineering, Tohoku Gakuin University, Professor, Genetical engineering)
- OHMORI, Koji (Center for Marine Environmental Studies, Ehime University, Associate Professor, Environmental alteration)
- OKUDA, Noboru (Center for Ecological Research, Kyoto University, Associate Professor, Food web analysis)
- KAKEHASHI, Masayuki (Graduate School of Health Science, Hiroshima University, Professor, Model for epidemics)
- ◎KAWABATA, Zen'ichiro (Research Institute for Humanity and Nature, Professor, Project Leader)
- KOHMATSU, Yukihiko (Research Institute for Humanity and Nature, Assistant Professor, Fish habitats)
- TAYASU, Ichiro (Center for Ecological Research, Kyoto University, Associate Professor, Stable isotopic analysis)
- NAKANO, Takanori (Research Institute for Humanity and Nature, Associate Professor, Stable isotopic analysis)
- NAKANO, Shin-ichi (Faculty of Agriculture, Ehime University, Associate Professor, Microbial ecology)
- SEKINO, Tatsuki (Research Institute for Humanity and Nature, Assistant Professor, GIS analysis)
- NASU, Masao (Graduate School of Pharmaceutical Sciences, Osaka University, Professor, Genome analysis of pathogens)
- Ho-Dong Park (Faculty of Science, Shinshu University, Professor, Water pollution)
- HONJO, Mie (Center for Ecological Research, Kyoto University, Graduate student, Viral ecology)
- MATSUI, Kazuaki (Faculty of Engineering, Tohoku Gakuin University, pD of JSPS, Viral ecology)
- MATSUOKA, Masatomi (Asahi Fishery Cooperative, Shiga Prefecture, Secretary, Creation of food culture)
- MOMOKI, Akiko (Research Institute for Humanity and Nature, Associate Professor, Effects of epidemics on culture)
- MIKI, Takeshi (Center for Ecological Research, Kyoto University, Graduate student, Mathematical models of epidemics)
- YASUNAGA, Teruo (Genome Information Research Center, Research Institute for Microbial Diseases, Osaka University, Informatics)
- YAMAUCHI, Astsushi (Center for Ecological Research, Kyoto University, Associate Professor, Mathematical models for epidemics)
- YAMANAKA, Hiroki (Center for Ecological Research, Kyoto University, Graduate student, Fish habitats)
- YONEKURA, Ryuji (Gifu Prefectural Research Institute for Freshwater Fish and Aquatic Environments, Researcher, Stress on fish)
- Hainan Kong (School of Environmental Science and Engineering, Shanghai Jiao Tong Univ. China, Professor,

#### Lake management)

○ Robert Naiman (Univ. Washington, Fishery Science. USA, Professor, Fish ecology)

○ Doris Soto (Fishery Department, FAO, UN, Rome, Italy, Senior Fishery Resources Officer, Resource analysis)

(◎ : Project leader, ○ : Core member)

#### Progress Report (From Oct. 1, 2005 to Mar. 31, 2006)

- 1) We realized that this research on the links between human and environmental factors and human culture required a comprehensive study and that the research had a high feasibility as well as a high possibility of being globally accepted.
- 2) We reviewed literature ranging from general introductory books to specialized works and research papers. Furthermore, we interviewed researchers related to this study and discussed the present research status and future study subjects. We subsequently realized the importance of exploring the relationship between environmental factors for epidemics and the human activity that generates such factors, in a bid to comprehend the issues of infectious diseases. We further found that little research had been conducted in this field.
- 3) We assessed the feasibility of the research. We also examined the availability of researchers, research sites, equipment, data from related fields and the results of a similar project by the Research Institute for Humanity and Nature (RIHN). We concluded that we had laid a substantial foundation for carrying out this project.
- 4) We formed five research teams responsible for analyzing human-caused environmental change, examining KHV and carp's ecosystem, tracing the route of the infection, studying the effect on economic and cultural domains and providing the feedback and predictions.
- 5) We found, however, that we lack proficient researchers in charge of studying the links between infectious diseases and human culture. To tackle this problem, we decided to utilize RIHN's achievements and strengthen our research capability by collaborating with researchers at RHIN.
- 6) We established an advisory team consisting of globally accomplished researchers in their fields. We will receive timely advice and information on pathogenic activities in freshwater ecosystems from the members (twelve specialists from nine different countries) of the freshwater BIODIVERSITY committee for DIVERSITAS (an international program of biodiversity science). We are also planning to recruit as our advisor a pathologist specializing in virus infections.
- 7) We worked on a method of examining the relationships between environmental change and stress from the viewpoint of epidemic outbreaks connected with stress in host cells.
- 8) We chose Lake Taihu in Shanghai, China, as a research site to test the validity of our infectious models. We held a meeting on the research project with joint research partners in China.

#### Current Research Achievements

##### 1. Outlines of the achievements

- 1) It became clear that understanding human and environmental factors was inevitable in elucidating how humans and outbreaks of infectious diseases were interconnected. We were able to unearth this untouched topic.
- 2) We learned that the research on the interactions of humans and the koi herpes virus disease would help resolve actual environmental issues and also could become the model research project on epidemics.
- 3) The amount of cultivated carp multiplied by 13 times to approximately 3,250,000 tons in 2003 from 1980. In Japan the amount of carp in 2003 was 5,000 tons, based on data by the Food and Agriculture Organization (FAO) of the United Nations and the Ministry of Agriculture, Forestry and Fisheries of Japan. Since carp provide a high source of protein, these figures showed that they were valuable for human beings.
- 4) We organized five research teams and one advisory team.
- 5) We held three study sessions where we narrowed down the subject for research reviews and projects related to

each research team.

- 6) We found that coastal regions had a heterogeneous structure, viewed from water temperature distribution.
- 7) We prepared the measurement of stressors and provided cultivation experiment facilities with all necessary equipment.
- 8) We selected an appropriate place for infection models and held a meeting with field research partners

## 2. Publication

- 1) Rao, A. S. S. and Kakehashi, M. 2005 "Incubation-time distribution in back-calculation applied to HIV/AIDS data in India" *Mathematical Biosciences and Engineering* 2(2): 263-277.

## 3. Symposia

- 1) Kawabata, Z. (2005) Diversity of viral-like agents to attenuate *Microcystis* bloom. GWSP-Asia Meeting, Kyoto, Japan, Aug. 30. Proceeding p50-51.
- 2) Kawabata, Z., Matsui, K., Ishii, N. and Ueki, M. (2005) Experimental analysis of horizontal gene transfer in microbial community. The 21st Japanese Society of Microbial Ecology Symposium, Microbial Evolution and Ecology, Fukuoka, Japan, Nov. 11. Proceeding p298.
- 3) Kawabata, Z. and Fuhrman, J. (2005) Does microbial diversity drive the world? DIVERSITAS Open Science Conference, Oaxaca, Mexico, Nov. 11. Abstract: CD.

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**Research Institute for Humanity and Nature**


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**Incubation Studies****Incubation study** 

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**Project name:** Better understanding the interaction between carbon circulation and human activities in Asia**Leader:** HONDA, Yoshiaki (Associate Professor, Center for Environmental Remote Sensing, Chiba University)

This research evaluates the relationship between the quality and quantity of human activities (gradation of economy and modes of life between the coastal area and the western part of the Chinese continent, in particular) on one hand, and vegetative biomass, observation information of carbon dioxide concentration, and atmospheric observation values by ground measurements in Asia on the other, in order to assess how human activities influence use of land, vegetative biomass and, by extension, the carbon cycle.

**Incubation study** 

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**Project name:** Interactions between humans and harmful biological agents in degraded freshwater ecosystems**Leader:** KAWABATA, Zen'ichiro

In recent years, infectious diseases have broken out and spread rapidly among humans worldwide, as well as in livestock and wild animals, posing an enormous threat to human life and economic activity. To foresee and prevent these outbreaks, it is essential not only to examine pathogenic organisms and disease mechanisms but also to understand the environmental factors that create harmful biological agents. In this research, we have undertaken reference studies to demonstrate the interactions among human alteration of the environment, environmental conditions facilitating the release and dissemination of harmful biological agents, and the ripple effect of infectious diseases on human activity.

**Incubation study** 

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**Project name:** Infectious diseases as a global environmental problem – a human ecological approach to insect-borne diseases in tropical Asia**Leader:** MOJI, Kazuhiko (Professor, Institute of Tropical Medicine, Nagasaki University)

Of the many infectious diseases – one form of interaction between mankind and nature – this research focuses on insect-borne diseases, whose occurrence and spread are determined by combinations of elements (biology, environmental changes, human activities, social factors, etc.), in order to make a human ecological investigation into their current state in tropical Asia.

**Incubation study** 

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**Project name:** Environmental changes and people's lives on the Loess Plateau – a study of its environmental history**Leader:** MURAMATSU, Koichi (Assistant, Research Institute for Oriental Cultures, Gakushuin University)

Antique maps (from ancient documents on local history after the 15<sup>th</sup> century) depicting the Loess Plateau (mainly northern part of Shaanxi Province), satellite pictures, and detailed maps by the former Soviet Union are combined together and arranged chronologically to create a new map to investigate how desertification has progressed and forests have changed. From this, characteristics of changes on the map and their causes are investigated.

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**Incubation study**

**Project name:** Hypoxic environment at high altitude -human aging and diseases in association with ecology, culture and nature-

**Leader:** OKUMIYA, Kiyohito (Associate Professor)

People living at high altitudes have created not only unique cultures and values but advanced religious culture as well, as they maintain a symbiotic relationship with their harsh ecological environment. This research investigates how changes in environment, economy, and lifestyle in the 21<sup>st</sup> century can transform people's views toward disease, life, and death – the ultimate views on the “four sufferings” – and how this relates to traditional medicine and religion. Amid the major waves of globalism in the real world, this is an attempt to review the changes in high altitude environments in an interdisciplinary context, by going back to the drawing board in order to take into account the spiritual life of people living in these areas.

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**Incubation study**

**Project name:** On-farm conservation: environmental compatibility of a traditional farming system and lifestyle

**Leader:** SATO, Tadashi (Associate Professor, Graduate School of Life Sciences, Tohoku University)

An attempt to compare agriculture and lifestyle before and after the Green Revolution in various areas: 1) agricultural production, 2) biodiversity in the ecosystem, and 3) economy, with a view towards redefining the “light and shadow” of the Green Revolution as a global environmental issue. The question of how agriculture and lifestyle should be carried out to guarantee sustainable production while ensuring a certain level of productivity is also examined.

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**Incubation study**

**Project name:** Historical interaction between nomadic states' activities and environmental transformation in the high-latitude Asian steppe region

**Leader:** SHIRAISHI, Noriyuki (Associate Professor, Faculty of Humanities and Faculty of Human Education and Sciences, Niigata University)

Nomadic dynasties that have come and gone on the Mongolian Plateau played a major role in world history, and they experienced a rapid rise and fall during a very short period of time. One analysis that has attracted much attention is the major involvement of climate changes (Environmental Determinism). One may, however, point out that environmental destruction due to human activities is also to blame. This research aims at “elucidating the historical mechanism of the rise and fall of nomadic dynasties in terms of the interaction between human activities and environmental changes.”

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**Incubation study**

**Project name:** A design of the self-reliant and sustainable local communities: a case study on Ise Bay basin area

**Leader:** TAKANO, Masao (Associate Professor, Graduate School of Environmental Studies, Nagoya University)

Soon, Japan will be the first country in the history of mankind to see the end of its growing society that has lasted for over 100 years. In an attempt to dismantle conventional systems, “structural reform” is underway in present-day Japan, but no one has proposed a clear vision as to what should be built thereafter. On the assumption that building a self-supporting, sustainable community is the course of action we should take, this research aims at designing a sustainable community in the Ise Bay basin zone which, it is hoped, will be one example of a concrete vision.

**Incubation study**

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**Project name:** Change and stability in environment: why do people have a fear of environmental change?**Leader:** TAKEUCHI, Nozomu (Assistant Professor)

For mankind to cope with the natural environment, it is necessary to create a system which assumes that the environment changes, instead of futilely seeking an absolutely stable system. This project sheds new light on social systems and ideas that mankind has produced in light of their adaptability to environmental changes, thus proposing an attitude which human society should adopt in coping with natural environment.

**Incubation study**

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**Project name:** Reconstruction of the high resolution environmental history and high-precision chronology by the analysis of annually laminated sediments**Leader:** YASUDA, Yoshinori (Professor, International Research Center for Japanese Studies)

This research first makes an attempt to determine history and time bases with high accuracy by making various analyses of varves (series of layers of sediment deposited in a lake over many years). From this, environmental history and the history of civilization are restored and given a year-by-year analysis, in order to clarify kinetics in the theories of civilization and environment. Finally, by extrapolating the past signs to the present "future," a prediction is made as to the near future twenty to fifty years ahead, thereby contributing to the creation of a sustainable civilized society.

**Incubation study**

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**Project name:** Cooperative society development for cross-national environmental issues in East Asia**Leader:** ZHENG, Yuejun (Associate Professor)

A new framework for Harmonious Society for Environmental Issues (HOSEI) has become more and more necessary to resolve cross-national environmental issues in East Asia. This research is to clarify the relationship between human activities and emission of man-made substances, and to identify the essence of environmental fluctuation. As a set of basic elements for HOSEI, we have developed the concept of HOSEI, Possible Level for Environmental Cooperation (PLEC) and Social Perception of Environment

## Research Promotion Center

The Research Promotion Center, in accordance with the principles of the Institute, has been engaged in building the basis for finding a new research perspective beyond the scope of the existing disciplinary framework. The Institute organizes its activities in the framework of the National Institutes for the Humanities, whose Medium-term Action Program stipulates that "Research Institute for Humanity and Nature will make necessary arrangements to consolidate the Research Promotion Center for activities including information collection and processing, science communication, and relevant basic research, in relation to the global environment studies."

### Activities in the Fiscal Year 2005

From this year, the Research Institute has set up the Committee for the Operation of the Research Promotion Center. Accordingly, RPC (Research Promotion Center)'s research works are adjusted at the end of the fiscal year.

Activities of RPC are classified such as "planning science communication" to the public (for example, the RIHN Public Seminar), "providing information and its processing tools" (databases, observation technologies, etc.) for promoting the "global environment studies" and RPC Research.

We start RPC's Research Project "How to archive and reuse the results of interdisciplinary studies? –Toward continuous study for environmental issues".

### Planning science communication:

#### RIHN Forum

RIHN Forum is organized, based on the principles and outcomes of RIHN's research activities, and understanding that "the so-called environmental problems are fundamentally problems of human culture," with the aim to raise questions and animate discussion about up-to-date topics around these problems, to help find answers to the fundamental questions to the global environmental problems.

#### The 4th RIHN Forum

Title: Extinguished water

Date: 9 July, 2005

Venue: Kyoto International Conference Hall

#### RIHN Public Seminars

This seminar aims to provide the opportunity to share opinions with citizens in Kyoto as to various topics concerning the environmental problems related to human lifestyles.

#### The 5th Public Seminar

Date: 1 April, 2005

Speaker: HAYASAKA, Tadahiro (Professor, RIHN)

Title: Global warming, is it real?

#### The 6th Public Seminar

Date: 3 June, 2005

Speaker: WATANABE, Tsugihiko (Professor, RIHN)

Title: Impacts of climate change on life and environment

**The 7th Public Seminar**

Date: 3 September, 2005

Speaker: FUKUSHIMA, Yoshihiro (Professor, RIHN)

Title: Kamo river and Hwang Ho. -The blessing and misfortune

**The 8th Public Seminar**

Date: 7 October, 2005

Speaker: AKIMICHI, Tomoya (Professor, RIHN)

Title: Fish and Food Culture in Southeast Asia

**The 9th Public Seminar**

Date: 2 December, 2005

Speaker: NAKASHIZUKA, Tohru (Professor, RIHN)

Title: Species rich forests are necessary for sustainable human life

**The 10th Public Seminar**

Date: 3 February, 2006

Speaker: YOSHIOKA, Takahito (Associate Professor, RIHN)

Title: Narrative Theory of Environment - Environmental Quality and Environmental Consciousness

**The 11th Public Seminar**

Date: 3 March, 2006

Speaker: SHIRAIWA, Takayuki (Associate Professor, RIHN)

Title: New environmental hypothesis entitled "Mega-scale Fish Feeding Forest" applied to Amur River, the Sea of Okhotsk and the World Nature Heritage SHIRETOKO

**Publications****RIHN Series**

The 2nd volume "Ecological Immigration" (in Japanese) Showado Publishing Co. (2005)

The 3rd volume "The Water and Green of Silk Road. Disappeared to where?" (in Japanese) Showado Publishing Co. (2006)

# Outreach Programs and Events

## 1. RIHN Forum

"What are the global environmental problems?" "What are the integrated global environment studies?" "What will be the outcomes of such studies?" "What will be the future of the global environmental problems?" "Will their solution be possible?"

RIHN Forum is organized, based on the principles and outcomes of RIHN's research activities, and especially on the understanding that "the so-called environmental problems are fundamentally problems of human culture", to raise questions and animate discussion about up-to-date topics around the problems, to help us find answers to the above fundamental questions.

### The 4th RIHN Forum

Theme: Extinguished Water

Date: 9 July, 2005

Venue: Kyoto International Conference Hall Room A

#### Program

##### Part-1 Lectures

Greeting by Toshitaka HIDAKA (Director-General, RIHN)

"Silk Road rich in Water and the Green" by Takashi INOUE (Visiting Professor, RIHN, Executive Producer, NHK)

"When water extinguishes" by Masayoshi NAKAWO (Professor, RIHN)

##### Part-2 Panel Discussion

Takashi INOUE, Masayoshi NAKAWO, Takanori NAKANO, and Junzo UCHIYAMA

Chairperson: Sinjiro KANAE (Associate Professor, RIHN)

Discussions

"Destination of minerals in water by desertification" by Takanori NAKANO (Professor, RIHN)

"When waters in mind is lost" by Junzo UCHIYAMA (Associate Professor, RIHN)

## 2. Publication

### RIHN Series

The 2nd volume "Ecological Immigration" (eds., by Yuki KONAGAYA, Sinjilt, and Masayoshi NAKAWO), Showado, July, 2005. (in Japanese)

The 3rd volume "Where did Silk Road rich in Water and Green Disappear?" Showado, 2006. (in Japanese)

### RIHN Library

This series is published for public, based on research outcomes by individual researchers in RIHN.

"Deer consume the World Heritage- Ecology of Deer and Forest" Bun-ichi Sogo Shuppan, 2006.

## 3. Seminars

### 3-1 RIHN Seminars

RIHN Seminars are organized to provide opportunities for RIHN's scientists to share the latest topics and research trends in different fields of global environment research with speakers invited from Japanese or foreign institutes, and to get inspired with new directions of research; these seminars also serve to create substantial collaborations in research between RIHN and such other institutes. Seminars are held several times a year, where well-studied and reflected subjects of different fields are chosen for discussion.

**April 2005-March 2006****The 20<sup>th</sup>** 2 June, 2005

Speaker: Akihiko, KONDOH (Center for Environmental Remote Sensing, Chiba University)

Title: 'Detection and Factor Analysis of Variations of the Earth Surface Environment by Satellite Data'

**The 21<sup>st</sup>** 14 September, 2005

Speaker: Shota, EMORI (Atmospheric environment division, National Institute for Environmental Studies)

Title: 'Climate Modeling Research at National Institute for Environmental Studies'

**The 22<sup>nd</sup>** 20 December, 2005

Speaker: Toru, MOROTOMI (Graduate school of economics, Kyoto University)

Title: 'Social Capital and Poverty Reduction in the Developing Countries: Possibilities of Microcredit and commons'

**The 23<sup>rd</sup>** 16 January, 2006

Speaker: Yasuo, DEGUCHI (Graduate school of letters, Kyoto University)

Title: 'Introduction to the Philosophy of Statistics'

**3-2 Luncheon Meeting (Danwakai)**

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At RIHN where institute members, as well as visiting professors, part-time researchers, foreign researchers and so on, converge to freely present their individual themes on global environmental study, these Luncheon meetings provide an unique opportunity for mutual inquiry and exchange of opinions. As meetings serve as an important venue for promoting creative thinking and constructive debates and will be held virtually on a biweekly basis.

**April 2005-March 2006****No.77** 5 April, 2005

Speaker: Tazu, SAEKI (Assistant Professor) and Hiroshi, ABE (Assistant Professor)

Title: 'Discussion on Danwakai for this and the Next Fiscal Years'

**No.78** 17 May, 2005

Speaker: Yoichi, FUJIWARA (Technician)

Title: 'Parameter Estimation of Rainfall-Runoff Models'

**No.79** 31 May, 2005

Speaker: Fumie, MURATA (Research Fellow)

Title: 'A Possibility of Tropical Weather Forecast'

**No.80** 21 June, 2005

Speaker: Shinsuke, SATAKE (Research Fellow (JSPS))

Title: 'East Asian Trans-Boundary Air Pollution (Chemical Weather Forecast)'

**No.81** 5 July, 2005

Speaker: Dr. Palanisami, KUPPANAN (Visiting Professor)

Title: 'Groundwater Decline and Management in Hard Rock Regions of Tamilnadu, South India'

**No.82** 6 September, 2005

Speaker: Michiko, NAKAGAWA (Research Fellow (JSPS))

Title: 'The Relationship Between Seeds and Seed Predators in a Tropical Forest in Southeast Asia'

**No.83** 20 September, 2005

Speaker: Satoshi, YAMASHITA (Research Fellow)

Title: 'Community Structure of Mushrooms and Mycophagous Insects in Forests'

- No.84 4 October, 2005  
Speaker: Ryunosuke, TATENO (Research Fellow)  
Title: 'Study for the Life History of Trees – My Research Interests'
- No.85 1 November, 2005  
Speaker: Tomotoshi, ISHITOBI (Technician)  
Title: 'Submarine Groundwater Discharge'
- No.86 15 November, 2005  
Speaker: Taichi, MATSUKAWA (Technician)  
Title: 'The Open Data Archive of Social Research Data'
- No.87 29 November, 2005  
Speaker: Yumiko, MURAKAMI (Technician)  
Title: 'Wooden Products Excavated from Archaeological Sites'
- No.88 31 January, 2005  
Speaker: FENG Fong-Long (Visiting Professor)  
Title: 'Application of Spatial Information in Forest Ecosystem Management - An Example of Taiwan'

### 3-3 Evening Seminars

Modeled on the format of the Study meetings, the evening seminars are intended to promote the free exchange of opinions and to stir up discussion. Although these seminars will of course be far more limited timewise than the aforementioned Luncheon meetings and RIHN Research Seminars, they are important as discussion-centered Study meetings. Ordinarily these Study meetings will be held on a monthly basis and beginning at five p.m. last approximately two hours. As research presenters nominate the next round of presenters, a special feature of these Evening Seminars is the presentation of early buds of information on creative research being done by researchers in diverse academic fields.

- No.20 20 April, 2005  
Speaker: Reichiro, ISHII (Research Fellow)  
Title: The "Global Environmental Issues" We tuck on at RIHN
- No.21 19 May, 2005  
Speaker: Yukihiro, KOHMATSU (Assistant Professor)  
Title: Public Expectation to RIHN
- No.22 13 June, 2005  
Speaker: Tohru, NAKASHIZUKA (Professor)  
Title: The problems in organization of RIHN
- No.23 20 July, 2005  
Speaker: Takahiro, YOSHIOKA (Associate Professor)  
Title: Can Human Beings Learn from Their Environments?
- No.24 11 October, 2005  
Speaker: Tadahiro, HAYASAKA (Professor)  
Title: Reconsideration of 'Research Projects'
- No.25 10 January, 2006  
Speaker: Yo-Ichiro, SATO (Professor), Chieko, UMETSU (Associate Professor), Masayo, MAENO and Minako, OHSHIMA  
Title: Report of IHDP Conference
- No.26 28 March, 2006

Speaker: Akiko, IMAMURA (Research Fellow)

Title: "My Neighbor TOTORO" Viewed from Ecology

#### 4. Presentation of Research Projects

The leaders of the research projects overview the on-going process in an interim report, in which Total of 450 joint researchers take part as discussants. This annual meeting plays an important role of providing the opportunity for sharing research outcomes and academic information through discussions and practically, for the academic evaluation of research activities of RIHN.

Venue: CO-OP In Kyoto

Date and Time: 14 December, 2005 (Wed.) - 16 December, 2005 (Fri.). From 09:00 to 18:00.

#### 5. Study Meetings "The Whole and the Individual in Nature and Culture (WINC)"

Study meetings "The Whole and the Individual in Nature and Culture (WINC)" aim to evoke innovative discussions and thoughts as to how we approach from studies of the individual-focused and the proximal to the integrative understanding of the reality of nature and culture interactions as a whole. Taking diverse theme and scientific bases of human knowledge and practices interacting with them. Study meetings will be held several times throughout the year and are to be coordinated by Tomoya, AKIMICHI (RIHN), Yuki, KONAGAYA (National Museum of Ethnology), and Yozaburo, SHIRAHATA (International Research Center for Japanese Studies)

##### 5-1 Study Meetings

###### The 6th Meeting

Date: 30 July, 2005

Theme: Carps and Its Families

Discussants:

Tsuneo, NAKAJIMA (Lake Biwa Museum)

Title: Effects of Human Subsistence Activities in the Pre-Historic and Historic Periods upon the Distribution of Cyprinid Fish

Tsuneari, NOJI (Aichi University of Education)

Title: How to produce Goldfish: On the 'Kango' Folk-Technology

Satoshi, YASUMURO (National Museum of Japanese History)

Title: Naming of Carp: On the Interpretation of 'Chu-ppa'

Chairperson: Junzo, UCHIYAMA (RIHN)

###### The 7th Meeting

Date: 7 March, 2006

Theme: Flowers

Title: Why Do Human Being appraise Flower?

Discussants: Toshitaka, HIDAKA, Tomoya, AKIMICHI, Hideyuki, OHNISHI, Yo-Ichiro, SATO (RIHN), Sachiko, TAKEDA (Osaka University of Foreign Studies), Chikako, WATANABE (Osaka Gakuin University), Shuzo, KOYAMA (Suita City Museum), and Erika, TAKASHINA (Kyoto University)

## **6. Symposia**

### **Pre-symposium Stage 1**

Theme: Ethnogenesis of South and Central Asia

Date: 6<sup>th</sup>, June, 2005 - 8<sup>th</sup>, June, 2005

Place: Palulu Plaza Kyoto

Sponsoring: Research Institute for Humanity and Nature

Co-Sponsoring: Department of Sanskrit and Indian Studies, Harvard University

### **Pre-Symposium Stage 2**

Date: 18<sup>th</sup>-20<sup>th</sup>, October, 2005

Place: Palulu Plaza Kyoto

To hold an international pre-symposium as the first involvement in the international declaration of global research activities. The objective is to appeal to participants, both from Japan and other countries, regarding the creative shared awareness of "grasping global environmental problems as human culture".

### **Joint Workshop**

#### **The third International workshop of Oasis Project**

Date: 18<sup>th</sup> and 19<sup>th</sup>, October, 2005.

Sponsorship: Research Institute for Humanity and Nature

### **International Symposium**

Theme: Sustainability and Biodiversity of Forest Ecosystems- Drivers, Mechanisms, and Effects of Forest Change

Date: 18<sup>th</sup>, October, 2005

Sponsorship: Research Institute for Humanity and Nature

### **Workshop of Agriculture in Arid Area Project (ICCAP)**

Date: 18<sup>th</sup> to 20<sup>th</sup>, October, 2005

Sponsorship: Research Institute for Humanity and Nature

### **International Symposium**

Theme: Human Impacts on Urban Subsurface Environments

Date: 19<sup>th</sup> and 20<sup>th</sup>, October, 2005

Sponsorship: RIHN Committee for the International Symposium

## Social Activities

### 1. Press Conference

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As a public information activity, RIHN has official press conferences several times per year to make open RIHN's academic activities such as research findings, symposia, publications and update environmental topics through this conferences. This activity has the important media to link RIHN with the society.

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No.4 May, 2005

No.5 February, 2006

## ***Individual Achievements***

## Individual Achievements

### 1. Director-General

#### **HIDAKA, Toshitaka**

Director-General

Born in 1930.

Professor emeritus of Kyoto University

Professor emeritus of the University of Shiga Prefecture

#### **Curriculum Vitae**

##### **Academic Career**

Completed the Research student at the same Department (1958)

Completed the Graduate School, Faculty of Science, University of Tokyo (1957)

Graduated from the Department of Zoology, Faculty of Science, University of Tokyo (1952)

##### **Professional Career**

Advisor of Shiga Prefecture (2001-)

Director-General of the National Research Institute for Humanity and Nature (2001-)

The first President of the University of Shiga Prefecture (1995-2001)

Advisor of the Preparation Committee, the University of Shiga Prefecture (1993-1995)

Dean of the Faculty of Science at Kyoto University (1989-1991)

Professor of Zoology at the Department of Zoology, Faculty of Science, Kyoto University (1975-1993)

Professor of Biology at the same Faculty, the same University (1965-1975)

Associate Professor of Biology and Agricultural Entomology at the same Faculty, the same University (1960-1965)

Lecturer of Biology and Agricultural Entomology at the Faculty of Agriculture, Tokyo University of Agriculture and Technology (1959)

##### **Higher Degree**

D. Sc. (The University of Tokyo, 1961)

##### **Fields of Specialization / Background**

Ethology

##### **Academic Society Memberships**

Japan Ethological Society, The Entomological Society of Japan, Society of Evolutionary Studies, Japan, Ecological Society of Japan, Japanese Society of Applied Entomology and Zoology, The Society of Population Ecology, Animal Behavior Society, The Japanese Society of Systematic Zoology, Japan Association for International Centre of Insect Physiology and Ecology, The Japanese Society for Comparative Physiology and Biochemistry, International Society for Neuro-ethology, Société Zoologique de France, Primate Society of Japan, Japan Association for African Studies, The Japanese Society for Wild Silkmoths, The Japan Society of Tropical Ecology, The Lepidopterological Society of Japan, The Japan Association for Social and Economic System Studies, etc.

##### **Major Publications**

###### **Books**

Toshitaka HIDAKA

Jan. 2006 "Heredity or Environment? — The Genetic Program" Bungei-shunju-sha (in Japanese)

###### **Translation**

Toshitaka HIDAKA, Setsuko HANEDA

Jun. 2005 "The World Seen from Living Beings." (Original title: J. von Uexkül and G. Kriszat "Streifzüge durch die Umwelten von Tieren und Menschen"), Iwanami-bunko

## Articles

- Apr. 2005 "The flowers of northern country" *Nami*, Shinchosha (in Japanese)  
 "The Umwelt" *Kaze-no-tabibito*, Eurasian Travel Co. (in Japanese)  
 "Why addicted to strange organism?" *Aera*, Asahi Shimbunsha (in Japanese)  
 "The breakfast of Nairobi" *Zenjin*, Tamagawa University Press (in Japanese)  
 "When I come to think" *Shiga Shimbun*, Kyoto Shimbunsha (in Japanese)  
 "Grow or rear" *Asahi Shimbun* (in Japanese)  
 "How to make children to like Science" *Asahi Shimbun* (in Japanese)  
 "Genetically programmed" *Asahi Shimbun* (in Japanese)  
 "Child care in animals" *Asahi Shimbun* (in Japanese)  
 "Playing hooky" *Chunichi Shimbun* (in Japanese)  
 "My bitter smile" *Nihon Keizai Shimbun* (in Japanese)  
 "Two beauties" *Kyoto Shimbun* (in Japanese)
- May 2005 "The Blues" *Nami*, Shinchosha (in Japanese)  
 "The changing breakfast" *Zenjin*, Tamagawa University Press (in Japanese)  
 "Familiar examples of environmental problem" *Yomiuri Shimbun* (in Japanese)  
 "Entomology" *Chunichi Shimbun* (in Japanese)  
 "*Anthocharis* butterfly" *Shiga Shimbun*, Kyoto Shimbunsha (in Japanese)  
 "The learning is built-in." *Asahi Shimbun* (in Japanese)  
 "Learn with interest" *Asahi Shimbun* (in Japanese)  
 "Reading with adventure" *Asahi Shogakusei Shimbun* (in Japanese)  
 "The state of self-growing" *Asahi Shimbun* (in Japanese)  
 "The selfish gene and the preservation of species" *Aging and Health*, Japan Foundation for Aging and Health (in Japanese)  
 "Zoology – my axis" *Chunichi Shinmun* (in Japanese)  
 "The time and the human" *Kaze-no-tabibito*, Eurasian Travel Co. (in Japanese)  
 "Biology of Butterflies – the postscript" *Kagaku Dojin* (in Japanese)
- Jun. 2005 "Cicadas in the spring" *Nami*, Shinchosha (in Japanese)  
 "The country of cats I" *Zenjin*, Tamagawa University Press (in Japanese)  
 "Sympathy to questions from children" *Asahi Shogakusei Shimbun* (in Japanese)  
 "What I felt in the travel through Turkey" *Kyoto Shimbun* (in Japanese)  
 "The swallowtail butterflies" *Chunichi Shimbun* (in Japanese)
- Jul. 2005 "The country called Turkey" *Nami*, Shinchosha (in Japanese)  
 "The country of cats II" *Zenjin*, Tamagawa University Press (in Japanese)  
 "How do animals sense the seasons" *Keizai-jin*, Kansai Economic Federation (in Japanese)  
 "Lake Biwa Prize for Ecology" *Shiga Shimbun*, Kyoto Shimbunsha (in Japanese)  
 "Children grow by themselves" *Mainichi Shimbun* (in Japanese)  
 "Books tell curious stories" *Asahi Shogakusei Shimbun* (in Japanese)  
 "A visit to Tohno" *Kyoto Shimbun* (in Japanese)
- Aug. 2005 "The life of the human" *Kaze-no-tabibito*, Eurasian Travel Co. (in Japanese)  
 "Attendants at the birth of the University of Shiga Prefecture" University of Shiga Prefecture (in Japanese)  
 "The double assurance" *Nami*, Shinchosha (in Japanese)  
 "Mechanism of the species preservation" *Aging and Health*, Japan Foundation for Aging and Health (in Japanese)

- "How far can butterflies see?" *Zenjin*, Tamagawa University Press (in Japanese)
- "The impact of the selfish gene" *i feel*, Kinokuniya Co., Ltd. (in Japanese)
- "Man learns by oneself" *Works*, Recruit Co., Ltd. (in Japanese)
- "The animal called human" *Shinano-Mainichi Shimbun* (in Japanese)
- "Cicadas, *Shiga Shimbun*" Kyoto Shimbunsha (in Japanese)
- "The *Tohokuben* dialect" *Chunichi Shimbun* (in Japanese)
- "A happy pleasure that something necessary is present" *Gunma Koho* Gunma Prefecture (in Japanese)
- Sep. 2005 "A film festival of wild animals" *Nami*, Shinchosha (in Japanese)
- "The environment and the Umwelt" *Kyoto Shimbun* (in Japanese)
- "The clock of the evening cicada" *Zenjin*, Tamagawa University Press (in Japanese)
- "The science class for adults" *Kyoto Shimbun* (in Japanese)
- Oct. 2005 "Tokyo burned-out" *Kaze-no-tabibito*, Eurasian Travel Co. (in Japanese)
- "In Urumchi" *Nami*, Shinchosha (in Japanese)
- "Insect songs in autumn night" *Zenjin*, Tamagawa University Press (in Japanese)
- "The cherries" *Chunichi Shimbun* (in Japanese)
- "Are Japanese gardens natural?" *Kyoto Shimbun* (in Japanese)
- "The important things we can learn from books" *Asahi Shogakusei Shimbun* (in Japanese)
- "To be heterogeneous is interesting." *Mainichi Shimbun* (in Japanese)
- "The tricks of genes, *Aging and Health*" Japan Foundation for Aging and Health (in Japanese)
- "The snake and the toad" *Chunichi Shimbun* (in Japanese)
- "Can we see the reality?" *Kyoto Shimbun* (in Japanese)
- Nov. 2005 "To grow or to rear?" *News Moriyama*, Ohmi-mirai-juku (in Japanese)
- "Water and agriculture" *Nami*, Shinchosha (in Japanese)
- "Moths in the fall of year" *Zenjin*, Tamagawa University Press (in Japanese)
- "J-H Fabre's Souvenirs entomologies" Shueisha (in Japanese)
- Dec. 2005 "The imagination and the reality" *Kaze-no-tabibito*, Eurasian Travel Co. (in Japanese)
- "The flower of Japanese loquat" *Zenjin*, Tamagawa University Press (in Japanese)
- "The circannual clocks" *Nami*, Shinchosha (in Japanese)
- "Books of fresh wonder" *Asahi Shogakusei Shimbun* (in Japanese)
- "In an unusual space" *Yomiuri Shimbun* (in Japanese)
- Jan. 2006 "Clocks measuring a year" *Kyoto Shimbun* (in Japanese)
- "The natural history" *Zenjin*, Tamagawa University Press (in Japanese)
- "In Tsuruoka" *Nami*, Shinchosha (in Japanese)
- "What is 《future-ability》?" *Kyoto Shimbun* (in Japanese)
- "Dog and man — long association of twenty thousand years" Health and Insurance Union of Tokyo Confectionary Association
- "How do grow the human children?" *Tobu kyoshitsu*, Mitsumura-Shuppan (in Japanese)
- "How do humans live?" *Aging and Health*, Japan Foundation for Aging and Health (in Japanese)
- Feb. 2006 "The body plan and the way of living" *Zenjin*, Tamagawa University Press (in Japanese)
- "The future of corals" *Kyoto Shimbun* (in Japanese)
- "Study nature!" *Kaze-no-tabibito*, Eurasian Travel Co. (in Japanese)
- "To pass the winter" *Nami*, Shinchosha (in Japanese)
- "The self-reliance" *Kyoto Shimbun* (in Japanese)
- "Knowing how to live" *Zenjin*, Tamagawa University Press (in Japanese)
- "The word 《beginning of spring》" *Nami*, Shinchosha (in Japanese)

### Activities in Academic Societies

Director-General, Kyoto Municipal Science Center For Youth (ongoing); Councilor, Institute of Low Temperature Science, Hokkaido University (ongoing); Councilor, Japan Aerospace Exploration Agency, Institute of Space and Astronautical Science (ongoing); Councilor, Shimonaka Memorial Foundation (ongoing); Councilor, Biwako Hall (ongoing); Chairperson of The Steering Committee, Biwako Prize for Ecology, Shiga Prefectural Government (ongoing); Adviser, Nature Film Network (ongoing); Advisor and Chairperson of Advisory Committee, Shiga University of Medical Science (ongoing); Councilor, The Inamori Foundation (ongoing); Selector, Foundation of The International Garden and Greenery Exposition, Osaka, Japan (ongoing); Commissioner, Nakayama Science Foundation (ongoing).

### Awards

Mainichi Publishing Cultural Award in 1976

The 10th Dr. Kumagusu Minakata Award in 2000

The Cultural and Artistic Award of Kyoto Shimbun Grand Prize in 2000

Shiga Cultural Award in 2001

The 50th Japan Essayist Club Award in 2002

## 2. Research Staff

### AKIMICHI, Tomoya

Professor

Born in 1946.

### Curriculum Vitae

#### Academic Career

Department of Anthropology, Faculty of Science, The University of Tokyo, D. Course (1977)

Department of Anthropology, Faculty of Science, The University of Tokyo, M. Sc. (1974)

Department of Zoology, Faculty of Science, Kyoto University (1968)

#### Professional Career

Professor, Research Institute for Humanity and Nature (2002)

Head of Department, Department of Cultural Research, National Museum of Ethnology (1999)

Adjunct Professor, School of Advanced Sciences, The Graduate University of Advanced Studies (1998)

Professor, Department of Cultural Research, National Museum of Ethnology (1995)

Professor, 1st Research Department, National Museum of Ethnology (1992)

Adjunct Associate Professor, Faculty of Cultural Research, The Graduate University of Advanced Studies (1988)

Associate Professor, 1st Research Department, National Museum of Ethnology (1987)

Research Fellow, 2nd Research Department, National Museum of Ethnology (1977)

#### Higher Degrees

D. Sc. (The University of Tokyo, 1986)

M. Sc. (The University of Tokyo, 1974)

#### Fields of Specialization / Background

Ecological Anthropology, Ethno-Biology

#### Academic Society Memberships

The Society of the Bio-Sophia Studies, The Society of Human and Animal Relations, The Society of the Environmental Sociology, The Society of Ecological Anthropology, The Society of Tropical Ecology

## Major Publications

### Books

Tomoya AKIMICHI

2005 *Maritime Peoples of the Pacific: An Anthropological Study*. Seoul: The Ethnology Garden Publisher. (in Korean)

Tomoya AKIMICHI, Mitsuo ICHIKAWA and Ryutaro OHTSUKA eds.

2006 *Ecological Anthropology*. Kunming: Yunnan University Press (in Chinese)

### Articles

Tomoya AKIMICHI

2005 "The sea of coral fish" (Special Issue on Biodiversity and Cultural Diversity). *Kikan Minzokugaku* 112: 23-30. (in Japanese)

Hiroya KAWANABE and Tomoya AKIMICHI

2005 "Special theme 2 Rethinking carp as food- History and culture of carp food culture" *Bio-Story* 3: 24-33. (in Japanese)

2005 "Nomenclature of the organism- To investigate Bajau folk taxonomy" *Bio-Story* 4: 82-83. (in Japanese)

Yoshiyuki TSURUMI and Tomoya AKIMICHI (interviewer)

2005 "To search for the forgotten history of the sea" In Yoshiyuki Tsurumi *Dialogue: To walk and to think*. Tokyo: Ohta Shuppan, pp. 495-512. (re-record) (in Japanese)

Keiji IWATA and Tomoya AKIMICHI (interviewer)

2005 "Fieldwork in the mysterious space: On the experience of animism" In Keiji IWATA *Tree becomes humans and humans become tree: Animism in the contemporary world*. Tokyo: Jinbun Shokan, pp. 224-240. (re-record) (in Japanese)

Tomoya AKIMICHI

2005 "Rethinking the commons: Between the supernatural and the natural world" (Special Symposium: Commons: Its significance and problems in the modern age) *Public Finance and Public Policy* 27(2): 27-30. (in Japanese)

2005 "Exploring an eco-management scheme for migratory marine species: Perspective from Asia and the Pacific". *The Studies in Regional Development* 37(1): 81-101.

2005 "Change in forest environment and junglefowl- The ethnic minorities in Yunnan, China and Laos" In Kazunobu IKEYA ed., *Forest People in Tropical Asia: Environmental Anthropology of the Natural Resource Use*, Kyoto: Jinbun Shoin, pp. 123-148. (in Japanese)

Tomoya AKIMICHI, Kan-ichi NOMOTO, Norio AKASAKA and Hiromi TAGUCHI

2005 "Discussion: folk system in the satoyama and sato-umi: Transformation and construction of new stage of human-environmental relations" *Kikan Tohokugaku* May, 2005, pp. 6-27. (in Japanese)

Tomoya AKIMICHI

2005 "Cultural history- Common property and the joint use" Yoshihisa AWAJI, Takashi KAWAMOTO, Kazuhiro UEDA, Kin-ichi HASEGAWA (eds.) *Readings Environment*, vol. 1 Nature and Humans. Tokyo: Yuhikaku, pp. 105-111. (in Japanese)

2005 "Chapter 9 Fishery geography section 2 Anthropological view" The Society of Fishery Economics (ed.) *Results and Overview of Studies in Fisheries Economy*. Tokyo: Seizando Shuppan, pp. 252-256. (in Japanese)

2005 "Folk-knowledge on fish: Diversity and tradition" Tohru TANIUCHI, Tetsuji NAKABO, Hiroaki MUNEMIYA, Akira TANIGUCHI, Ichiro AOKI, Akinori HINO, Seiichi WATANABE, Hiroki ABE, Takeo FUJII and Tomoya AKIMICHI (eds.), *The Encyclopedia of Science of Fish*, Tokyo: Asakura Shoten, pp. 526-534. (in Japanese)

Tomoya AKIMICHI ed.

2005 *Report of the study meeting of the commons and the eco-history* (Special Field of Grant in aid of the

Ministry of Education, Culture, Science, Technology and Sports, Joint study meeting of eco-history group of anthropology of resource and the study group of the commons), 183pp. (in Japanese)

Tomoya AKIMICHI

- 2005 "Who saves sacred water from pollution? Towards an Integrated study on human and water interactions. (panel presentation)" In Kenichi ABE, Noriko IIZUKA and Otte ALEXANDER (eds.), *Water and Cultural Diversity Mediating for Sustainable Development*. 4<sup>th</sup> World Water Forum session FT4-32. Centro Banamex, Mexico City, 20<sup>th</sup> March 2006, pp. 24-27.

Tomoya AKIMICHI

- 2006 "Trochus connection- The eco-history on the coral reef resource management in the Western Pacific" Michiko INTOH (ed.), *Anthropology of the Environment and Resource Use: Life and Culture in the Western Pacific Islands*. Tokyo: Akashi-shoten, pp. 15-35. (in Japanese)

Tomoya AKIMICHI, Mitsuo ICHIKAWA and Ryutaro OHTSUKA

- 2006 "Introduction: Areas and perspective in ecological anthropology" In Tomoya AKIMICHI, Mitsuo ICHIKAWA and Ryutaro OHTSUKA (eds.), *Ecological Anthropology*, Kunming: Yunnan University Press, pp. 1-9. (in Chinese)

Tomoya AKIMICHI

- 2006 "Resource and ownership with reference to marine resource" In Tomoya AKIMICHI, Mitsuo ICHIKAWA and Ryutaro OHTSUKA (eds.), *Ecological Anthropology*, Kunming: Yunnan University Press, pp. 118-130. (in Chinese)

#### Miscellaneous

Komei SASAKI, Tomoya AKIMICHI and Kenichi ABE

- 2005 "On the scope of shoyo-jurin culture" (Special issue: A new shoyo-jurin culture) *Kagaku* 75(4): 428-438.

Akishinonomiya FUMIHITO, Tomoya AKIMICHI and Masami HASEGAWA

- 2005 "SOUKENDAI Integrated study biosystem science and joint study" *Sokendai Journal* 7: 26-31.

Tomoya AKIMICHI

- 2005 "Book review Japanese Culture viewed from paddy field fishery" *Nihon Dokusho Shinbun*.
- 2005.8 "Stickleback and bio-sophia: Linking water, fish and local area" 2nd Stickleback All Japan Summit in Ono~Considering water environment in Japan from stickleback conservation: A research report of stickleback habitat at Honganshozu and freshwater biota in rivers in Ono city. Ono Committee of Education, pp. 4-11.
- 2006.3 "Rethinking ordinary fish" A report of the symposium on freshwater fish conservation, Gifu Prefecture, pp. 45-51. (in Japanese)
- 2006.3 "Panel discussion: Conservation in daily life" In A report of the symposium on freshwater fish conservation, Gifu Prefecture, pp. 88-104. (in Japanese)
- 2005.11 "Mountain god, scorpion fish, and yamanokami gobby" (p. 87), "Octopus fishing" (p. 195), "Folklore on poison fishing" (p. 223), "Stone weir fishing" (p. 240), "Fish skin cloth" (p. 280), "Sacred fish and fish god" (p. 341), "Conservation of grouper and food culture" (p. 361), "Abi fishing" (p. 382), "Flying fish fishing" (p. 413), "Shark-tooth weapon" (p. 559), in Tohru TANIUCHI, Tetsuji NAKABO, Hiroaki MUNEMIYA, Akira TANIGUCHI, Ichiro AOKI, Akinori HINO, Seiichi WATANABE, Hiroki ABE, Takeo FUJII and Tomoya AKIMICHI (eds.), *The Encyclopedia of Science of Fish*, Tokyo: Asakura Shoten. (in Japanese)
- 2005.11 "Sea current and trade winds" (pp. 24-28), "Fauna in Micronesia" (pp. 33-36), "Use and conservation of marine resource" (pp. 113-116), "Variety of fishing techniques" (pp. 117-120), "Canoe and navigational skills" (pp. 121-124), "Sidereal compass and stick chart" (pp. 125-128). Michiko INTOH ed., Fifty

- eight chapters for the guide to Micronesia, Tokyo: Akashi-Shoten. (in Japanese)
- 2006.2.16 "Conservation of medaka" *Books Forthcoming: The first half of March*, Nihon-Shoseki-Shuppan Kyokai, p. 7. (in Japanese)
- 2006.3.1 "Illusionary community in East Asia" *Books Forthcoming: The latter half of May*, Nihon-Shoseki-Shuppan-Kyokai, p. 9.
- 2005.12.16 "Human becomes a tree" *Books Forthcoming: The first half of January*, Nihon-Shoseki-Shuppan-Kyokai, p. 5. (in Japanese)
- 2006.3.15 "Local riparian culture in Laos" *Seikyo-Shinbun*, Seikyo-Shinbun Newspaper company.
- 2006.3 "Preface to water and people" *Water and People* vol. 0: 1. (in Japanese)

### **Social Activities and Public Lectures**

- 2005.5/11 "Growing and Development of the Bio-Sophia" (Lecture) Tokyo: Tokyo University of Agriculture.
- 2005.5/19 "The World of Bio-Sophia" (Memorial Lecture) Japanese Association of Zoos and Aquariums. Mito City.
- 2005.6/12 "Future of the Eco-commons. Water, People and Organisms in the Tropics: From the Mekong River to the Wallacea" (Keynote Speech), The Japan Society of Tropical Ecology the Annual meeting, Kyoto University, Kyoto City.
- 2005.6/23 "The World of the Eco-History Study" International workshop between Japan and China. Kunming, China.
- 2005.7/9 "Snow and People" (commentator) 1<sup>st</sup> RIHN Chiiki Seminar, Toyama City.
- 2005.10/9 "Fish and Food in Southeast Asia" The 8<sup>th</sup> RIHN Seminar for the Citizen, Kyoto City.
- 2005.10/19 "Landscape in the Paddy Field" RIHN Inaugural International Pre-Symposium 'Bridging Times and Seas: Historical Landscape Change on the Shores of Northern Inland Seas'. Kyoto City.
- 2005.10/22 "The Eco-Commons in the Plant Harvest in Asia" (Organizer) The Committee of Anthropology of Resource Use and Symbolism, Kyoto City.
- 2005.10/25 "People and Fish in Laos, Freshwater Fish Resource Management during the Past Decade" (Keynote Lecture) The Study meeting of Aquaculture in Laos, The University of Tokyo, Tokyo.
- 2005.11/19 "How to Conserve Freshwater Fish: Consideration of Ordinary Fish" (Lecture) A Symposium on the freshwater Fish Conservation, Gifu. Ohgaki City.
- 2005.12/18 "Cultural History of Lion and People" 8<sup>th</sup> Symposium of the Animals and Human Relations (Coordinator) Kyoto City.
- 2006.1/22 "Dugong Conservation and Local Culture in the Andaman Sea, Thailand" SOKENDAI International Symposium: Topics in Environmental Issues in Asia: Conservation Strategy, Culture and Politics. (Coordinator and Speaker) Hayama Cho.
- 2006.3/10 "The Implication of Outbreak of Nomura's Jellyfish" (Lecture) Kyoto Asnie, Kyoto City.
- 2006.3/25-26 The 12<sup>th</sup> Annual General Meeting of the Society of Human and Animal Relations. (Representative) Azabu University, Machida City.

### **Activities in Academic Societies**

Member, Planning and Coordination Committee of the National Institute for the Humanities (NIHU) (2003-), Director of Science, Ministry of Education, Science, Technology and Sports (2002-), President of the Society of the Bio-Sophia (2004-), President of the Society of Human and Animal Relationships (1999-2006), Vice President, The Society of Domestic Fowl Studies (2001-), Member, Evaluation Committee of Research Proposal in Lake Biwa Museum (1998-), Joint Researcher, National Museum of Ethnology (2002-), Member, Promoting Organization of the Japan Sea Study (2003-), Member, consulting Committee of Nagao Foundation (2003-), Member, Social Education Committee of Kyoto City (2004-), Editor-in-Chief, A Newsletter of Ocean Policy Research Foundation (2004-).

### Awards

Daido-Seimei Chiiki-Kenkyu Shorei-Sho in 1998 (Award for Promotion of Area Studies by Daido Life Insurance Company in 1998)

### Research Activities

#### Field Research in Foreign Countries

- 2005.6 China (International Workshop in Yunnan University and visit to a UNESCO World Heritage in Jendu, Sichuwan)
- 2005.7-8 Laos (Fieldwork for aquatic resource use and management in southern Laos)
- 2005.11 Thailand (Ethno-ecological study of junglefowl and domestic fowl in Chiang Rai, northern Thailand)
- 2006.1 Laos (A study on the conservation and management of fish resource in southern Laos)
- 2006.3 China (A field study on the non-timber forest products in Yunnan Province)

#### Supervision and Host (Number of DC Students and JSPS Research Fellows)

Special post-graduate course student of Sokendai (1)

## FUKUSHIMA, Yoshihiro

Professor

Born in 1942.

### Curriculum Vitae

#### Academic Career

Department of Forestry, Faculty of Agriculture, Kyoto University, Bachelor Course (1966)

#### Professional Career

Instructor of Kyoto University (1966)

Associate Professor, Kyoto University (1989)

Professor, Institute for Hydrospheric-Atmospheric Sciences, Nagoya University (1994)

Professor, Research Institute for Humanity and Nature, Inter-University Research Institute, Ministry of Culture, Sports, Sciences and Technology (2001)

Inter-University Research Institute Corporation, National Institutes for the Humanities, Research Institute for Humanity and Nature (2004)

#### Higher Degree

D. Agri. (Kyoto University, 1981)

#### Fields of Specialization / Background

Mountain Hydrology, Forest Hydrology, Macro-scale Hydrology

#### Academic Society Memberships

Japan Society of Hydrology and Water Resources, The Meteorological Society of Japan

### Major Publications

#### Articles

Matsuoka, M., T. Hayasaka, Y. Fukushima and Y. Honda

2006 "Land cover in East Asia classified using Terra MODIS and DMSP OLS products" *TRES: International Journal of Remote Sensing* ID: 167563, (in press).

FUKUSHIMA, Y.

2006 "Long-term changes of water level of Lake Issyk-kul, located in high altitude of Central Asia" *Suiri-kagaku*

No. 28: 74-91.

MA, Xieyao, T. Yasunari, T. Ohata and Y. Fukushima

2005 "The influence of river ice on spring runoff in the Lena river, Siberia" *Annals of Glaciology* 40: 123-127.

Chen J., Y. Fukushima and M. Taniguchi

2005 "Water use and its impact zone in the lower reach of the Yellow River" *Proc. 2<sup>nd</sup> Intl. Forum held in Zhengzhou*: 97-106.

## **Research Activities**

### **Field Research in Foreign Countries**

June 2005 Field trip on the practical water use in the United States of America

Sept. 2005 Field trip on the actual water use and sediment yield in Wudding River of the mid-Loess Plateau

## **Social Activities and Public Lectures**

### **Social Activities**

August 1995~ Guest Professor of Graduate Course of Hydrology, Beijing Normal University

### **Public Lectures**

22 August 2005 「Water problems of irrigated agriculture in semi-arid regions both the Yellow River and California State」『Cultural Column of Yomiuri Evening Newspaper』

September 2005 「Similarity and Difference in the Kamo River and the Yellow River related to flood disasters and benefits」『The 7<sup>th</sup> open lecture sponsored by RIHN』, Nijjima Hall of Dohsisha Univ. (Kyoto city)

## **HAYASAKA, Tadahiro**

Professor

Born in 1959.

## **Curriculum Vitae**

### **Academic Career**

Department of Geophysics, Graduate School of Science, Tohoku University, Dr. Sc. (1984)

Department of Geophysics, Graduate School of Science, Tohoku University, M. Sc. (1982)

### **Professional Career**

Professor, Research Institute for Humanity and Nature (2001)

Professor, National Institute of Polar Research (1999)

Professor, Graduate School of Science, Tohoku University (1999)

Associate Professor, Faculty of Science, Tohoku University (1994)

Assistant Professor, Faculty of Science, Tohoku University (1990)

Research Fellow, Japan Society for the Promotion of Science (1988)

### **Higher Degrees**

Dr. Sc. (Tohoku University, 1988)

M. Sc. (Tohoku University, 1984)

### **Fields of Specialization / Background**

Meteorology, Atmospheric Physics

### **Academic Society Memberships**

The Meteorological Society of Japan, Japan Association of Aerosol Science and Technology

**Major Publications****Articles**

HAYASAKA, T., K. KAWAMOTO, G.-Y. SHI, A. OHMURA

2006 "The Importance of Aerosols in Satellite-derived Estimates of Surface Shortwave Irradiance over China"  
*Geophys. Res. Lett.*, 33, L06802, doi:10.1029/2005GL025093.

**Other Publications**

HAYASAKA, T.

2005 Colors of sky, *Mahora*, October Issue, Tabinobunnka Kenkyusho, pp. 18-19.

**Activities in Academic Societies****Committee Member etc.**

2001~present IAMAS International Radiation Commission Member

2001~present WCRP GEWEX Radiation Panel Member

1996~present Editorial board member of "Kishou Kenkyu Note", The Meteorological Society of Japan

**Oral Presentation etc.**

2005 Radiation measurements in Japan, *UNEP ABC Science Team Meeting, 4-6 April 2005, Shanghai, China.*

2005 Long-term Variation of Surface Shortwave Radiation in East Asia, *the 1st Japan-China-Korea International Symposium on Atmospheric Sciences, Univ. Tokyo/Meteor. Soc. Japan/China Meteor. Soc./Korean Meteor. Soc., 13-14 May 2005, Tokyo, Japan.*

2005 Observations of aerosols and radiation in Fukue island, Japan, *ABC-EAREX'05 Workshop, 29 June-1 July 2005, Kyoto, Japan.*

2005 Vertical profile and size distribution of aerosols observed by lidar and skyradiometer in Japan for 2003-2004, *IAMAS2005, 2-11 August 2005, Beijing, China.*

2005 Aerosol effects on the surface shortwave radiation in China, *International Symposium on Atmospheric Environmental Impacts of Aerosols in East Asia, 19-21 September 2005, Kyoto, Japan.*

2005 Comparison of radiative flux measurements during EAREX2005 Gosan Campaign, *2nd ABC-EAREX'05 Workshop, 25-26 October 2005, Seoul, Korea.*

**Social Activities and Public Lectures****Public Lectures**

May 20, 2005 Public lecture 「On global warming」 Joetsu City, Silver age College

July 19, 2005 Public lecture 「What is the global warming?」 Shugakuin Daini Primary school, Kyoto City

September 17, 2005 RIHN 1<sup>st</sup> Seminar for the Community 「Snow and people: On Japan sea supporting our lives」,  
Public lecture 「Japan sea and the air」 and panel discussion, Toyama prefectural hall, Toyama City

**KAWABATA, Zen'ichiro**

Professor

Born in 1946.

**Curriculum Vitae****Academic Career**

Department of Biology, Graduate School of Science, Tohoku University, unfinished D Degree (1975)

Department of Biology, Graduate School of Science, Tohoku University, M. Course (1973)

Department of Biology, Faculty of Science, Tohoku University (1971)

### Professional Career

Professor, Research Institute for Humanity and Nature (2005)  
 Professor (Concurrent), Center for Marine Environmental Studies, Ehime University (1999)  
 Professor, Center for Ecological Research, Kyoto University (1998)  
 Professor, Department of Environmental Conservation, Ehime University (1996)  
 Associate Professor, Department of Environmental Conservation, Ehime University (1983)  
 Lecturer, Department of Environmental Conservation, Ehime University (1981)  
 Assistant Professor, Faculty of Science, Biological Institute, Tohoku University (1977)  
 Technician, Faculty of Science, Biological Institute, Tohoku University (1975)

### Higher Degrees

Dr. Sc. (Tohoku University, 1997)  
 Ms. Sc. (Tohoku University, 1973)

### Fields of Specialization / Background

Microbial Ecology, Ecosystem Ecology

### Academic Society Memberships

The Ecological Society of Japan, The Japanese Society of Microbial Ecology, The Japanese Society of Limnology, Japanese Society of Water Treatment Biology, Japanese Society for Environmental Biotechnology, The Plankton Society of Japan, The Oceanographic Society of Japan, The Japanese Society of Fisheries Sciences, Japan Society on Water Environment, Society of Environmental Science, Japan, The Society of Eco-Engineering, Japanese Society of Fisheries Oceanography, Japan Society of Protozoology, The Society for Studies on Entropy, International Association for Theoretical and Applied Limnology

### Major Publications

#### Books

Kawabata, Z. and Matsui, K.  
 2003 "Moving Genes in Water – Horizontal gene transfer among bacteria facilitating genetic diversification" In Ohgushi (ed.) *Introduction to Biological Diversity Sciences*, pp136-157, Tokyo, Maruzen, 186pp.  
 Kawabata, Z.  
 2003 "Food web, Microcosm, Ecotron" In eds., Iwasa, Y., Matsumoto, T., Kikuzawa, K. and The Ecological Society of Japan, *Encyclopedia of Ecology*. pp265-269, 521-523, 34-35. Kyoritsu Shuppan, Tokyo, 682pp.  
 Kawabata, Z.  
 2004 "What is Microbial Ecology" In ed., The Japanese Society of Microbial Ecology, Education Working Group, *Introduction to Microbial Ecology – Micro Biosphere Sustaining Global Environments*. pp1-7, Nikka Giren, Tokyo, 237pp.

#### Journal Papers

Matsui, K., Ishii, N. and Kawabata, Z.  
 2001 "Survival of genetically modified *Escherichia coli* carrying extraneous antibiotic resistance gene through microbial interactions" *Bulletin of Environmental Contamination and Toxicology* 66(2): 139-145.  
 Fuma, S., Takeda, H., Miyamoto, K., Yanagisawa, K., Inoue, Y., Ishii, N., Sugai, K., Ishii, C. and Kawabata, Z.  
 2001 "Ecological evaluation of gadolinium toxicity compared with other heavy metals using an aquatic microcosm" *Bulletin of Environmental Contamination and Toxicology* 66(2): 231-238.  
 Tomaru, Y., Kawabata, Z. and Nakano, S.  
 2001 "Mass mortality of Japanese pearl oyster, *Pinctada fucata martensii*, in relation to water temperature, chlorophyll *a* and phytoplankton composition" *Diseases of Aquatic Organisms* 44(1): 61-68.  
 Manage, P. M., Kawabata, Z. and Nakano, S.

- 2001 "Dynamics of cyanophage-like particles and algicidal bacteria causing *Microcystis aeruginosa* mortality" *Limnology* 2: 73-78.
- Nakano, S., Manage, P. M., Nishibe, Y. and Kawabata, Z.
- 2001 "Trophic linkage among heterotrophic nanoflagellates, ciliates and metazoan zooplankton in a hypereutrophic pond" *Aquatic Microbial Ecology* 25: 259-270.
- Matsui, K., Honjo, M. and Kawabata, Z.
- 2001 "Estimation of the fate of dissolved DNA in thermally stratified lake water from the stability of exogenous plasmid DNA" *Aquatic Microbial Ecology* 26(1): 95-102.
- Nishii, K., Nakano, S., Tamada, M., Manage, P. M., Nishibe, Y. and Kawabata, Z.
- 2001 "Microbial decomposition of dissolved organic matter in a hypereutrophic pond" *Limnology* 2: 207-212.
- Matsui, K., Jun, M.-S., Ueki, M. and Kawabata, Z.
- 2001 "Functional succession of bacterioplankton on the basis of carbon source utilization ability by BIOLOG plate" *Ecological Research* 16: 905-912.
- Nishibe, Y., Kawabata, Z. and Nakano, S.
- 2002 "Grazing on *Microcystis aeruginosa* by the heterotrophic flagellate *Collodictyon triciliatum* in a hypertrophic pond" *Aquatic Microbial Ecology* 29: 173-179.
- Kawabata, Z., Manage, P. M., Miyai, Y., Hisamoto, M. and Miyai, M.
- 2002 "Cavitation control as a means of reducing algal biomass in pond waters" *Japanese Journal of Water Treatment Biology* 38(4): 203-210.
- Urabe, J., Elser, J. J., Kyle, M., Sekino, T. and Kawabata, Z.
- 2002 "Herbivorous animals can mitigate unfavorable ratios of energy and material supplies by enhancing nutrient cycling" *Ecological Letters* 5(2): 177-185.
- Flöder, S., Urabe, J. and Kawabata, Z.
- 2002 "The influence of fluctuating light intensities on species composition and diversity of natural phytoplankton communities" *Oecologia* 133: 395-401.
- Genkai-Kato, M., Sekino, T., Yoshida, T., Miyasaka, H., Khodzher, T. V., Belykh, O. A., Melnik, N. G., Kawabata, Z., Higashi, M. and Nakanishi, M.
- 2002 "Nutritional diagnosis of phytoplankton in Lake Baikal" *Ecological Research* 17: 135-142.
- Manage, P. M., Kawabata, Z., Nakano, S. and Nishibe, Y.
- 2002 "Effect of heterotrophic nanoflagellates on the loss of virus-like particles in pond water" *Ecological Research* 17: 473-479.
- Ishii, N., Takeda, H., Doi, M., Fuma, S., Miyamoto, K., Yanagisawa, K. and Kawabata, Z.
- 2002 "A new method using enhanced green fluorescent protein (EGFP) to determine grazing rate on live bacterial cells by protists" *Limnology* 3: 47-50.
- Tomaru, Y., Ebisuzaki, S., Kawabata, Z. and Nakano, S.
- 2002 "Respiration rates of the Japanese pearl oyster, *Pinctada fucata martensii*, feeding on *Pavlova lutheri* and *Chaetoceros gracilis*" *Aquaculture Research* 33: 33-36.
- Tomaru, Y., Kumatabara, Y., Kawabata, Z. and Nakano, S.
- 2002 "Effect of water temperature and chlorophyll abundance on shell growth of the Japanese pearl oyster, *Pinctada fucata martensii*, in suspended culture at different depths and sites" *Aquaculture Research* 33: 109-116.
- Tomaru, Y., Udaka, N., Kawabata, Z. and Nakano, S.
- 2002 "Seasonal change of seston size distribution and phytoplankton composition in bivalve pearl oyster *Pinctada fucata martensii* culture farm" *Hydrobiologia* 481: 181-185.
- Kitamura, S., Tomaru, Y., Kawabata, Z. and Suzuki, S.
- 2002 "Detection of marine birnavirus from Japanese pearl oyster *Pinctada fucata* and seawater from different depth"

- Diseases of Aquatic Organisms* 50: 211-217.
- Fuma, S., Ishii, N., Takeda, H., Kawabata, Z. and Ichimasa, Y.  
 2002 "Combined effects of  $\gamma$ -rays and acidification on an experimental model ecosystem" *RADIOISOTOPES* 51(5): 204-213. (In Japanese with English abstract)
- Fuma, S., Ishii, N., Takeda, H., Miyamoto, K., Yanagisawa, K., Ichimasa, Y., Saito, S. and Kawabata, Z.  
 2002 "Characterization of simple aquatic microcosm for ecotoxicity screening" *Japanese Journal of Environmental Toxicology* 5(2): 51-63.
- Matsui, K., Ishii, N. and Kawabata, Z.  
 2003 "Release of extracellular transformable plasmid DNA from *Escherichia coli* by co-cultivated with algae" *Applied and Environmental Microbiology* 69(4): 2399-2404.
- Fuma, S., Ishii, N., Takeda, H., Miyamoto, K., Yanagisawa, K., Ichimasa, Y., Saito, M., Kawabata, Z. and Polikarpov, G. G.  
 2003 "Ecological effects of various toxic agents on the aquatic microcosm in comparison with acute ionizing radiation" *Journal of Environmental Radioactivity* 67: 1-14.
- Nakano, S., Murabe, A., Tsujimura, S., Hayakawa, K., Nakajima, T., Kumagai, M., Jiao, C. and Kawabata, Z.  
 2003 "Dominance of *Microcystis* with special reference to carbon availability in lake water" *Microbes and Environments* 18: 38-42.
- Yoshida, T., Sekino, T., Genkai-Kato, M., Logacheva, N. P., Bondarenko, N. A., Kawabata, Z., Khodzher, T. V., Melnik, N. G., Hino, S., Nozaki, K., Nishimura, Y., Nagata, T., Higashi, M. and Nakanishi, M.  
 2003 "Seasonal dynamics of primary production in the pelagic zone of southern Lake Baikal" *Limnology* 4: 53-62.
- Narita, M., Chiba, K., Nishizawa, H., Ishii, H., Huang, C.-C., Kawabata, Z., Silver, S. and Endo, G.  
 2003 "Diversity of Mercury resistance determinants among *Bacillus* strains isolated from sediment of Minamata Bay" *FEMS Microbiology Letters* 223: 73-82.
- Matsui, K., Ishii, N. and Kawabata, Z.  
 2003 "Microbial interactions affecting the natural transformation of *Bacillus subtilis* in a model aquatic ecosystem" *FEMS Microbiology Ecology* 45: 211-218.
- Nishibe, Y., Manage, P. M., Kawabata, Z. and Nakano, S.  
 2004 "Trophic coupling of a testate amoeba and *Microcystis* species in a hypertrophic pond" *Limnology* 5: 71-76.
- Choi, K., Ueki, M., Imai, A., Kim, B. and Kawabata, Z.  
 2004 "Photoalteration of dissolved organic matter (DOM) released from *Microcystis aeruginosa*" *Archiv für Hydrobiologie* 159(2): 271-286.
- Matsui, K., Ishii, N., Honjo, M. and Kawabata, Z.  
 2004 "Use of the SYBER Green I fluorescence dye and a centrifugal filter device for rapid determination of dissolved DNA concentration in fresh water" *Aquatic Microbial Ecology* 36: 99-105.
- Narita, M., Matsui, K., Huang, C.-C., Kawabata, Z. and Endo, G.  
 2004 "Dissemination of TnMER11-like mercury resistance transposons among *Bacillus* isolated from worldwide environmental samples" *FEMS Microbiology Ecology* 48: 47-55.
- Ueki, M., Matsui, K., Choi, K. and Kawabata, Z.  
 2004 "The enhancement of conjugal plasmid pBHR1 transfer between bacteria in the presence of extracellular metabolic products produced by *Microcystis aeruginosa*" *FEMS Microbiology Ecology* 51: 1-8.
- Ishii, N., Matsui, K., Fuma, S., Takeda, H. and Kawabata, Z.  
 2004 "Release of transforming plasmid DNA from actively growing genetically engineered *Escherichia coli*" *FEMS Microbiology Letters* 240: 151-154.
- Fuma, S., Takeda, H., Takaku, Y., Hisamatsu, S. and Kawabata, Z.  
 2005 "Effects of dysprosium on the species-defined microbial microcosm" *Bulletin of Environmental Contamination*

and *Toxicology* 74: 263-272.

### Articles

Nakano, S., Tomaru, Y., Kawabata, Z. and Suzuki, S.

2001 "Microbial Ecology in Pearl Oyster Farm in Uwa Sea: Microbes as Food and Pathogens" *Earth Environments* 6(1): 39-45.

Kawabata, Z.

2002 Special Issue: Food web dynamics in spatial heterogeneity under multiple disturbances. *Ecological Research* 17(2): 133.

Kawabata, Z.

2003 "Dynamics of dissolved DNA as Genetic Resources in Aquatic Ecosystems" *Seibutsu-kogaku Kaishi* 81(10): 425-427.

### Reports

Honjo, M., Matsui, K., Ishii, N., Nakanishi, M. and Kawabata, Z.

2001 Vertical distribution of viruses and related factors in a stratified lakes. In Nakanishi, M., Scientific Research, Basic Research A1 (1998-2000), Standard Lake Biwa Model Applicable to the Environmental Changes in 21 Century, pp. 86-90.

Kawabata, Z.

2001 Group Summary- Analyses of maintenance and ecosystem functions of biodiversity using a symbiotron. In ed., Hiroya Kawanabe, Annual Report 2000 under MEXT Creative Basic research Program. An integrated study on biodiversity conservation under global change and bio-inventory management system, pp. 28-29.

Kawabata, Z.

2001 Analyses of generation processes and ecosystem functions of biodiversity using a symbiotron (aquatron). In ed., Hiroya Kawanabe, Annual Report 2000 under MEXT Creative Basic research Program. An integrated study on biodiversity conservation under global change and bio-inventory management system. pp. 30-32.

Tomaru, Y., Kawabata, Z. and Nakano, S.

2001 Mass mortality of Japanese pearl oyster, *Pinctada fucata martensii*, in relation to water temperature, chlorophyll *a* and phytoplankton composition. In Suzuki, S., Scientific Research, Basic Research B2 (11490025) (1999-2000), Dynamics of marine birna virus in fish, mollusks and seawater. pp. 46-53.

Kawabata, Z.

2002 Symbiotron for the experimental studies on biodiversity. In Report of the MEXT Creative Basic Research 09NP1501, An Integrated Study on Biodiversity Conservation under Global Change and Bioinventory Management System (FY 1997-2001) 37-45, DIVER.

Kawabata, Z.

2002 Species diversity on mitigate phyto-and zooplankton biomass changes. In Report of the MEXT Creative Basic Research 09NP1501, An Integrated Study on Biodiversity Conservation under Global Change and Bioinventory Management System (FY 1997-2001) 199-207, DIVER.

Kawabata, Z.

2003 Technical report- Summary. The survey on water conservation policy and action in european countries. 41-44, 71-73. Water Resources Environment Technology Center.

Kawabata, Z.

2004 Analysis of horizontal gene transfer and gene expression mechanisms in aquatic ecosystem using aquatrons. JSPS Scientific Research, Basic Research A1 (13309009) (2001-2003), 185pp.

### Communication Articles

Kawabata, Z.

2003 Review on international studies on freshwater biodiversity. The 21st Century COE Program of Kyoto

University, Formation of a strategic base for the multidisciplinary study of biodiversity. Newsletter 2: 26-27.

Kawabata, Z. and Yuhma, M.

2003 Exercise in the river ecosystem analyses. Center for Ecological Research, Kyoto University, Newsletter, 82: 8-9.

Kawabata, Z.

2005 Interactions between research facilities and myself. Center for Ecological Research, Kyoto University, Newsletter, 89: 24-25.

Yamauchi, J. and Kawabata, Z.

2005 Strategy for unifying biodiversity studies. *Japanese Journal of Ecology* 55: 289-290, 319-320.

Kawabata, Z.

2005 Expectations of researcher at a university to museum. *Japanese Journal of Ecology*: 487-489.

### **Activities in Academic Societies**

Members of Editorial Board of Ecological Research (1995-2001), The Committee for Future Activities of The Ecological Society of Japan (2003-2004), Executive Committee of The Japanese Society of Microbial Ecology (1999-2002, 2005-), Committee for the Best Paper Prize of The Japanese Society of Microbial Ecology (2000-2001), Executive Committee of The Japanese Society of Limnology (2000-2001, 2004-2005), Editorial Board of Japanese Journal of Water Treatment Biology (1994-), Editorial Board of Journal of Environmental Biotechnology (2001-2002), and Editorial Board of Plankton Biology and Ecology (2001-), Editor-in-Chief of Limnology (05-).

### **Academic Activities**

Visiting Researcher of National Institute for Environmental Studies (2001-), Visiting Researcher of Center for Marine Environmental Studies, Ehime University (2001-), Members of Committee for the Postdoctoral Fellowships for Foreign Researchers of JSPS (2001-), Committee of scoping the field of Japan Prize (2002), NEDO Evaluation Committee for Technology (2003-2004), GWSP Committee of Science Council Japan (2004-2006), and Freshwater Biodiversity Committee of DIVERSITAS (2004-).

### **Oral Presentations for International Symposia**

Kawabata, Z.

2001 Food web structure and species diversity in the aquatrons under manipulated environments. Workshop: Space, food webs and biodiversity. Princeton University, USA, June 20, No Abstract.

Nakano, S., Nishibe, Y., Manabe, P. M., Yokosawa, M. and Kawabata, Z.

2001 Trophic interactions between planktonic protists and metazoan zooplankton in a hypereutrophic pond. The 9th International Symposium on Microbial Ecology, Amsterdam, The Netherlands, August 24-28, Abstract p. 283.

Honjo, M., Matsui, K., Ueki, M., Nakamura, R. and Kawabata, Z.

2002 Diversity of cyanophages infectious to *Microcystis aeruginosa* in a hyper-eutrophic pond. The 3rd International Algal Virus Workshop, Hiroshima, May 25, Abstract p. 28.

Jun, M.-S., Kawabata, Z. and Urabe, J.

2002 Light gradient and food web structure of plankton communities: an experimental approach. INTECOL, Seoul, Korea, Aug. 11-18, Abstract p. 104.

Kawabata, Z. and Yamamura, N.

2003 General discussion: International Symposium under 21 Century COE Program of Kyoto University- Toward the integration of biodiversity studies. Kyoto, March 27.

Fuma, S., Doi, M., Takeda, H., Kawabata, Z. and Saito, M.

2003 Index for comparative evaluation of ecological effects between ionizing radiation and other toxic agents- Application to the model ecosystem data. International Conference on the Protection of the Environment from the Effects of Ionizing Radiation, IAEA, Stockholm.

Choi, K., Ueki, M. and Kawabata, Z.

2003 Autochthonous dissolved organic matter from algae in lakes and its biodegradability. The 58th annual meeting of the Korean Association of Biological Sciences. Chungnam National University, Daejeon, Korea., Aug. 19, Abstract p. 33.

Honjo, M., Matsui, K., Ueki, M., Nakamura, R., Jed, A., Fuhrman, J. A. and Kawabata, Z.

2003 Diversity of viruses infectious to bloom-forming cyanobacteria, *Microcystis aeruginosa* in a hyper-eutrophic pond. Perspectives of the Biodiversity Research in the Western Pacific and Asian in the 21st Century DEWPA Symposium, Kyoto, Dec. 18, Abstract p. 60.

Fuma, S., Takeda, H., Takaku, Y., Hisamatsu, S. and Kawabata, Z.

2004 Effects of dysprosium on the species-defined microbial microcosm. SETAC-Europe 14th Annual Meeting (SETAC: Society of Environmental Toxicology and Chemistry), Prague, Czech Republic, Apr. 18.

Kawabata, Z. and Matsui, K.

2004 Involvement of microbial interactions in the natural transformation of bacteria in a model aquatic ecosystem. Risk Assessment for Gene Hopping in Environments. The Japanese Society of Microbial Ecology. Toyonaka, Japan, January 22, No abstract.

Kawabata, Z.

2004 Biological factors involved in horizontal gene transfer between bacteria in a model aquatic ecosystem. Plenary Lecture for the 59th Conference of Korean Association of Biological Sciences (KA OBS), Seoul, Korea, Aug. 17, Abstract p. 11.

Matsui, K., Endo, G., Ishii, N. and Kawabata, Z.

2004 Involvement of microbial interactions in the natural transformation of bacteria in a model aquatic ecosystem. The 10th International Symposium on Microbial Ecology, Cancun, Mexico, Aug. 22, Abstract p. 228.

Uchii, K., Matsui, K., Nasu, M. and Kawabata, Z.

2004 Genetic and physiological analysis of intestinal bacteria of bluegill with three different feeding habits. The 10th International Symposium on Microbial Ecology, Mexico, Aug. 22.

Kawabata, Z., Matsui, K. and Ueki, M.

2004 Possible interactions among aquatic ecosystems by gene transfer. The first EAFES International Congress, Oct. 21, Mokpo, Korea, Proceedings of the First EAFS International Congress p. 104-105.

Kawabata, Z.

2005 Diversity of viral-like agents to attenuate *Microcystis* bloom. GWSP-Asia Meeting, Kyoto, Japan, Aug. 30. Proceeding p. 50-51.

Kawabata, Z. and Fuhrman, J.

2005 Does microbial diversity drive the world? DIVERSITAS Open Science Conference, Oaxaca, Mexico, Nov. 11. Abstract: CD.

### Prize

Ehime Publication and Culture Prize, 2000 (with coauthors) (2000)

### Field Activities

Instructor of The Nature Conservation Society of Japan (2005-)

### Education and Host

2 Foreign Researchers funded by JSPS Postdoctoral Fellowship

1 JSPS Postdoctoral Fellows

5 Graduate Students of Doctor Course of Kyoto University

### Research Activities as a Leader

Analyses of generation processes and ecosystem functions of biodiversity using a symbiotron (aquatron). MEXT Creative Basic Research Program. An integrated study on biodiversity conservation under global change and bio-inventory management system (Representative: Kawanabe, H.) (2001).

Analysis of horizontal gene transfer and gene expression mechanisms in aquatic ecosystem using aquatrons. JSPS Scientific Research, Basic Research A1 (13309009) (2001-2003).

Combined effects of light and nutrients on biodiversity and secondary production. JSPS Scientific Research for Foreign Researcher (2001).

Effects of dissolved organic matter on virus killing *Microcystis* bloom. JSPS Scientific Research for Foreign Researcher (2002-2003).

Dynamics of genes in natural aquatic ecosystem. Research Associated by the Asahi Glass Foundation (2003-2005).

Analysis of different mechanisms for horizontal gene transfer in aquatic ecosystem using aquatrons. JSPS Scientific Research, Basic Research A1 (16207001) (2004-).

### Social Activities and Public Lectures

#### Social Activities

Members of Lake Biwa Committee in the Yodo River Basin Committee (2001-2005), Executive Committee of the Lake Biwa Research Institute, Shiga Prefecture (2002-2004), Reviewing Committee for the Center for Northeast Asian Studies, Tohoku University (2003-2005), Committee of the Development of Red Tide Treatment Boat (2003-2005), Committee of Dam Water Resources Environment Conservation for the (2005-), and Executive Committee of Center for Ecological Research, Kyoto University (2005-)

#### University Lectures

Faculty of Science, Kyoto University (2001-2004), Faculty of Science, Shinshu University (2002)

## KINOSHITA, Tetsuya

Professor

Born in 1950.

### Curriculum Vitae

#### Academic Career

Department of Philosophy, Faculty of Literature, Kyoto University, D. Course (1979)

Department of Philosophy, Faculty of Literature, Kyoto University, M. Course (1976)

Department of Philosophy, Faculty of Literature, Kyoto University (1974)

#### Professional Career

Professor, Research Institute for Humanity and Nature (2003)

Professor, Faculty of Literature, Okayama University (2001)

Assistant Professor, Faculty of Literature, Okayama University (1984)

Instructor, Faculty of Literature, Okayama University (1981)

Research Assistant, Faculty of Literature, Kyoto University (1979)

#### Higher Degree

M. Litt. (Kyoto University, 1976)

#### Fields of Specialization / Background

Chinese philosophical history, Neo-Confucianism, History of Chinese Classical Studies

#### Academic Society Memberships

The Sinological Society of Japan, The Institute of Eastern Culture, The Society of Oriental Researches

## Major Publications

### Articles

Kinoshita, Tetsuya

2005 “‘Ji’ ‘butsu’ ‘jibutsu’ ‘jijibutsubutsu’ – Syuki no ‘titi zai kakubutsu’ kaisyaku wo rikaisuru tameni” (On the terms ‘shi 事’ ‘wu 物’ ‘shiwu 事物’ ‘shishiwuwu 事事物物’ – To understand Chu-xi’s interpretation on the phrase ‘zhi zhi zai ge wu 致知在格物’ of “Da-xue”) *Toyo-kotengaku-kenkyu (Journal of Oriental Classical studies)* 20: 33-66. (in Japanese)

Kinoshita, Tetsuya

2005 “‘Mei’ to ‘rei’ – Shuki no ‘tenmei wo kore sei to iu’ kaisyaku” (‘Ming 命’ and ‘ling 令’ – On Chu-xi’s interpretation on the phrase ‘tianming zhi wei xing’ of “Zhong-yong”) *The Toyoshi-kenkyu (The Journal of Oriental Researches)* 64-1: 65-98. (in Japanese)

Kinoshita, Tetsuya

2005 “‘Shushigaku no iti’ rensai wo oeru ni Atari” (A self comment to my serial essay “On the place of Neo-Confucianism in the Whole Chinese History”) *Toyo-kotengaku-kenkyu (Journal of Oriental Classical studies)* 19: 31-37. (in Japanese)

## NAKANO, Takanori

Professor

Born in 1950.

## Curriculum Vitae

### Academic Career

Department of Geology, Faculty of Science, Tokyo University of Education, D. Course (1982)

Department of Geology, Faculty of Science, Tokyo University of Education, M. Course (1977)

Department of Geology, Faculty of Science, Tokyo University of Education (1974)

### Professional Career

Professor, Research Institute for Humanity and Nature (2004)

Associate Professor, Institute of Geoscience, University of Tsukuba (1992)

Assistant Professor, Institute of Geoscience, University of Tsukuba (1982)

### Higher Degrees

D. Sc. (Tokyo University of Education, 1982)

M. Sc. (Tokyo University of Education, 1977)

### Fields of Specialization / Background

Resource Geology, Isotope Earth Science

### Academic Society Memberships

The Society of Resource Geology, Geochemical Society of Japan, Japanese Association of Hydrological Sciences, Geological Society of Japan, The Society of Society of Economic Geologist

## Major Publications

### Books

Ie, Y. Ogawa, Y. Nagata, T. Nakano, E. Hiei, M. Hirano, Y. Asano, N. Ikeda and N. Ikeda and Suken Shuppan Shuppanbu

2005 *Chigaku I, Earth and Space (text for senior high school)*, 274pp. Suken Shuppan. (in Japanese)

### Articles

Nakano, T., Tayasu, I., Wada, E., Igeta, A., Hyodo, F. and Miura, Y.

2005 Sulfur and strontium isotope geochemistry of tributary rivers of Lake Biwa: implications for human impact on the decadal change of lake water quality. *Science of the Total Environment* v. 345, Issues 1-3, 1-12.

Nakano, T., Nishikawa, M., Mori, I., Shin, K., Hosono, T. and Yokoo, Y.

2005 Source and evolution of the "perfect Asian dust storm" in early April 2001: implications of the Sr-Nd isotope ratios, *Atmospheric Environment*, v. 39, 5568-5575.

Kurihara, Y., Nakano, T. and Ogasawara, K.

2005 The occurrence of the fossil mytilid bivalve *Mytilus tichanovitchi* Makiyama from the Miocene Shimonita Formation, Gunma Prefecture, central Japan: Re-evaluation of its biostratigraphic and marine paleoclimate significance. *The Journal of the Geological Society of Japan*. v. 111, pp. 498-507. (in Japanese with English abstract)

Yamanaka, M., Okumura, M., Nakano, T. and Shimano, Y.

2005 Visit to valuable water springs (69) Valuable water springs in Yakushima island. *Journal of Japanese Association of Groundwater Hydrology*. v. 47, pp. 253-262. (in Japanese)

### **General Reports**

Nakano, T.

2005 Study on the behavior of heavy metals in the water-plant-soil system of abandoned mining area. *2005 Report of the Shigen Sozai gakkai*. 39-42. (in Japanese)

Nakano, T.

2005 Mass and quality of water. *Hito to Mizu, Research Journal of cooperative research project of National Institute for the Humanities*, v. 1, 10-11. (in Japanese)

Nakano, T.

2005 Development of high-precision discrimination method for the source area of *Igusa* materials using dissolution analytical method. *Research Report of National Institute for Agro-Environmental Sciences*, v. 431, 29-40.

### **Activities in Academic Societies**

#### **Committee members**

2004- Member of the Committee for the Society of Resource Geology

#### **Oral Presentations etc.**

Nakano, T., Morohashi, S., Sakai, H., Yasuda, H. and Okada, N.

June 12-17, 2005 Determination of seasonal and regional variation in the provenance of dissolved cations in rain in Japan based on Pb and Sr isotopes. International Symposium of Acid rain. Prague, Czech Republic, p. 56.

Arita, S., Nakano, T., Murano, K.

June 12-17, 2005 Temporal change in chemical and isotopic composition of rain and fog on Mt. Kitadake, central Japan, during typhoon events. International Symposium of Acid rain. Prague, Czech Republic, p. 71.

Miura, Y., Nakano, T., Hosono, T., Shin, K. and Kurosawa, M.

June 12-17, 2005 Dissolution of carbonate in response to an increase of acidic components from the Asian continent: an example of stream water on Tsushima island. International Symposium of Acid rain. Prague, Czech Republic, p. 386.

Nakano, T., Tayasu, I., Igeta, A., Hyodo, F., Kohzu, A., Nagata, S. and Wada, E.

January 31, 2005 Stable isotope geochemistry of sulfur, nitrogen and strontium in the tributary rivers of Lake Biwa. Annual meeting of Japan Geoscience Union (invited). (in Japanese)

Nakano, T.

February 25, 2005 Study on the behavior of heavy metals in the water-plant-soil system of abandoned mining area. *Conference of the Shigen Sozai gakkai*. (in Japanese)

## Research Activities

### Field Research in Japan and Oversea

- April 7-12, 2005 Shiga Prefecture (Water quality research of lake Biwa watershed)  
 June 18-25, 2005 Iwate Prefecture (Acid-Heavy metal Water quality research of the Hachimantai area)  
 August 1-6, 2005 Seoul in Korea (Water quality research of the groundwater and riverwater in Seoul city)

## Social Activities and Public Lectures

### Public Lectures

- May 12, 2005 "Rock-fingerprint and Environmental traceability study" Atmospheric chemistry study group of Natural Science of Kanazawa University [in Japanese].  
 July 9, 2005 4<sup>th</sup> RIHN Forum on "Mizu ga tachikirareruto mineral wa" [in Japanese].  
 July 26, 2005 "RIHN project and Environmental traceability study" Cooperative seminar of Geology and Soil animal groups of Yokohama National University [in Japanese].  
 October 18, 2005 Human impact on the quality of river- and ground-water in Japan: examples using stable isotopes of dissolved ions. In Human impacts on Urban Subsurface Environments of RIHN Pre-International symposium, Kyoto, Japan.  
 January 31, 2006 "Global environmental issues and Environmental traceability study". Hanshin Shinia College [in Japanese].  
 February 25, 2006 "Multi-elemental map of water in Akanoi area". 3<sup>th</sup> Forum for river management organized by NPO Hojo no sato.

### University Lectures

- November 4, 2005 Graduate School of Agriculture, Kyoto University  
 January 26-27, 2006 Graduate School of Life and Environmental Sciences, University of Tsukuba

## NAKASHIZUKA, Tohru (ASANO, Tohru)

Professor

Born in 1956.

## Curriculum Vitae

### Academic Career

- Graduate School of Science, Osaka City University, D. Course (1983)  
 Graduate School of Science, Chiba University, M. Sc. (1980)  
 Department of Biology, Faculty of Science, Chiba University (1978)

### Professional Career

- Guest Professor, Kanazawa University (2002)  
 Professor, Research Institute for Humanity and Nature (2001)  
 Professor, Center for Ecological Research, Kyoto University (1995)  
 Senior Researcher, Forestry and Forest Products Research Institute (1994)  
 Senior Researcher, Japan International Research Center for Agricultural Sciences (1993)  
 Senior Researcher, Tropical Agricultural Research Center (1992)  
 Senior Researcher, Forestry and Forest Products Research Institute (1989)  
 Researcher, Forestry and Forest Products Research Institute (1985)

### Higher Degrees

- D. Sc. (Osaka City University, 1983)  
 M. Sc. (Chiba University, 1980)

## Fields of Specialization / Background

Plant Ecology, Forest Ecology

## Academic Society Memberships

Ecological Society of Japan, The Botanical Society of Japan, Japanese Forestry Society, International Association of Vegetation Science, International Association for Landscape Ecology, American Society of Ecology, Japanese Association of Historical Botany, Japan Society of Tropical Ecology, The Japanese Society of Forest Environment, Ecology and Civil Engineering Society

## Major Publications

### Books

Nagaike, T., Yoshida, T., Miguchi, H., Kamitani, T. & Nakashizuka, T.

2005 Rehabilitation for species enrichment in abandoned coppice forests in Japan. In Stanturf, J. A. & Madsen, P. (eds.), *Restoration of Boreal and Temperate Forests*, CRC Press, pp. 371-381.

Nakashizuka, T.

2005 Tayousei toha nanndarou (What is biological diversity?) In Hidaka, T. ed. *Seibutsu Tayousei ha naze taisetsuka* (Why is biological diversity important?), Showado, pp. 1-40.

### Articles

Nakashizuka, T.

2005 Ajia no Shinrin Jizokusei to Seibutsu Tayousei: Sustainability and biodiversity of Asian forests. *Shinrin Kagaku* 43: 68-72.

Enoki, T., Kawaguchi, H., Nakashizuka, T. & Hamid, A. A.

2005 "Growth pattern and leaf morphology of *Shorea parvistipulata* saplings in a tropical rain forest of Sarawak, Malaysia" *Journal of Tropical Ecology* 21: 215-218.

Nakashizuka, T.

2005 "The role of biodiversity in Asian forests" *Journal of Forest Research* 9: 293-298.

Ichie, T., Kenta, T., Nakagawa, M., Sato, K. & Nakashizuka, T.

2005 "Resource allocation to reproductive organs during masting in the tropical emergent tree, *Dipterocarpus tempehes*" *Journal of Tropical Ecology*, 21: 237-241.

Takeuchi, Y., Kenta, T. & Nakashizuka, T.

2005 "Comparison of sapling demography of four dipterocarp species with different seed-dispersal strategies" *Forest Ecology and Management* 208: 237-248.

Abe, M., Miguchi, H., Honda, A., Makita, A. & Nakashizuka, T.

2005 "Short-term change in factors affecting regeneration of beech (*Fagus crenata*) after simultaneous death of dearf bamboo" *Journal of Vegetation Science*, in press.

Ichie, T., Kenzo, T., Kitahashi, Y., Koike, T. & Nakashizuka, T.

2005 "How does *Dryobalanops aromatica* supply carbohydrate resources for reproduction in a masting year?" *Tree Structure and Function* 21: 237-241.

Nakagawa, M., Takeuchi, Y., Kenta, T. & Nakashizuka, T.

2005 "Predispersal seed predation by insect vs. vertebrate in six *Dipterocarp* species in Sarawak, Malaysia" *BIOTROPICA* 37: 389-396.

## Activities in Academic Societies

Steering Committee of Ecological Society of Japan (2003-), Executive Committee of Ecological Society of Japan (2002-), Steering Committee of Japan Society of Tropical Ecology (1998-), Steering Committee of Japanese Branch of International Society of Landscape Ecology (2001-), Associate Editor of *EcoScience* (Canada, 2003-), Secretary

General of DIVERSITAS Western Pacific Asia (1998-2001), Steering Committee of Global Canopy Program (1999-), Japanese Technical Committee of GBIF (2000-), Science Committee of DIVERSITAS (2002-)

### Research Activities

#### Field Research in Japan

Kita-ibaraki, Ibaraki: Researches on dynamics of trees and forests (May 2005)

Shirakami, Aomori: Monitoring of beech forest dynamics (Sept., Oct. 2005)

Ohdai, Nara: Effect of deer on forest regeneration (June, July, Aug., Sept. & Oct., 2005)

#### Field Research in Foreign Countries

Sarawak, Malaysia: Canopy processes of tropical rain forest (May, Aug., & Nov. 2003, Jan. 2005)

Kanchanaburi, Thailand: Dynamics of tropical seasonal forest (Jan. 2006)

### Supervision and Host (Number of DC Students and JSPS Research Fellows)

Special Collaborative Researcher of RHIN (3 graduate students from Kyoto University)

### Social Activities and Public Lectures

#### Social Activities

Working Group for "Water and Life", Kansai Forum for Environment (2002-), Consulting Committee, Nature Conservation Society Japan (2002-), Steering committee for "Koshiji Mizu to Midori no kai", (2002-)

## NAKAWO, Masayoshi

Professor

Born in 1945.

### Curriculum Vitae

#### Academic Career

Department of Geophysics, Faculty of Science, Hokkaido University, D. Sc. (1977)

Department of Geophysics, Faculty of Science, Hokkaido University, M. Sc. (1974)

Department of Physics, Faculty of Science, Kyoto University (1969)

#### Professional Career

Adjunct Professor, Nanjing University (2003)

Professor, Research Institute for Humanity and Nature (2001)

Associate Professor, Research Institute for Humanity and Nature (2001)

Adjunct Professor, Hunan Normal University (1996)

Associate Professor, Institute for Hydrospheric-Atmospheric Sciences, Nagoya University (1993)

Head of Department, Second Department, Nagaoka Institute of Snow and Ice Studies, National Institute for Disaster Prevention and Earth Sciences (1987)

Associate Professor, Department of Applied Physics, Faculty of Engineering, Hokkaido University (1987)

Assistant Professor, Department of Applied Physics, Faculty of Engineering, Hokkaido University (1981)

Research Associate, Division of Building Research, National Research Council of Canada (1977)

Research Associate, Institute of Low Temperature Science, Hokkaido University (1970)

#### Higher Degrees

D. Sc. (Hokkaido University, 1977)

M. Sc. (Hokkaido University, 1974)

**Fields of Specialization / Background**

Glacio-climatology, Snow Hydrology

**Academic Society Memberships**

Japanese Society of Snow and Ice, Japan Society of Hydrology and Water Resources, Meteorological Society of Japan, International Glaciological Society, International Association of Hydrological Sciences, American Geophysical Union, International Water History Association

**Major Publications****Articles**

Fumio NAKAZAWA, Koji FUJITA, Nozomu TAKEUCHI, Toshiyuki FUJIKI, Jun UETAKE, Vladimir AIZEN and Masayoshi NAKAWO

2005 "Dating of seasonal snow/firn accumulation layers using pollen analysis" *J. Glaciology* 51: 174, 483-490.

HASHIMOTO, S., S. ZHOU, Masayoshi NAKAWO, Masujiro SHIMIZU, Nobuyoshi ISHIKAWA

2005 "Temporal isotope changes in wet snow layers in association with mass exchange between snow particles and liquid water in between the particles" *Annals of Glaciology* 40.

**Activities in Academic Societies**

2003, May ~ present Council member / Chair of Academic Committee, Japanese Society of Snow and Ice

August, 2005 Nakawo, M. 「Weather information in and around Hexi Corridor in the period of the Qing Dynasty described in official documents preserved at the First Historical Archives of China.」  
PAGES Second Open Science Meeting, Beijing

October, 2005 Nakawo, M. organized Oasis Project Sessions, and Inter Project Sessions on "Human History in the Changing Climate" and "Challenging for Better Human/Water Relationships", in the Pre-symposium for the RIHN Inaugural International Symposium.

**Research Activities****Field Research in Foreign Countries**

August-September, 2005 China and Kazakhstan (Field Investigations on the Illi Project)

**Supervision and Host (Number of DC Students and JSPS Research Fellows)**

Vice supervisor (1), JSPS Foreign Research Fellow (1)

**Social Activities and Public Lectures****Public Lectures**

March, 2006 Two thousand years history of the water circulation system in arid and semi-arid region, central Eurasia. Special Lecture at Hunan Normal University, Changsha

**Social Activities**

2002~2005 member, Japan National Committee for Polar Science, Science Council of Japan

2003~present Japanese Representative for Union Commission on Cryosphere Sciences

**OSADA, Toshiki**

Professor

Born in 1954.

**Curriculum Vitae****Academic Career**

Department of Tribal &amp; Regional Languages, Faculty of Arts, Ranchi University (India), D. Course (1990)

Department of Linguistics, Faculty of Arts, Hokkaido University, M. Course (1984)

Department of Linguistics, Faculty of Arts, Hokkaido University (1981)

**Professional Career**

Professor, Research Institute for Humanity and Nature (2003)

Professor, Department of Arts, Kyoto University of Arts and Design (2001)

Research Associate, International Research Center for Japanese Studies (1992)

Temporary Teacher, Shukutoku Sugamo High School (1991)

**Higher Degrees**

Ph. D. (Ranchi University, 1991)

M. A. (Hokkaido University, 1984)

**Fields of Specialization / Background**

Linguistics, South Asian Studies

**Academic Society Memberships**

The Japanese Society of Linguistics, The Japanese Society of South Asian Studies

**Major Publications****Books****[Co-editor]**

Toshiki Osada (ed.)

2006 *Proceedings of the Pre-symposium of RIHN and 7<sup>th</sup> ESCA Harvard-Kyoto Roundtable*. Research Institute for Humanity and Nature.**Articles**

Osada, Toshiki

2005 "On theory of mixed language for the origins of Japanese language", Inami & Inoue (eds) *Cross-border and Mixture in the Presentation*. (In Japanese) International Research Center for Japanese Studies. pp. 169-182.

Osada, Toshiki

2005 "A historical note on inclusive / exclusive opposition in South Asian languages –borrowing or retention or innovation?", *Mon-Khmer Studies* 34: 79-96.

Osada, Toshiki

2005 "Languages never exist without their scripts in South Asia", *Gekkan Gengo* 34(10): 50-51. (in Japanese)

Osada, Toshiki

2005 "Report on the Pre-symposium of RIHN and 7<sup>th</sup> ESCA Harvard-Kyoto Roundtable", *ILCAA Newsletter* 115: 56-60. (in Japanese)

Osada, Toshiki

2006 "Report on the field research in Gujarat, India", *Human and Water* 0: 28-29. (in Japanese)

Osada, Toshiki

2006 "How many Proto-Munda words in Sanskrit? –with special reference to agricultural vocabulary", In Toshiki Osada (ed.) *Proceedings of the Pre-symposium of RIHN and 7<sup>th</sup> ESCA Harvard-Kyoto Roundtable*. Kyoto: Research Institute for Humanity and Nature, pp. 151-174.

Nicholas Evans and Toshiki Osada

2005 "Mundari: The myth of a language without word classes" *Linguistic Typology* 9: 351-390.

Nicholas Evans and Toshiki Osada

2005 "Author's response: Mundari and argumentation in word-class analysis" *Linguistic Typology* 9: 442-457.

### **Activities in Academic Societies**

#### **Symposium (Convener)**

June 2005 Session on Agricultural vocabulary, in Pre-symposium of RIHN and 7<sup>th</sup> ESCA Harvard-Kyoto Roundtable, Kyoto.

#### **Oral Presentation**

June 2005 "How many Proto-Munda words in Sanskrit? —with special reference to agricultural vocabulary" in Pre-symposium of RIHN and 7<sup>th</sup> ESCA Harvard-Kyoto Roundtable, Kyoto.

January 2006 "The rice ritual of Munda people in Jharkhand", in First Farmers in Global Perspectives, Lucknow, India.

### **Research Activities**

#### **Field Research in Foreign Countries**

June 2005 Preliminary survey on Indus sites in Gujarat, India.

October 2005 Field survey on Indus sites in Gujarat, India.

## **SAITO, Kiyoaki**

Professor

Born in 1945.

### **Curriculum Vitae**

#### **Academic Career**

Department of Agricultural Biology, Faculty of Agriculture, Kyoto University (1969)

Department of Education, Faculty of Education, Kyoto University (1971)

#### **Professional Career**

Professor, Research Institute for Humanity and Nature (2004)

Senior Staff Writer, Staff Writer, The Mainichi Newspaper (1971-2003)

#### **Fields of Specialization / Background**

Study of Nature, Journalism

#### **Academic Society Memberships**

The International Society of Volunteer

### **Major Publications**

#### **Articles**

Saito, Kiyoaki

2005 Visit to Shangri-La. The Mainichi News Paper, Oct. 28th (in Japanese)

2005 The crisis of irrigation agriculture in USA. Economist, Sep. 20th, pp84-87 (in Japanese)

2005 The field-work of giant snow-cap in Japan-alps. The Mainichi News Paper, May. 18th (in Japanese)

Saito, Kiyoaki Yamakoshi, Gen and Takada, Kori

2005 Discussions about Japanese Primatology. The Asahi News Paper, Nov. 5th, Oct 29th (in Japanese)

**Activities in Academic Societies**

Member, Editorial Board for Journal of Volunteer Studies (The International Society of Volunteer)

Member, Editorial Board for Ecosophia (The Research Society of Ethno-Natural History)

**Research Activities****Field Research in Foreign Countries**

September, 2005 China (Research on the High-Altitude Environments)

June, 2005 USA (Research on the Water resources)

**Social Activities and Public Lectures****Social Activities**

Member, Japanese National Committee for Antarctic Research

**Public Lectures**

April, 2005 Global Environment from the view point of the Antarctic. Nagaoka-city central public hall (in Japanese)

May, 2005 The lecture on Global Environment. Takatuki-city public hall (in Japanese)

June, 2005 The lecture on Global Environment. Takatuki-city public hall (in Japanese)

July, 2005 The lecture on Global Environment. Takatuki-city public hall (in Japanese)

**SATO, Yo-Ichiro**

Professor

Born in 1952.

**Curriculum Vitae****Academic Career**

Department of Agronomy, Kyoto University, M. Course (1979)

Faculty of Agriculture, Kyoto University (1977)

**Professional Career**

Professor, Research Institute for Humanity and Nature (2003-)

Assoc. Prof. Shizuoka University (1994)

Research Associate, National Institute of Genetics (1983)

**Higher Degrees**

D. Agr. (Kyoto University, 1986)

M. Agr. (Kyoto University, 1979)

**Fields of Specialization / Background**

Genetics, Ecological Genetics, DNA archaeology

**Academic Society Memberships**

J. Soc. Breeding, Society of Tropical Ecology

**Major Publications****Books**

Yousuke Kuroda, Yo-Ichiro Sato, Chay Bounphanousay, Yasuyuki Kono and Koji Tanaka 2005 Gene flow from cultivated rice (*Oryza sativa* L.) to wild *Oryza* species (*O. rufipogon* Griff. and *O. nivara* Sharma and Shastry) on the Vientiane plain of Laos *Euphytica* 142: 75-83

Yousuke Kuroda, Hathairat Uairong and Yo-Ichiro Sato 2005 Differential heterosis in a natural population of Asian wild rice (*Oryza rufipogon* Griff.) due to reproductive strategy and edge effect *Genetic Resources and Crop*

*Evolution* 52: 151-160

- 2005 *Sato to mori no kuraishisu kurashi tayouka heno teigen* "Crisis of village and forest advance to diversity of life" Asahi sensho 786 (in Japanese)
- 2005 *Mukashi no kankyou wo kagaku suru* (To investigation for environment of the past) *Ima kono kenkyu ga omoshiroi*, Iwanami Junior shinsho: 137-156
- 2005 *Seikatsu no naka no seibutsutayousei* "Seibutsutayousei ha naze taisetsu ka?" Showado

#### Articles

- 2005 *Syoyojoyurimbunka to ine* (evergreen broad leaf forests and rice). *Kagaku* 75: 4, 441-444 (in Japanese)
- 2005 *Nazo ni michita mame no syoutai wo saguru DNA koukogaku no chousen* (Probe to identity of bean filled by mystery Challenge of DNA Archaeology). *EPTA21*, 55-57
- 2005 *Ichiyouka siteyuku nihon no shoku* (To making for the same Japanese Foods) *Kikan Minzokugaku* 112, 31-38
- 2005 *Sannai-maruyama iseki kara deta syusi tachi* (Seeds was excavated from Sannai-maruyama site) *Vesta* 58, 35
- 2005 *Seibutugaku ni okeru buntui no houhou to kangaekata*. *Gekkan gengo* 34: 8, 58-65
- 2005 *Ine ha itsukara nihon ni attaka*. 8<sup>th</sup> *Jyomon bunka kouza* 17-28
- 2005 *Ine ha dokode umaretanoka* (Where was born the rice?) *Syuuukan Kaidou wo yuku*, No. 35
- 2005 「Shōgaboiseki」 「Asia no seiyojin」 *Syukan asahi hyakka* 『Silk road kikou』 No. 4
- 2006 *Fuukei wo yomu*. *CX-PAL* 67, SONY
- 2006 *Sato no fushigi*. The school of future projectfulfillment executive
- 2006 *Tayousei no mori kara (I)*. (From forest of diversity) *Subaru* 166-173
- 2006 *Shokubutu ga motsu mizu no tuioku*. *Human and water* 0

#### Activities in Academic Societies

- April 2005 1<sup>st</sup> workshop of Human and Water, *Mizu no iru ine iranai ine*, I-URIC, Tokyo (In Japanese)
- July 2005 NHK Culture Center *Komugi ga kataru Silk road, Bisyoujyo miira ga motsu komugi no roots wa?* Suita-city (In Japanese)
- July 2005 Kome Symposium – *Shoku no mirai – Shoku no anshin to kome no DNA kantei*–, Shoku no mirai wo kangaeru kai, Shizuoka-city (In Japanese)
- September 2005 *Atarashii nongyou wo sasaeru kagaku to gijyutsu, Ine ga ine ni natta toki, Chuo nongyo sougou kenkyu center Hokuriku kenkyu center*, Jyoetsu-city (In Japanese)
- September 2005 Chikyu kankyo hozon koukai Symposium, *Kome to bunka no tayousei* (The diversity of Rice and Culture), Sizuoka-city (In Japanese)
- September 2005 RHIN 1<sup>st</sup> Chiiki seminar, *Yuki to Hito* (Snow and Human): *Kurashi wo sasaeru nihonkai* (The sea of Japan supports the life), Toyama prefecture (In Japanese)
- October 2005 The Symposium of Human Culture study organization, *Hito ga tsukutta shokubutsu tachi*, Yuraku-cho (In Japanese)
- October 2005 Kokusai rotary dai 2620 chiku taikai kinen kouen, *Naze ima yasei ine jiseichi hozon ka?* Shizuoka-city (In Japanese)
- October 2005 *Silk road to oasis* "Roran" Shanghai Silk road seminar hold fulfillment executive, Shanghai, China
- October 2005 *Yamato no shizen to rekisi · bunka, Okome no DNA –Nihon no ine bunka wo kangaeru–* Yamanobe bunka kaigi, Tenri-city (In Japanese)
- October 2005 11<sup>st</sup> Workshop of Global Change Japan-America, The earth environment frontier study center, Yokohama (In Japanese)
- November 2005 World Wild Rice Symposium, Osaka (In Japanese)
- January 2006 International Seminar First Farmers in Global Perspective, Lucknow, India (in English)
- February 2006 *Nihon no ine no tayousei*, Kodaiinekenkyukai, Ohno-cho Hiroshima prefecture (In Japanese)

March 2006 53<sup>rd</sup> Forum of National Museum of Japanese History, *YAYOI no hajimari to Higashiasia*, Tokyo (In Japanese)

## TAKASO, Tokushiro

Professor

Born in 1954.

### Curriculum Vitae

#### Academic Career

Department of Biology, Graduate School of Science, Tokyo Metropolitan University, D. Course (1981)

Department of Biology, Graduate School of Science, Chiba University, M. Course (1978)

Department of Horticulture, Faculty of Agriculture, Shizuoka University (1976)

#### Professional Career

Professor, Research Institute for Humanity and Nature (2003)

Visiting Professor, Research Institute for Humanity and Nature (2001)

Professor, Tropical Biosphere Research Center, University of the Ryukyus (1997)

Postdoctoral Fellow, Department of Biology, University of Victoria (1990)

Postdoctoral Fellow, Harvard Forest, Harvard University (1988)

Postdoctoral Fellow, Harvard Forest, Harvard University (1986)

Research Fellow, Japan Society for the Promotion of Science (1985)

Research Fellow, Japan Society for the Promotion of Science (1981)

#### Higher Degrees

Ph. D. (Tokyo Metropolitan University, 1982)

M. Sc. (Chiba University, 1978)

#### Fields of Specialization / Background

Plant Morphology

#### Academic Society Memberships

The Botanical Society of Japan, The Japanese Society for Plant Systematics, The Japanese Society of Plant Physiologists, The Botanical Society of America

### Major Publications

#### Articles

Tangmitcharoen, S., T. Takaso, S. Siripanadilox, W. Tasen and J. N. Owens

2006 Behavior of major insect pollinators of teak (*Tectona grandis* L. f.): a comparison of clonal seed orchard versus wild trees. *Forest Ecology and Management*. 222: 67-74.

Tangmitcharoen, S., T. Takaso, S. Siripanadilox, W. Tasen and J. N. Owens

2006 Insect biodiversity in flowering teak (*Tectona grandis* L. f.) canopies: comparison of wild and plantation stands. *Forest Ecology and Management*. 222: 99-107.

### Activities in Academic Societies

#### Oral Presentation, etc.

March, 2006 "Pollen development and pollination mechanism in *Cymodocea rotundata*" (The 5th Annual Meetings of Japanese Society for Plant Systematics, oral presentation) Ryukyu University, Japan (in Japanese)

March, 2006 "Phenology of seagrasses in Iriomote Island (The 5th Annual Meetings of Japanese Society for Plant Systematics, poster presentation) Ryukyu University, Japan (in Japanese)

March, 2006 "Morphological analysis of a cryptic dioecious shrub, *Mussaenda parviflora* (Rubiaceae)" (The 5th Annual Meetings of Japanese Society for Plant Systematics, poster presentation) Ryukyu University, Japan (in Japanese)

## **WATANABE, Tsugihito**

Professor

Born in 1953.

### **Curriculum Vitae**

#### **Academic Career**

Department of Agricultural Engineering, Graduate School of Agriculture, Kyoto University, D. Course (1983)

Department of Agricultural Engineering, Graduate School of Agriculture, Kyoto University, M. Sc. (1979)

Department of Agricultural Engineering, Faculty of Agriculture, Kyoto University (1977)

#### **Professional Career**

Professor, Research Institute for Humanity and Nature (2003)

Associate Professor, Research Institute for Humanity and Nature (2001)

Associate Professor, Arid Land Research Center, Tottori University (2001)

Associate Professor, College of Agriculture and Bioscience, Osaka Prefecture University (1995)

Associate Professor, Faculty of Agriculture, Kyoto University (1989)

Research Assistant, Faculty of Agriculture, Kyoto University (1984)

Research Fellow, Japan Society for Promotion of Science (1983)

#### **Higher Degrees**

D. Agri. (Kyoto University, 1989)

M. Sc. (Kyoto University, 1979)

#### **Fields of Specialization / Background**

Irrigation and Drainage Engineering

#### **Academic Society Memberships**

Japanese Society of Irrigation, Drainage and Reclamation Engineering, Japan Society of Hydrology and Water Resources, Japanese Association for Water Resources and Environment, Japan Society of Civil Engineers, the Japanese Society for Arid Land Studies, International Commission on Irrigation and Drainage, and International Water Resources Association

### **Major Publications**

#### **Books**

Watanabe, Tsugihito and Keisuke Hoshikawa

2005 *Water Balance Model of Irrigation District. in Integrated Assessment Model of Water Resources and Application to the Yellow River Basin.* edited by Dawen YANG and Tetsuya KUSUDA. Beijing: China Water Power Press. (in Chinese)

#### **Articles**

Katsuyuki Fujinawa, Kentaro Masuoka, Takanori Nagano and Tsugihito Watanabe

2005 "Numerical simulation modeling for salt-water intrusion in predicting impacts of sea-level rise on areas below sea-level" *JSCE Journal of Hydraulic, Coastal and Environmental Engineering* 790/VII-35: 35-48 (in Japanese)

Naganao, Takanori, Keisuke Hoshikawa, Donma Sevgi, Takashi Kume and Tsugihito Watanabe

2005 "Assessment of adaptation capacity of a large irrigation district towards social and climatic changes: A case

study of Lower Seyhan Basin in southern Turkey" *Proceedings of world water and environmental resources congress 2005, Environment and Water Resources Institute of American Society of Civil Engineers, May 2005*, pp. 13-19.

Hoshikawa, Keisuke, Tsugihiko Watanabe, Takashi Kume and Takanori Naganao

2005 "A model for assessing the performance of irrigation management systems and studying regional water balances in arid zones" *Proceedings of the 19th congress of International Commission on Irrigation and Drainage, September 10-18, 2005, Beijing, China. (CD-ROM)*

Kume, Takashi, Takanori Naganao, Tsugihiko Watanabe, Toru Mitsuno and Chaolunbagen

2005 "Effect of Leaching Irrigation on the Spatial Distribution of Soil Salinity in the Hetao Irrigation District in China" *Proceedings of the 19th congress of International Commission on Irrigation and Drainage, September 10-18, 2005, Beijing, China. (CD-ROM)*

Tanaka, Kenji, Yoichi Fujihara, Tsugihiko Watanabe, Toshiharu Kojiri and Shuichi Ikebuchi

2006 "Projection of the Impact of Climate Change on the Surface Energy and Water Balance in the Seyhan River Basin Turkey" *Annual Journal of Hydraulic Engineering* 50: 31-36.

## Activities in Academic Societies

### Administrative Works

- 2005- Chairperson of Sub-Committee of Strategic Research Initiatives, Research and Development Committee. Member of Committee for Renaming. JSIDRE (Japanese Society of Irrigation, Drainage and Reclamation Engineering)
- 2003- Member of Working Group on Irrigated Agriculture under Droughts and Water Shortage. Member of Working Group on Global Climate Change and Irrigation. ICID (International Committee on Irrigation and Drainage)
- 2003- Member of Editing Board of *Paddy and Water Environment*. PAWEES (International Society of Paddy and Water Environmental Engineering)
- 1998- Board Member, JAWRE (Japanese Association for Water Resources and Environment)

### Chairing

- March 7, 2006. General Moderator, Annual Symposium on Water Resources, The Science Council of Japan. Tokyo, Japan.
- March 20, 2006. Moderator, Session on Water and Cultural Diversity, Fourth World Water Forum, Centro Banemex, Mexico City, Mexico.

### Special Lecture

- August 24, 2005. "Impacts of Climate Change on Agriculture". Freshman Seminar of Annual Meeting of JSIDRE, Gifu University, Gifu, Japan.

### Aural Presentations

- August 4, 2005. Sato, Yoshinobu, Masayuki Matsuoka, Tsugihiko Watanabe, Yoshihiro Fukushima, and Xieyao Ma. "Long-term changes in discharge of upstream Yellow River and modeling of artificial operation impacts". Annual meeting of Japan Society of Hydrology and Water Resources. Tsukuba University, Tsukuba, Japan.
- August 25, 2005. Hoshikawa, Keisuke, Takashi Kume, Takanori Naganao, and Tsugihiko Watanabe. "Development and application of IMPAM (Irrigation Management Performance Assessment Model)". Annual Meeting of JSIDRE, Gifu University, Gifu, Japan.
- August 25, 2005. Kume, Takashi, Takanori Naganao, Sevgi Donma, Selim Kapur, and Tsugihiko Watanabe. "Results of soil salinity distribution in the Adana Region of Turkey". Annual Meeting of JSIDRE, Gifu University, Gifu, Japan.

- August 25, 2005. Nagano, Takanori, Keisuke Hoshikawa, Takashi Kume, Tsugihiko Watanabe, and Sevgi Donma, "Water Use Efficiency of the Selected Tertiary Canals in the Lower Seyhan Irrigation Project Area, Turkey". Annual Meeting of JSIDRE, Gifu University, Gifu, Japan.

## Field Studies

### Abroad

April, May, and November 2005, and January to February 2006.

Turkey (Studies on Impact of climate change on agricultural production)

June 2005. United States of America (Studies on Water resources and irrigation management)

September 2005. China (Studies on irrigated agriculture under droughts and water shortage)

November 2005. Arab Republic of Egypt (Studies on Impact of climate change on agricultural production)

December 2005. Italy (Studies on crop and water dynamics in farmland)

## Other Academic Activities

2000 to date Research Collaborator, JSPS-CAS Core-University Program Researches on Combating Desertification and Developmental Utilization in Inland China, Arid Land Research Center of Tottori University.

2000 to date Joint Researcher, Arid Land Research Center of Tottori University.

2001 to date Head of Agriculture and Irrigation Sub-Group of the Research Project on "Improving the Sustainability in Utilizing and Controlling Water in the Yellow River Basin", the Core Research for Evolutional Science and Technology Japan Science and Technology.

## Social Activities and Other Activities

### Lectures

- May 9, 2005. "Water use and water balance model of the larger irrigation schemes in the Yellow River Basin", International Joint Workshop on Water Resources Management of Yellow River. Tsinghua University, Beijing, China.
- May 12, 2005. "Challenges of establishing new academic field on global environment and assessment of impacts of climate change on agriculture". Invited Special Lecture. Hohai University, Nanjing, China.
- November 3, 2005. "Agriculture, regional hydrological cycle and basin water resources". Commentator, International Symposium on Agriculture and food security on the Monsoon Asia" of National Institute for Agro-Environmental Sciences. Tokyo University, Tokyo, Japan.
- November 4, 2005. "Is enough water resources in the Yellow River Basin?". Seminar of Japan Society of Arid Land Studies. Tokyo University, Tokyo, Japan.
- November 9, 2005. "Safety of food, soundness of agriculture, and conservation of land and water". Workshop of New Echigawa Irrigation Project. Echigawa-engan Land Improvement District, Higashi-Ohmi, Shiga, Japan.
- December 20, 2005. "Crop water productivity and irrigation management. FAO Workshop on crop water productivity. FAO, Rome, Italy.
- January 18, 2006. "Irrigation and drainage engineering for global environment". Special Lecture of College of Agriculture, Kyoto University, Kyoto, Japan.
- February 14, 2006. "Impacts of global warming on agriculture". Hanshin Senior College, Amagasaki, Hyogo, Japan.
- February 28, 2006. "Human Resources Development for Rural Development and Environmental Conservation" International Cooperation Forum of Obihiro University of Agriculture and Veterinary. Obihiro, Hokkaido, Japan.

### Committee Work for Other Organizations

- 2005 to date Member of the Committee on Evaluation of Independent Administrative Institutions, Ministry of Agriculture, Forestry and Fisheries.
- 2004 to date Member of the Working Group for Environment of Lake Biwa and Rivers in the Lake Biwa Basin, Ministry of Land Infrastructure and Transportation.
- 2003 to date Member of the Committee on Evaluation of Independent Administrative Institutions, Ministry of Foreign Affairs.
- 2003 to 2005 Member of Research Liaison Committee for Social Environmental Engineering, The Science Council of Japan.
- 2003 to date Member of the Committee on Technical Research, Advice Center for Rural Environment Support.
- 2002 to date Member of the Committee for Promotion of Groundwork in Shiga Prefecture, Federation of Land Improvement Organizations of Shiga Prefecture.
- 1999 to date Member of the National Committee for ICID, Japan Institute of Irrigation and Drainage.

## YUMOTO, Takakazu

Professor

Born in 1959.

### Curriculum Vitae

#### Academic Career

Department of Botany, Graduate School of Science, Kyoto University, D. Course (1987)  
 Department of Botany, Graduate School of Science, Kyoto University, M. Course (1984)  
 Faculty of Science, Kyoto University (1982)

#### Professional Career

Professor, Research Institute for Humanity and Nature (2003)  
 Associate Professor, Center for Ecological Research, Kyoto University (1994)  
 Lecturer, Faculty of Science, Kobe University (1992)  
 Lecturer, College of Liberal Arts, Kobe University (1992)  
 Research Assistant, College of Liberal Arts, Kobe University (1989)  
 Research Fellow, Japan Society for Promotion of Science (1987)

#### Higher Degrees

D. Sc. (Kyoto University, 1987)  
 M. Sc. (Kyoto University, 1984)

#### Fields of Specialization / Background

Plant Ecology, Tropical Ecology

#### Academic Society Memberships

The Ecological Society of Japan, The Botanical Society of Japan, The Japan Society of Tropical Ecology, Japan Association for African Studies, The Society for the Study of Species Biology, Japanese Association of Historical Botany

### Major Publications

#### Articles

- Kitamura, S., Suzuki, S., Yumoto, T., Chuailua, P., Plongmai, K., Poonswad, P., Noma, N., Maruhashi, T. and Suckasam, C.
- 2005 A botanical inventory of a tropical seasonal forest in Khao Yai National Park, Thailand: implications for fruit-

frugivore interactions. *Biodiversity and Conservation* 14: 1241-1262.

Sato, H., Hattori, T., Kugogi, S. and Yumoto, T.

2005 *Strobilomyces mirandus* Corner, a new record from Japan. *Mycoscience* 46: 102-105.

Yumoto, T. and Nakashizuka, T.

2005 The canopy biology program in Sarawak: scope, methods, and merits. In: *Pollination Ecology and the Rain Forest: Sarawak Studies* (eds. Roubik, W. D., Sakai, S. & A. A. H. Karim), Springer: 13-21.

Yumoto, T.

2005 Vertebrate-pollinated plants. In: *Pollination Ecology and the Rain Forest: Sarawak Studies* (eds. Roubik, W. D., Sakai, S. & A. A. H. Karim), Springer: 134-144.

Kitamura, S., Yumoto, T., Poonswad, P., P. Chuailua, Plongmai, K., Noma, N., Maruhashi, T. and Wohandee, P.

2005 Fruit-frugivore interactions in a moist evergreen forest of Khao Yai National Park, Thailand. *Tropics* 14: 346-355.

### **Activities in Academic Societies**

Steering committee member of the Wildlife Conservation Society (2004-)

Editorial board of Japanese Journal of Historical Botany (2003-)

Steering committee member of the Japan Society of Tropical Ecology (1998-)

Editorial board of Japanese Journal of Conservation Ecology (1996-)

### **Research Activities**

#### **Field Research in Japan**

July, 2005 Hokkaido Prefecture (Research on peridotite plants on Mt. Apoi)

June, 2005 Iwate Prefecture (Research on serpentine plants on Mt. Hayachine)

May, 2005 Kagoshima Prefecture (Research on tree, *Myrica rubra*)

#### **Supervision and Host**

5 graduate students from Graduate School of Science, Kyoto University

1 graduate student from Graduate School of Environmental Sciences, University of Shiga Prefecture

#### **Social Activities and Public Lectures**

December, 2005 Field Course in Yakushima Island for Super Science High School Program (Oita Maizuru High School, Kamiyaku-cho)

September, 2004 Intensive series of lectures on "Ecological Sciences" in Graduate School of University of Education (Nara University of Education, Nara-shi)

July, 2004 Lecture in Symposium "Restoration of Natural Vegetation from Local Genetic Pools" (NPO Center for Restoration of Regional Nature, Kyoto-shi)

May, 2005 Lecture in Hanshin Senior College on "Introduction to Tropical Rainforests" (Hanshin Senior College, Amagasaki-shi)

**INOUE, Takashi**

Visiting Professor

Born in 1952.

**Curriculum Vitae****Academic Career**

School of Law, Waseda University (1976)

**Professional Career**

Executive Producer, NHK Tokyo Head Office, General Broadcasting Administration (2006~present)

Executive Producer, NHK Tokyo Head Office, Special Programmes Center (2003-2006)

Executive Manager, Cultural Programme, NHK Enterprises 21, Inc. (2001)

Executive Producer, NHK Enterprises 21, Inc. (2000)

Senior Producer, NHK Tokyo Head Office, Programme Production Department (1998)

Senior Producer, NHK Tokyo Head Office, Special Programme Department (1993)

Senior Producer, NHK Tokyo Head Office, Programme Production Department (1990)

Programme Director, NHK Tokyo Head Office, Programme Production Department (1981)

Programme Director, Yamaguchi Bureau, NHK (Nippon Hoho Kyokai; Japan Broadcasting Corporation) (1976)

**Higher Degree**

B. L. (Waseda University, 1976)

**Fields of Specialization / Background**

Television documentary production (in the field of civilization/history)

**Major Publications****Books**

Inoue, Takashi et al.

2005 *Sin Silkroad* (Silkroad 2005 ①, Nippon Hoso Shuppan Kyokai (Japan Broadcast Publishing Co., Ltd.) [In Japanese])*Sin Silkroad no Tabi* (New Silkroad ①) Kodansya (Kodansya Co., Ltd.) [In Japanese]*Sin Silkroad no Tabi* (New Silkroad ②) Kodansya (Kodansya Co., Ltd.) [In Japanese]*Sin Silkroad no Tabi* (New Silkroad ③) Kodansya (Kodansya Co., Ltd.) [In Japanese]**Research Activities****Field Research in Foreign Countries**

April through May, 2005 People's Republic of China (Historical ruin-site research at Xinjian Uygur, China)

**Social Activities and Public Lectures**

Productions of civilization, culture and historical television programmes as few listed below.

2005 *NHK Supesharu Sin Sirukurodo (10Episode)* (NHK Special Silkroad 2005)**KUWAMURA, Tetsuo**

Visiting Professor

Born in 1950.

**Curriculum Vitae****Academic Career**

Department of Zoology, Faculty of Science, Kyoto University, D. Course (1978)

Department of Zoology, Faculty of Science, Kyoto University, M. Sc. (1975)

Faculty of Science, Kyoto University (1973)

### **Professional Career**

Visiting Professor, Research Institute for Humanity and Nature (2005-2006)

Dean, Faculty of Liberal Arts, Chukyo University (2002-04)

Visiting Professor, Tropical Biosphere Research Center, University of the Ryukyus (1995-96)

Professor, Faculty of Liberal Arts, Chukyo University (1992-present)

Associate Professor, Faculty of Liberal Arts, Chukyo University (1981)

Lecturer, Faculty of Liberal Arts, Chukyo University (1980)

### **Higher Degrees**

D. Sc. (Kyoto University, 1982)

M. Sc. (Kyoto University, 1975)

### **Fields of Specialization / Background**

Behavioral Ecology, Marine Biology

### **Academic Society Memberships**

Japan Ethological Society, Ecological Society of Japan, Zoological Society of Japan, Ichthyological Society of Japan, Society of Evolutionary Studies, Japan, Japanese Coral Reef Society, International Society for Behavioral Ecology, Association for the Study of Animal Behaviour

### **Major Publications**

#### **Books**

Kuwamura, Tetsuo

2004 *Sex-changing Fishes from Coral Reefs*. Tokyo: Iwanami. (in Japanese)

Kuwamura, Tetsuo

2001 *Evolutionary Ecological Meaning of Life: An Introduction to Biology*. Tokyo: Shokabo. (in Japanese)

Kuwamura, Tetsuo and Karino, Kenji (eds.)

2001 *Social Behavior of Fishes Vol. 1*. Tokyo: Kaiyusha. (in Japanese)

#### **Articles**

Takamoto, Gousuke, Seki, Satoko, Nakashima, Yasuhiro, Karino, Kenji and Kuwamura, Tetsuo

2003 "Protogynous sex change in the harem triggerfish *Sufflamen chrysopterus* (Tetraodontiformes)" *Ichthyological Research* 50: 281-283.

Sakai, Yoichi, Karino, Kenji, Kuwamura, Tetsuo, Nakashima, Yasuhiro and Maruo, Yukiko

2003 "Sexually dichromatic protogynous angelfish *Centropyge ferrugata* (Pomacanthidae) males can change back to females" *Zoological Science* 20: 627-633.

Sakai, Yoichi, Karino, Kenji, Nakashima, Yasuhiro and Kuwamura, Tetsuo

2002 "Status-dependent behavioural sex change in a polygynous coral-reef fish, *Halichoeres melanurus*" *Journal of Ethology* 20: 101-105.

Kuwamura, Tetsuo, Tanaka, Naomi, Nakashima, Yasuhiro, Karino, Kenji and Sakai, Yoichi

2002 "Reversed sex-change in the protogynous reef fish, *Labroides dimidiatus*" *Ethology* 108: 443-450.

Sakai, Yoichi, Kohda, Masanori and Kuwamura, Tetsuo

2001 "Effect of changing harem on timing of sex change in female cleaner fish *Labroides dimidiatus*" *Animal Behaviour* 62: 251-257.

### **Activities in Academic Societies**

Councilor, Japan Ethological Society (2003-present)

President, Japan Ethological Society (1999-2002)

Councilor, Ichthyological Society of Japan (1996-present)

Advisory Editorial Board of *Zoological Science*, Zoological Society of Japan (2003-present)

Advisory Editorial Board of *Ethology* (1991-present)

Organizer of the Satellite Meeting on "*Sex Allocation and Sexual Conflict in Coral Reef Organisms*" in 10th International Coral Reef Symposium, Sesoko, Okinawa (2004.7.3-4)

Plenary talk "*Status-dependent sex change related with mate choice in reef fishes*" in 27th International Ethological Conference, Tübingen (2001.8.27)

#### Awards

Kodansha Publication Culture Prize for Scientific Publication (2005) to "*Sex-changing Fishes from Coral Reefs*" (Iwanami, 2004)

#### Research Activities

##### Field Research in Japan

1982-present (several times every year) Sesoko Island, Okinawa (behavioral ecology of coral reef fishes)

2004.8, 10, 2005.4-10, 12, 2006.3 Iriomote Island, Okinawa (behavioral ecology of coral reef fishes)

2001.10, 2002.9, 2003.8, 2004.9, 2005.11 Tokashiki Island, Okinawa (behavioral ecology of coral reef fishes)

## SUGIMOTO, Takashige

Visiting Professor

Born in 1942.

#### Curriculum Vitae

##### Academic Career

Department of Geophysics, Faculty of Science, Kyoto University, D. Course (1971)

Department of Geophysics, Faculty of Science, Kyoto University, M. Course (1968)

Department of Geophysics, Faculty of Science, Kyoto University (1966)

##### Professional Career

Visiting Professor, Research Institute for Humanity and nature (2004-)

Visiting Professor, Center for Marine Environmental Studies (2004-)

Professor, Ocean Research Institute, Tokai University (2004-)

Professor, Ocean Research Institute, University of Tokyo (1988-2004)

Associate Professor, Ocean Research Institute, University of Tokyo (1980-1988)

Associate Professor, Faculty of Science, Tohoku University (1976-1980)

Lecturer, Faculty of Science, Tohoku University (1972-1976)

Research Associate, Faculty of Science, Tohoku University (1971)

##### Higher Degrees

D. Sc. (1974)

M. Sc. (1968)

##### Fields of Specialization / Background

Fisheries Oceanography, Coastal Oceanography/Geophysics

##### Academic Society Memberships

Japanese Societies for Fisheries Oceanography, Oceanographic Society of Japan and its, Coastal Oceanography Research Committee, Marine Meteorological Society, etc.

## Major Publications

### Articles

- Sugimoto, T., H.-Y. Kim, J. Takeuchi and Y. Furushima 2005 "Response of coastal environment and ecosystem to climate change and the Kuroshio" *Bull. Coastal Oceanogr.* 43(1), pp. 19-25.
- Komatsu, T., T. Sugimoto et al. 2005 "Distribution of drifting seaweeds in the East China Sea" *Ocean Monthly*: 522-526. [in Japanese]
- Sugimoto, T., K. Kuroda, M. Tuboi and M. Kuwae 2005 "Ocean environments and biological production estimated from old documents and sediment-cores" *Ocean Monthly* 37(8), pp. 563-567.

## Research Activities

### Field Research in Japan

- 16 Aug., 2005 Field survey of the downstream and estuary areas of the Yodo River and the inner part of the Osaka Bay

## COBBI, Jane

Invited Research Fellow

(France)

## Curriculum Vitae

### Academic Career

- Department of Anthropology and Sociology, University of Paris X-Nanterre, PHD (1981)
- Department of Ethnology, Faculty of Letters, University of Paris 7, Master's Degree (1978)
- National Institute of Oriental Languages, Paris University (1971)
- National School of Oriental Languages, Paris University (1965)

### Professional Career

- National Center of Scientific Center (CNRS), Paris
- Research Center on Civilizations from China, Japan, Tibet, UMR 7133 (= "Japanese Civilisation" (UMR 7129, Institut des Hautes Etudes Japonaises, until 2006))
- Joint Researcher, Research Center on Far East Asia, Paris-Sorbonne (CREOPS) (1997-)
- Joint Researcher, Research Team "Objects, Cultures, Societies" (E.A.2589), National Museum of Natural History (1997-)
- Director of a Research Team: "Material Culture and Daily Life in Japan" (GDR 991), National Center of Scientific Research, Paris (1991-2002)
- Researcher 1<sup>st</sup> class, National Center of Scientific Research, Paris (1982-)
- Lecturer, Master's Degree *Anthropology of objects*, National Museum of Natural History (1995-)
- Lecturer, Master's Degree, University of Nice (1992-)
- Lecturer, Ecole des Hautes Etudes en Sciences Sociales, Paris (1978-1987)
- Research Fellow, Ecole des Hautes Etudes en Sciences Sociales, Paris (1978-1982)
- Teacher, Japanese Language and Civilization, Paris (1971-1974)

### Higher Degrees

- D. Ethnology (University of Paris-X, 1981)
- M. Ethnology (University of Paris 7, 1978)
- M. Japonology (National Institute of Oriental Languages, Paris, 1971)

### Fields of Specialization / Background

Japanese Ethnology, General Anthropology, Food Anthropology, Ethnobotany, Ethnobiology

### Academic Society Memberships

The French Society of Japanese Studies, The Association of Asie-Sorbonne, The Society of Euro-asiatic Studies, The Asia Network, The Japan Anthropology Workshop, The French Association of Anthropology

### Major Publications

#### Books

2004 *SENTIR. Pour une anthropologie des odeurs* (with R. Dulau.), Collection Eurasie, Paris, L'Harmattan (283p) partic. «Education olfactive au Japon», p. 93-106; ISBN: 2-7475-7080-0 (in French)

#### Articles

2004 «Le frais, le cru, le vivant», *L'autre*, (Cliniques, cultures et sociétés) Vol. 5 N°3, 367-374 (in French)

2006 «Le "pays de la main". Waza ou le savoir-faire au Japon», in *Cahiers d'Anthropologie Sociale* N°1 (*Dire le savoir-faire*), Paris, L'Herne, p. 111-120 (in French)

2006 «Enjoying Raw (Nama wo tanoshimu)», *Chiri* (Geography), Vol. 51, p. 90-93 (in Japanese)

#### Miscellaneous

2004.10. «Offerings to deities in Japan», *Le Monde des Religions* N°7 (Les saveurs du sacré), p. 36-37, Paris (in French)

2004 **CD-ROM** «*Representations on natural Environment in Asia*», Proceedings of the First Congress of Asia Network (sept. 2003), Paris ([www.reseau-asie.com](http://www.reseau-asie.com)), Workshop Coordinator + Personal Communication «Prohibited Nature, recommended Nature»

2005.6. **Radio:** Radio-France Internationale: «Whale in Japan»

### Social Activities and Public Lectures

2004.3. «Food and Environnement (*Shoku to kankyô*)», Research Institute for Humanity and Nature, Kyoto (in Japanese)

2004.6.17. «Eating Wild in Asia, Africa, Oceania», Mini-Symposium of the Seminar: Anthropology of Food Practices, Maison des Sciences de l'Homme, Paris, Coordinator (in French and Japanese)

2004.10.15. «The Japanese Culture in France: from La Sorbonne-University to sushi-shops», and «A Historical view on French Research on Japanese Culture» (International Symposium "The Japanese Culture in the World"), Chinese Academy of Social Science, Pekin (in Japanese)

2004.10.21. «Discover Japanese Culture from France» (The Japanese Embassy in China), Pekin (in Japanese)

2005.3.10. «Smell and Taste of the Fermented» (Symposium The World of Fermentation), National Museum of Ethnology, Osaka (in Japanese and French)

2005.4.19 and 20. «Japan at the time of E. Guimet and P. Claudel: a scientific Look» (Musée Guimet - Lyon, Museum d'Histoire naturelle), Lyon City (in French)

2005.8.24-26. «Nagasaki and Yokohama, doors for the Western Food», La Comida de los Puertos en *el Mundo*, XXIIe International Congress of Food Anthropology, Vera Cruz, Mexique (in French)

2005.9.29. «The Cultivation of the Wild: a production of "mountain vegetables, *sansai*" in Japan», 2<sup>nd</sup> Congress of Asia Network, Paris (in French)

2005.9.29. «*The "Civilization of Plants" in question*», The Second Congress of Asia Network ([www.reseau-asie.com](http://www.reseau-asie.com)), Workshop Coordinator, Paris (in French)

2006.1.19. «From natural to social Environment: diachronic and synchronic Data on a Japanese Village» Research Institute for Humanity and Nature, Kyoto (in Japanese)

2006.2.6. «Eating with deities in Japan» (Symposium Religion and Food), National Center of Scientific Research, Paris (in French)

2006.3.2. «"Eadible" animals in Japan» (Research Seminar: Anthropology of Relations with Animals),

Ecole des Hautes Etudes en Sciences Sociales, Paris (in French)

### **Regular Lectures and Seminars**

- 1995- «*Anthropology of the Object*», Master's Degree, National Museum of natural History (Musée de l'Homme), Paris, 26 hours/year.
- 1998- «*Drinks: from Nutrition to Social Life*», Research Seminar (Team Research Ethnologie des pratiques alimentaires (avec M. D. Fournier), Maison des Sciences de l'Homme, Paris.
- 2000- «*The World of Smell*» Research Seminar, National Museum of natural History, Paris.

### **Activities in Academic Societies**

- Lecturer, Anthropology of Object, Master's Degree, National Museum of Natural History (1995)
- Joint Researcher, Research Center on Far East Asia, Paris-Sorbonne (1997-)
- Joint Researcher, Research Team "Objects, Cultures, Societies", National Museum of Natural History (1997-)
- Member, Evaluation Committee of Specialists, University of Nice (1998-)
- Member, Administration Board of the Society for Eurasian Studies (1998-)
- Member, Editorial Committee for the Publication *Eurasie* (1998-)
- Member, Evaluation Committee of Specialists, National Museum of Natural History (1998-)
- Member, National Committee of Universities (2003-)
- Member of the Asia Network (2003-)

### **Research Activities**

#### **Field Research in Foreign Countries**

- 2004.3. Japan (Research Institute on Humanity and Nature: field study in Kyoto and Nagano)
- 2004.10. China (Research on the banquet-meals in China)
- 2005.3. Japan (Research Institute on Humanity and Nature: field study in Kyoto, Nagano, Izumo)
- 2005.8. Mexico and Vera Cruz (Research on food markets in Mexican towns)
- 2005.11.-2006.1. Japan (National Research on Humanity and Nature: field study in Kyoto and Nagano)

### **Supervision and Host (Number of DC Students and JSPS Research Fellows)**

Supervision of post-graduate course students, Master's Degree (2)

## **FENG, Fong-Long**

Invited Research Fellow

Born in 1953. (Taiwan)

### **Curriculum Vitae**

#### **Academic Career**

- Ph. D. The Forestry Graduate Institution, National Taiwan University, Taiwan (1990)
- M. S. The Forestry Graduate Institution, National Chung-Hsing University, Taiwan (1985)
- B. S. The Forestry Science Department, National Chung-Hsing University, Taiwan (1982)

#### **Professional Career**

- Invited Research Fellow (2005)
- Professor of Forestry Department of National Chung-Hsing University (1998-)
- Associate Professor of Forestry Department of National Chung-Hsing University (1991-1998)
- Courtesy Associate Professor Department of Bioresource Engineering Oregon State University (1993-1994)
- Instructor of Forestry Department of National Chung-Hsing University (1990-1991)

Assistant of Forestry Department of National Chung-Hsing University (1983-1990)

Assistant of Forestry Department of Providential Ping-Tung Agricultural Instituted (1979-1980)

### Higher Degrees

Ph. D (National Taiwan University, 1990)

M. Sc. (National Chung Hsing University, 1985)

### Fields of Specialization / Background

Forest Science

### Major Publications

#### Books

Natural Resource Inventory and Measurement

Geographical Information System, GIS

Spatial informatics

Ecosystem Conservation and Management

#### Research Field

- (1) Integrated Forest Inventory and Monitoring System
- (2) Growth, Yield, Succession and Ecological Modeling with Spatial analysis
- (3) Landscape Ecology and Spatial Ecology applied to Ecosystem Management
- (4) Carbon Sequestration Estimation in Land-use and Forestry Section

#### Thesis in Journal

Fong-Long Feng and Ming-Chun Jane

2005 "Application of Dendrochronology in the Relationship of Forest and Environment" *Q. Jour. For. Res.* 27(3): 37-50.

Feng, Fong-Long, Tzen, Chyng-Shyan and Kan, Chen-Yi

2005 "Classification of Streams Landscape and Establishment of Biological Indicators in Taiwan – Examples of Chungkan River, Kehyea River and Nankann River" *Q. Jour. For. Res.* 27(3): 25-36.

Feng, Fong-Long

2005 To Approach and Maintain the Desirable Fu.

Fong-Long Feng

2004 "EU Researches on the Mitigation Contribution of Greenhouse Gas by Forest and Forestry" – *COST E21 Plan – Agricultural Science and Technology Newsletter International Bi-monthly* 21: 3-7.

Fong-Long Feng

2004 "Spatial Ecology in Landscape Leval – Landscape Ecology" *Taiwan Forest Journal* 30(2): 40-50.

Fong-Long Feng

2004 "Effectiveness Assessment of Conservation Planning – Rapid Ecological Assessment (REA)" *Taiwan Forest Journal* 30(3): 36-40.

Fong-Long Feng

2004 Development and Application of Spatial Information in Forest Ecosystem Management- An Example of Hwei-Sum Forest Experimental Stationgy. *Journal of Agriculture and Forestry* 53(4): 339-354  
ture Condition, Taiwan Forest Journal 31(5): 44-48.

Fong-Long Feng, Ya-Jean, Lou

2003 Landscape Change of Land-Use Campus- A Case Study of National Chung Hsing University *Q. Jour. For. Res.* 25(1): 37-48.

Fong-Long Feng, Chang-Ching Wu

2003 Application of spatial information to evaluate ecological site quality-A case study of Huisun forest

- Experimental station *Q. Jour. Chin. For.* 36(2): 115-125.
- Fong-Long Feng, Horng-Perng Lin  
2003 Analysis and Restoration of Landslide in HuiSun Forest Experimental Station after 921 Chi-Chi Earthquake *Q. Jour. Chin. For.* 25(4): 1-20.
- John-Sin Cheng, Fong-Long Feng  
2002 "The Landscape Pattern Representative Analysis of the Gandaushi Long-term Ecological Research Site" *Endemic Species Research* 4(1): 75-85.
- Fong-Long Feng, Hsuan-Te Lee  
2002 "Using Individual Tree Location Map to Explore Gap Influence on Tree Growth and Application of Individual Tree Location Map" *Q. Jour. For. Res.* 24(1): 21-30.
- Gene-Long Wang, Fong-Long Feng  
2002 "Habitat Suitability Index Model in Avian" *Taiwan Forestry Journal* 28(3): 72-75.
- Fong-Long Feng  
2002 "Scenario and Application in Climate Change" *Taiwan Forestry Journal* 28(4): 24-32.
- Fong-Long Feng  
2002 "Development and Application of Forest Growth Modeling" *Taiwan Forestry Journal* 28(5): 14-19.
- Fong-Long Feng  
2002 "The Future of Natural Conservation Mapping" *Taiwan Forestry Journal* 28(6): 10-13.
- I-Sheng Kao, Fong-Long Feng  
2000 "Criteria and Indicators: Measuring Sustainable Forest Management" *Taiwan Forestry Journal* 26(2): 50-61.
- Fong-Long Feng, I-Sheng Kao  
2000 "Study on the Criteria and Indicators of Forest Ecosystem Management in Taiwan" *Q. Jour. For. Res.* 22(1): 79-90.
- Fong-Long Feng  
2000 "Forest and Climate Change" *Climate change and FCCC* 24: 8-11.
- Fong-Long Feng, Hsuan-Te Lee, John-Sin Cheng  
2000 "Making and Application of Individual Tree Location Map" *Q. Jour. For. Res.* 22(2): 61-72.
- Fong-Long Feng, Jenq-Horng Tsai  
2000 "Application of GIS Techniques for Forest Stratified Sampling Design" *Q. Jour. For. Res.* 33(4): 485-503.
- Fong-Long Feng, Jian-Tai Kuo  
2001 "Application and Simulation in Eco-region of Taiwan by Holdridge Method" *Q. Jour. For. Res.* 23(1): 83-100.
- Fong-Long Feng, Hsuan-Te Lee, Ming-Jing Lin  
2001 "Application of individual tree location map in the thinning operation of Luanta-fir" *Q. Jour. For. Res.* 23(2): 77-88.
- Jian-Tai Kao, Fong-Long Feng  
2001 "Spatial Interpolation of the Habitat Factors and Forest Habitat Classification" *Q. Jour. For. Res.* 34(2): 167-184.
- Hsuan-Te Lee, Fong-Long Feng  
2001 "Apply the Concept of "Cellular Automata" in Simulating Forest Ecosystem" *Taiwan Forestry Journal* 27(6): 22-26.
- Fong-Long Feng, Wen-Pin Lin  
2001 "Application of Mathematic Programming of Forest Management" *Taiwan Forestry Journal* 27(6): 15-21.
- Conference paper**  
Fong-Long Feng  
2004 Application of Spatial Information to Evaluate the Habitat Suitability: an Example of Avian in Taiwan.

Conference on Application of Statistics Information System and Computers in Natural Resource Monitoring and Management, IUFRO 4.11 statistical Methods Mathematics and Computer 2004.06.07-11 Taiwan, Taipei, National Taiwan University.

Feng, Fong-Long, Hsuan-Te LEE

2004 Combining Ecological Site Quality with Potential Growth in a Productivity Model Conference on The Center for Tropical Forest Science 2004.08.16-17 Taiwan Forest Research Institute Taipei, Taiwan.

Feng, Fong-Long

2004 Application of 5S spatial Technologies to Evaluate the Sink and Flux of Forest Carbon. Conference on green Food and Air Quality 2004.08.19 Taipei.

Feng, Fong-Long

2004 Ecological Site Quality Model for Tree Species: Taiwan's *Chamaecyparis formosensis* as an example Conference on "Sustainable Harvest Scenario in Forest management" 2004.08.25-27 Tale. Low-Taras, Slovakia.

Feng, Fong-Long, Wen Pin Lin, Mark A. Ridgley

2004 A Strategic Planning Process for Defining Desired Future Forest Land Use Pattern: an Application in Taiwan Conference on "Sustainable Harvest Scenario in Forest management" 2004.08.25-27 Tale. Low-Taras, Slovakia.

Feng, Fong-Long

2004 Application of Temporal and Spatial informatics in Forest Ecosystem Management - An Example of Taiwan. Conference on FORCOM HOMEPAGE - The Role of Forest for Coming Generations Philosophy and Technology for Forest Resource Management 2004.10.17-22 Utsunomiya University Utsunomiya, Japan.

Feng, Fong-Long

2004 Application of Temporal and Spatial informatics in Forest Ecosystem Management - An Example of Taiwan. Conference on "International Symposium on Ecological Restoration" 2004.11.17-21 Santa Clara, Villa Clara, Cuba.

Feng, Fong-Long

2003 Permanent Sampling Plot in Ecosystem Management – an Example in Hwei-Sum Experimental Station. In the Permanent Sampling Plot Conference 2003.2.25-26 Taiwan Forestry Bureau, Taipei.

Feng, Fong-Long

2003 Development of the Monitoring System of River Management in Taiwan- A Case Study of Beinan River. In the Permanent Sampling Plot Conference 2003.2.25-26 Taiwan Forestry Bureau, Taipei.

Feng, Fong-Long

2003 Application of Spatial Information to Wildlife Habitat Evaluation in Taiwan. "IALE World Congress 2003" July 13-17, 2003 Darwin, Northern Territory, Australia.

Feng, Fong-Long

2003 Application of Spatial Information to the Criteria and Index of Ecosystem Management in Taiwan. Proceedings of the International Symposium on Forest Biodiversity and Conservation and the Second Symposium of Asian University Forests. July 28-31, 2003 Chitou Forest Recreation Area, the Experimental forest, National Taiwan University.

Feng, Fong-Long

2003 The Potential Evaluation on Application CO2FIX Model to Estimate the Carbon Sequestration of Forest Landscape in Taiwan. Conference on "The Climate Change on Carbon Sequestration of Forestry". 2003.10.9 NTU International Conventional Center, Taipei, Taiwan.

Feng, Fong-Long

2003 Development and Application of Spatial Information of Forest Ecosystem in Taiwan. International Workshop

on "Toward an Integrated Biodiversity Information Network" & Forum of Species 2000 Asian-Oceania. October 13-14, 2003 Conference Room I, 2nd Floor, Academia Activity Center, Academia Sinica.

Feng, Fong-Long

2003 Application of Ecological Site Quality to Estimate Forest Productivity. In the 2003 Annual meeting of Chinese Forestry Association, in Chia-Yi University. 2003, 10, 31 in Chia-Yi, Taiwan.

Feng, Fong-Long

2003 Development and Application of Spatial Information in Forest Ecosystem Management-An Example of Hwei-Sum Forest Experimental Station. 2003 Symposium on Application of Information Technology in Agriculture 2003.12.1-2 Personnel Development Center, Taipei.

Feng, Fong-Long

2003 5S Resource Technologies Applied in the Decision-Making of Ecosystem Management. In the 2003 Academic Award Meeting of Annual meeting of Chinese Forestry Association, 2003.12.5 NCHU, Taichung, Taiwan.

Feng, Fong-Long

2003 Mapping Current Land Cover and Potential Vegetation Mapping in Taiwan. "2003 Conference on Vegetation Biodiversity and Sustainable Resource Management. 2003.12.6, Tong-Hai University, Taichung.

Feng, Fong-Long

2002 The Conservation Function of Protection Area to Endanger Species under the Concept of Landscape Ecology. In the workshop of Conservation Species in Conservation Biology, 2002.1.18, Taipei, Taiwan in Chien-Tan Oversea Youth Activities Center.

Feng, Fong-Long

2002 Collection, Processing and Application of Digital Colored Aerial Photos. "Geoinformics 2002", Nanjing Univ., Nanjing, China. June 1-3, 2002.

Feng, Fong-Long

2002 Application GIS to Forest Ecosystem Management in Taiwan. "ESRI International User Conference 2002". July 8-12, 2002 in San Diego, California.

Feng, Fong-Long and Ya-Jean Lou

2002 Landscape change of Land-Use in Campus – A Case Study of National Chung Hsing University (NCHU). Aug 7, 2002 in Taipei, Taiwan.

Feng, Fong-Long and Horng-Perng Lin

2002 Application of 5S Resource Technologies to Forest Ecosystem Management – The Analysis and Restoration of Collapsed Area after 921 Earthquake. 2002.8.30 in the conference on "Forest land Classification and Sustainable Management", Taipei, Taiwan.

Jian-Tai Kao, Feng, Fong-Long

2002 Digital Photogrammetry used in Timber Survey and Analysis 2002.11.3-4 "Young Researchers Summit of Chinese Cross-Trait. In National Transportation University, Chinchou, Taiwan.

Gene-Long Wang, Feng, Fong-Long

2002 Digital Photogrammetry used in Avian Habitat Mapping 2002.11.3-4 Young Researchers Summit of Chinese Cross-Trait. In National Transportation University, Chinchou, Taiwan.

Chia-Yi Wang, Chih-Cheng Huang, Feng, Fong-Long

2002 Studies on Ecotourism Zoning – An Illustration of Hui-Sun Experimental Forest Station. 2002.11.3-4 Young Researchers Summit of Chinese Cross-Trait. In National Transportation University, Chinchou, Taiwan.

Feng, Fong-Long

2002 Land Classification in Ecotourism – An example in Hwei-Sum 2002.11.3-4 Young Researchers Summit of Chinese Cross-Trait. In National Transportation University, Chinchou, Taiwan.

Feng, Fong-Long

- 2002 Development and Application of Ecological Site Quality Approach. 2002.12.6 in the 2001 Annual meeting of Chinese Forestry Association, in National Chung Hsing University.
- Feng, Fong-Long
- 2002 Application of Semi-Markov Chain in Landscape Change of Campus 2002.12.6 in the 2001 Annual meeting of Chinese Forestry Association, in National Chung Hsing University.
- Feng, Fong-Long
- 2002 The Effect of Climate Change on the Distribution and Productivity in Taiwan (1) Development of Vegetation Distribution Model and Ecological Site Quality Model in Consideration of Habitat Factors. Result Presentation of Sustainability Committee of National Science Foundation (NSC90-2621-Z005-001) 2002.12 National Taiwan University.
- Feng, Fong-Long and Gene-Long Wang
- 2001 Application 4S Technologies in Avian Species Habitat Conservation. 2001.5.25 in the Conference of Center-Taiwan Ecological Conservation, Taichung, Taiwan, Tung-Hei University.
- Feng, Fong-Long
- 2001 Integrating Vegetation Map to Eco-region Map with GIS in Taiwan. ASIA 2001, Tokyo, Japan Conference. June 20-22, 2001.
- Feng, Fong-Long
- 2001 To Integrate Forest Growth Model with Landscape Change Model. Workshop of "Linking the Complexity of Forest Canopies to Ecosystem and Landscape Function". July 11-19, 2001 University of Utah, USA.
- Feng, Fong-Long
- 2001 Apply 4S to Landscape Classification in Taiwan. The 2nd IALE Asia-Pacific Region Conference "Landscape Change and Human Activity". Sep 22-25, 2001, Lanzhou, China.
- Chang, Shiao-Fei and Feng, Fong-Long
- 2001 Applied GIS of Ecological Planning in Hui-Sun Experimental Forest Station. 2001 Annual Meeting of the Association of Chinese Geographic Information System, 2001.10.12-13 in I-Lan College, Taiwan.
- Feng, Fong-Long
- 2001 Development and Application of DBMS in Ecosystem Management. 2001 Annual Meeting of the Association of Chinese Geographic Information System, 2001.10.12-13 in I-Lan College, Taiwan.
- Feng, Fong-Long
- 2001 Development and Application of a Carbon Sequestration Model in Forest Ecosystem in Taiwan. "AGU 2001 Fall Meeting" Moscone Center, San Francisco, CA USA. Dec 10-14, 2001.
- Feng, Fong-Long
- 2001 Application of GIS in Forest Land Management. 2001.12.12-13 於 2001 Chinese Forestry Association, Taipei, Taiwan University, Taipei, Taiwan.
- Feng, Fong-Long and Jian-Tai Kao
- 2000 Climate Regions of Taiwan. XXI IUFRO World Congress. Aug 7-12, 2000 Kuala Lumpur. Malaysia.
- Feng, Fong-Long and Hsuan-Der Lee
- 2000 The Integration of Individual Tree Growth Model and GIS in Forest Ecosystem Management. XXI IUFRO World Congress. Aug 7-12, 2000 Kuala Lumpur. Malaysia.
- Feng, Fong-Long and Jian-Tai Kuo
- 2000 Application and Simulation in Eco-region of Taiwan by Holdridge Method. X2000 ESRI and ERDAS User Meeting, 2000.11 in Taipei, Taiwan in Chien-Tan Oversea Youth Activities Center.
- Feng, Fong-Long
- 2000 Development of Management Model in Ecosystem Management, 2000.11.18 in the Proceeding of 2000 Forest Resource Management and Economics, p1-36.

Feng, Fong-Long

2000 Application GIS in Forest Ecosystem Management, 2000.12.20~21 in GIS 2000 National Chung Kung University.

Gene-Long Wang and Feng, Fong-Long

2000 GAP Analysis used in Habitat Protection of *Lophura Swinhoii* in Taiwan. 2000.12.27 in 2000 Annual Meeting of Chinese Forestry Association.

Hsuan-Te Lee, Chang-Ching Wu and Feng, Fong-Long

2000 Application of Gap Model to Man-made Forest Management. 2000.12.27 in 2000 Annual Meeting of Chinese Forestry Association.

Feng, Fong-Long and Jian-Tai Kuo

2000 Discuss on Information Published by Government from the Benefit Evaluation of Carbon Sequestration in Forest Sector. 2000.12.27 in 2000 Annual Meeting of Chinese Forestry Association.

#### **Text Book**

Fong-Long Feng

2004 Forest Management (Fourth Edition). Published by NCHU Publication Center. 279PP.

Fong-Long Feng

2004 Forest Management (Fourth Edition). Published by NCHU Publication Center. 392PP.

Fong-Long Feng

2004 Forest Measurement. Published by NCHU Publication Center. 205PP.

Fong-Long Feng

2004 Forest Evaluation. Published by NCHU Publication Center. 131PP.

Fong-Long Feng

2004 Forest Measurement. Published by NCHU Publication Center. 108PP.

Fong-Long Feng

2004 Application of 5S to Ecosystem Management (Third Edition). Published by NCHU Publication Center. 484PP.

Fong-Long Feng

2004 Information Collection of Forest Inventory. Published by NCHU Publication Center. 141PP.

Fong-Long Feng

2004 Forest evaluation. Published by NCHU Publication Center. 232PP.

Fong-Long Feng

2003 5S Advanced Landscape Ecology. Published by NCHU Publication Center. 257PP.

Fong-Long Feng

2003 Spatial Ecology. Published by NCHU Publication Center. 399PP.

Fong-Long Feng

2002 Forest Evaluation. 4<sup>th</sup> ed. Published by NCHU Publication Center. 310PP.

Fong-Long Feng

2002 Ecosystem Management. Published by NCHU Publication Center. 280PP.

Fong-Long Feng

2001 Spatial Ecology. Published by NCHU Publication Center. 202PP.

Fong-Long Feng, Gene-Long Wang, Hsuan-Te Lee, Chang-Tsien Wu and Kao, I-Shen

2001 Forest Dynamic – Implication of Forest Succession model. Published by NCHU Publication Center. 222PP.

Fong-Long Feng

2001 Economic Value of Non-Timber Production in East Asia. Published by NCHU Publication Center. 140PP.

Fong-Long Feng

2000 Principles of Geographical Information System. Published by NCHU Publication Center. 267PP.

Fong-Long Feng

2000 Ecosystem Management. Published by NCHU Publication Center. 569PP.

Fong-Long Feng

2000 Forest Resource Measurement. Published by NCHU Publication Center. 402PP. Published by NCHU Publication Center. 402PP.

Fong-Long Feng

2000 Advanced Landscape Ecology. Published by NCHU Publication Center. 150PP.

Fong-Long Feng, I-Shen Kao

2001 Environmental Sampling. Published by NCHU Publication Center. 162PP.

### Study Area and Projects

2004 NSC: Forestry Studies on the Land Classification of Slope Forestry and Criteria of Conservation and Management (1/2)

COA: (1) Application of 5S Resource Techniques to Promote the Strategies Assessment of CCCF on "Land-use and Forestry" (1/4) (2) Development of the Productivity Assessment System of Man-Made Forest in Taiwan (2/3)

EPA: Carbon Estimation, management strategy and monitoring Plan of Terrestrial biosphere in Taiwan:

Toucheinshi River Situation Survey

Sustainable Development of Ecotourism in Green island – Development of Terrestrial Resource Inventory and Monitoring system

2003 COA: (1) Development of the Productivity Assessment System of Man-Made Forest in Taiwan (1/3) (2) Development of Geoinformatics Web System in the Section of Private Forest

2002 COA: (1) Application of 5S Resource Techniques in Taiwan Forest Ecosystem Management (2) Development of Bio-Ecological Assessment Models of Ecosystem Management in Taiwan (3) To Visit Europe For State-of-the-art of Carbon Sequestration Assessment in Forest Section (4) Study on the Developing and Training GIS for Private Forest Improving Management Experiment Area in Taiwan (Chin-Tsu Be Pou)

EPA: Development and Application of Geo-DBMS of Be-Nan River in East Part of Taiwan

2001 NSC: **The Impact Assessment of Forest Distribution and Productivity by Climatic Change in Taiwan.**

COA: (1) Developing the Information Management Model of Ecosystem Management (2) Developing the Multi-scale Forest Land Cover Classification System (3) Study on the Developing and Applying GIS for Private Forest Improving Management Experiment Area in Taiwan (*Shiau Ban-Ten*)

2000 NSC: Integration and Application of Geo-spatial Database in Forest Ecosystem

COA: (1) **Developing the Information Management Model of Ecosystem Management** (2) Developing the Multi-scale Forest Land Cover Classification System (3) Study on the Developing and Applying GIS for Private Forest Improving Management Experiment Area in Taiwan

EPA: Development and Application of the Carbon Sequestration Model in Forest Ecosystem

### HARRISON, Rhett Daniel

Invited Research Fellow

Born in 1970. (U. K.)

### Curriculum Vitae

#### Academic Career

Co-organiser of the first CTFS-AA graduate field biology course in Pasoh (2001)

Department of Science, Kyoto University (1994-2000)

Bachelor of Science, Honors, Zoology, University of Durham, United Kingdom (1988-1991)

### **Professional Career**

Visiting foreign researcher, Research Institute for Humanity and Nature Kyoto, Japan (2005-present)

Smithsonian post-doctoral fellow, Smithsonian Tropical Research Institute, Panama (2002-2005)

Japanese Society for Promotion of Science post-doctoral fellow, Kyoto University, Japan (2000-2002)

### **Higher Degrees**

Doctor of Philosophy (Kyoto University, 2000)

Master of Science, 1996

### **Major Publications**

#### **Books**

Harrison, R. D.

2005 "A severe drought in Lambir Hills National Park" Pages 51-64 in D. W. Roubik, S. Sakai, and A. A. Hamid (eds). *Pollination Ecology and the Rain Forest Canopy: Sarawak Studies*. Springer Verlag.

Harrison, R. D. and M. Shanahan

2005 "Seventy-seven ways to be a fig: An overview of a diverse assemblage of figs in Borneo" Pages 111-127 (appendix 246-249) in D. W. Roubik, S. Sakai, and A. A. Hamid (eds). *Pollination Ecology and the Rain Forest Canopy: Sarawak Studies*. Springer Verlag, New York.

Lee, H.-S., S. Tan, S. J. Davies, J. V. LaFrankie, P. S. Ashton, T. Yamakura, A. Itoh, T. Ohkubo and R. D. Harrison

2004 "Lambir Hills forest dynamics plot, Sarawak, Malaysia" Pages 527-539 in E. C. Losos and E. G. Leigh Jr (eds). *Tropical forest diversity and dynamism: Findings from a large-scale plot network*. University of Chicago Press, Chicago.

#### **Articles**

Harrison, R. D.

2007 "Adaptive significance of phenological variation among hemi-epiphytic figs in Borneo" *Symbiosis* in press.

2006 "Dispersal of fig pollinators in Asian tropical forests" *Journal of Tropical Ecology* in press.

2006 "Maintenance of specificity in an isolate fig" *Biotropica* in press.

2006 "Mortality and recruitment in a community of hemi-epiphytic figs" *Journal of Tropical Ecology* 22: 477-480.

2005 "Destructive fires are not just Indonesia's problem" *Nature* 433: 13.

2005 "Figs and the diversity of tropical rain forests" *Bioscience* 55: 1053-1065.

2005 "Ecological diversity of figs (*Ficus*, Moraceae) at Lambir Hills National Park, Sarawak" *Malaysian Nature Journal* 57: 173-191.

2003 "Fig wasp dispersal and the stability of a keystone plant resource in Borneo" *Proceedings of the Royal Society London B* 270: S76-S79.

2001 Drought and the consequences of El Niño in Borneo: A case study of figs. *Population Ecology* 43: 63-76.

2000 Repercussions of El Niño: Drought causes extinction and the breakdown of mutualism in Borneo. *Proceedings of the Royal Society B* 267: 911-915.

Sakai, S., R. D. Harrison, K. Momose, K. Kuraji, T. Yasunari, L. Chong and T. Nakashizuka

2006 "Irregular droughts trigger mass flowerings in aseasonal tropical forests in Asia" *American Journal of Botany* in press.

Harrison, R. D., K. Momose and T. Inoue

2005 "Pollination of *Dipterocarpus* by *Apis dorsata* during a general flowering" *Malaysian Nature Journal* 57: 67-80.

Harrison, R. D., A. A. Hamid, T. Kenta, J. LaFrankie, H.-S. Lee, H. Nagamasu, T. Nakashizuka and P. Palmiotto

2003 "The diversity of hemi-epiphytic figs in a Bornean lowland rain forest" *Biological Journal of the Linnean*

*Society* 78: 439-456.

Harrison, R. D. and N. Yamamura

2003 "A few more hypotheses for the evolution of dioecy in figs" *Oikos* 100: 628-635.

Harrison, R. D., R. Banka, R. Yumuna, I. W. B. Thornton and M. Shanahan

2001 Colonisation of an island volcano, Long Island, Papua New Guinea, and an emergent island, Motmot, in its caldera lake. II. The vascular flora. *Journal of Biogeography* 28: 1311-1337.

Shanahan, M., R. D. Harrison, S. Hart, M. Storey and P. Allman-ward

2001 "Vertebrate fauna of the recently gazetted Pulong Tau National Park, Sarawak: Findings of a Malaysian Nature Society Expedition" *Malaysian Nature Journal* 54: 329-340.

Shanahan, M., R. D. Harrison, R. Yamuna, W. Koen and I. W. B. Thornton

2001 Colonisation of an island volcano, Long Island, Papua New Guinea, and an emergent island, Motmot, in its caldera lake. V. Figs (*Ficus* spp.), their dispersers and pollinators. *Journal of Biogeography* 28: 1365-1377.

Thornton, I. W. B., S. Cook, J. S. Edwards, R. D. Harrison, C. Schipper, M. Shanahan, R. Singadan and R. Yamuna

2001 Colonisation of an island volcano, Long Island, Papua New Guinea, and an emergent island, Motmot, in its caldera lake. VII. Overview and discussion. *Journal of Biogeography* 28: 1389-1408.

Harrison, R. D., N. Yamamura and T. Inoue

2000 "The phenology of a common roadside fig in Sarawak" *Ecological Research* 15: 47-61.

Kameyama, T., R. D. Harrison and N. Yamamura

1999 Persistence of a fig wasp population and evolution of dioecy in figs: A simulation study. *Researches on Population Ecology* 41: 243-252.

Nagamitsu, T., R. D. Harrison and T. Inoue

1999 "Beetle pollination of *Vatica parvifolia* (Dipterocarpaceae) in Sarawak, Malaysia" *Gardens' Bulletin Singapore* 51: 43-54.

Roubik, D. W., T. Inoue, A. Hamid and R. D. Harrison

1999 Height communication by Bornean honey bees (Apiformes: Apidae; Apini). *Journal of the Kansas Entomological Society* 72: 256-261.

Momose, K., T. Yumoto, T. Nagamitsu, M. Kato, H. Nagamasu, S. Sakai, R. D. Harrison, T. Itioka, A. A. Hamid and T. Inoue

1998 Pollination biology in a lowland dipterocarp forest in Sarawak, Malaysia. I. Characteristics of the plant-pollinator community in a lowland dipterocarp forest. *American Journal of Botany* 85: 1477-1501.

#### **Magazine/newspaper articles**

Harrison, R. D.

2006 Where are all the hornbills? *Borneo Post* in press.

2004 FIGS – Exploring the paths to mutualism. *Borneo Post Saturday* 14 August 2004.

1999 Pulong Tau: Our forest. *Malaysian Naturalist* 53: 32-37.

1999 Tamiji Inoue, 1947-1997. *Plant Science Bulletin* 45: 11.

1996 The Wilderness of Lambir Hills National Park. *Borneo Magazine* 7: 34-44.

1994 The invisible threat of mercury pollution. *Bolivian Times* La Paz, Bolivia.

Harrison, R. D. & Ashton, P. S.

2003 "Lambir Hills National Park: Sarawak's best kept secret" *Malaysian Naturalist* 57: 12-23.

Harrison, R. D. & Sakai, S.

1999 "Drought and reproductive phenology in a lowland Dipterocarp forest" *Inside CTFS* Summer 1999: 4.

#### **Miscellaneous**

Harrison, R. D.

2005 *Proceedings of the International Field Biology Course 2005, Khao Chong, Thailand*. 15 June - 14 July 2005.

Center for Tropical Forest Science – Arnold Arboretum Asia Program.

2004 *Proceedings of the International Field Biology Course 2004, Lambir Hills National Park, Sarawak*. 15 July - 14 August 2004. Center for Tropical Forest Science – Arnold Arboretum Asia Program.

1994 *Bolivia '93 - A study of Mercury Pollution*. La Paz, Bolivia: British Embassy.

Harrison, R. D. & Shanahan M.

1998 *Malaysian Nature Society 1998 Expedition to the proposed Pulong Tau National Park Sarawak*, Malaysia. Malaysian Nature Society, Miri Branch, Miri, Sarawak.

Harrison, R. D. & Munro, K.

1991 *Durham University Expedition to Tambopata-Candamo*. Durham: Durham University.

## **Research Activities**

### **Field Research**

1994-present Ecology of figs and fig wasps at Lambir Hills National Park, Sarawak.

2002-2005 Dispersal of fig pollinators in Panama.

2000-2002 Phenology of figs on Iriomote Island, Okinawa.

1999 Biotic expedition to Long Island, PNG.

## **KHARAKWAL, Jeewan Singh**

Invited Research Fellow

Born in 1967. (India)

## **Curriculum Vitae**

### **Academic Career**

B. A. Kumaun University, Nainital, India 1987.

M. A. in Indian Culture and Archaeology: Kumaun University, Nainital, India 1989.

Ph. D. Deccan College, Pune University, Pune, India 1994.

### **Professional Career**

Asst. Professor: Department of Archaeology, Institute of Rajasthan Studies, JRN Rajasthan Vidyapeeth University, Udaipur, India; from 1996 till now.

Visiting Professor: Research Institute for Humanity and Nature, Kyoto. May 2004 to April 2005.

JSPS Fellow: (January 2001 to April 2002) at the International Research Center for Japanese Studies, Kyoto, Japan with Prof. Y. Yasuda.

Research Assistant: Department of Archaeology, Institute of Rajasthan Studies, JRN Rajasthan Vidyapeeth University, Udaipur, India; from 1993 to 1996.

Research Assistant: Research Project of Indian Council of Historical Research, India "TV documentary Project on Himalayan Culture" 1991-1992.

Research Assistant: Research Project of University Grants Commission- "Continuity and Transition in Himalayan Cultural Life" Kumaun University, Campus, Almora 1989-91.

### **Higher Degree**

M. A. (Kumaun University, India)

### **Fields of Specialization / Background**

Rock Art and Bronze Age

Areas of Interest: Ancient Technologies and traditional science, Beginning of Domestication and Agriculture

### **Academic Society Memberships**

1. Indian Society for Prehistoric and Quaternary Studies, Pune, India

2. Indian Archaeological Society, Delhi, India
3. Indian Rock Art Society, Agra, India
4. PAHAR, Nainital, India
5. Member of Indo-Pacific Prehistory Association, Australia
6. Executive Member of History of Science and Technology Book Project, India

## Major Publications

### Articles

Kharakwal, J. S., D. P. Agrawal and Diwa Bhatt

2005 The fort of Banasur at Lohaghat, Kumaun, Uttaranchal. *Purattatva*.

Kharakwal, J. S.

2005 Indus Civilization: An Overview. *Occasional Papers 1* (Indus Project). Edited by T. Osada. Kyoto: Research Centre for Humanity and Nature.

Kharakwal, J. S., L. Pandey, J. Meena, H. Chaudhary, L. Patel, M. L. Sharma and M. L. Meena

2005 Archaeology of Rajasthan. *Sodh Patrika* 56: 45-79.

Kharakwal, J. S., Y. S. Rawat and Toshiki Osada

2005 Harappan sites in Kachchh and new opportunities of tourism. *Heritage Tourism Exploring the Future* (Ed. By V. N. Maira). Government of Gujarat. pp. 35-43.

Kharakwal, J. S.

2006 Zavar: the oldest zinc production center. *Rastra Nirman mai Mewar ka Yogdan*. Edited by Dev Kothari. Udaipur: Maharana Pratap Samiti. pp. 193-210.

## Research Activities

### Exploration (India)

2005 Janaury Archaeological survey in Rapar taluka in Kachchh district, Gujarat in order to identify a Harappan site for excavation jointly with Gujarat State Archaeology department and Research Institute for Humanity and Nature, Kyoto. The survey was carried with R. S. Bisht and Y. S. Rawat. Kanmer was identified for excavation and some other known sites like Sikarpur, Bagasara, Lothal were also visited.

### Excavations (Japan)

2005-06 Worked as Director of Kanmer Excavation, Gujarat, India. It is being jointly excavated by Indus Project of RIHN, Gujarat State department of Archaeology, India and Institute of Rajasthan Studies, Udaipur, India.

## Activities in Academic Societies

### Seminar and Conferences

#### National

2005 Zinc Production in Ancient India. Book under preparation was presented in IIT Kanpur in the Annual Meeting of History of Science and Technology (14<sup>th</sup> to 17<sup>th</sup> December).

### Teaching

Teaching South Asian Archaeology at undergraduate and Post Graduate levels since February 1994 in the Department of Archaeology and Museology, Rajasthan Vidyapeeth, Udaipur.

**Social Activities and Public Lectures****Extension Lectures**

Lectures as Resource Person

**Supervision and Host (Number of DC Students and JSPS Research Fellows)**

Approved Ph. D. supervisor of JRN Rajasthan Vidyapeeth, Udaipur.

1. Mr. Rajesh Meena is working under my supervision on Bead technology of Indus Civilization in Gujarat.
2. Mr. Suresh Meena is working on Pottery of Indus Civilization from Kachchh, India.

**PALANISAMI, Kuppannan**

Invited Research Fellow

Born in 1949. (India)

**Curriculum Vitae****Academic Career**

Department of Agriculture, Tamil Nadu Agricultural University, India, D. Course (1981)

Department of Agriculture, Tamil Nadu Agricultural University, India, M. Sc. (1975)

Department of Agriculture, Tamil Nadu Agricultural University, India (1973)

**Professional Career**

Invited Research Fellow, Research Institute for Humanity and Nature (2005)

Professor, Water Technology Centre, Tamil Nadu Agricultural University (1992-2006)

Associate Professor, Water Technology Centre, Tamil Nadu Agricultural University (1985-1992)

Assistant Professor, Tamil Nadu Agricultural University (1979-1985)

Research Assistant, Tamil Nadu Agricultural University (1975-1976)

**Higher Degrees**

D. Sc. (Tamil Nadu Agricultural University, 1981)

M. Sc. (Tamil Nadu Agricultural University, 1975)

**Fields of Specialization / Background**

Agricultural Economics

**Major Publications****Papers**

Palanisami, K. & S. R. Subramanian 1983 "Determinants of Farm Water Supply in the Lower Bhavani Project, Coimbatore, South India", *Water Resources Research*, Vol. 19, No. 6, pp. 1403-1409.

Palanisami, K. & S. R. Subramanian 1984 "Determinants of Farm Water Supply in the Lower Bhavani Project, Coimbatore, South India", *Water Resources Journal*, ESCAP/SER.C/124/ United Nations, pp. 43-49.

Palanisami, K. & K. William Easter 1984 "Tank Irrigation in India and Thailand: Problems and Prospects", *Irrigation Management Network*, Agricultural Administration Unit, London, Network Paper 10E, pp. 1-12.

Palanisami, K. & K. William Easter 1984 "Expost-evaluation of Flood Control Investments: A Case Study in North Dakota" *Water Resources Research*, Vol. 20, No. 12, pp. 1785-1790.

Palanisami, K. & K. William Easter 1987 "Small Scale Surface (Tank) Irrigation in Asia", *Water Resources Research*, Vol. 23, No. 5, pp. 774-780.

Palanisami, K. & J. C. Flinn 1988 "Evaluating the Performance of Tank Irrigation Systems", *Agricultural Systems*, Vol. 28, No. 3.

Palanisami, K. & J. C. Flinn 1989 "The Impact of Inadequate Water Supplies on Input Use and Yield of Rice Crops",

*Agricultural Water Management*, Vol. 15.

Palanisami, K. 1990 "Tank Irrigation - What Next?" IIMI/ODI Irrigation Management Network, London, July 1990 and also in *Water Resources Journal*, ESCAP/United Nations. ST/ESCAP/SER.C/167. pp. 50-54.

Sakurai, T. & K. Palanisami 2001 Tank Irrigation Management as a Local Common Property: the Case of Tamil Nadu, India, *Agricultural Economics*, 25 (2001) 273-283.

Palanisami, K. & Ruth Meinzen-Dick 2001 "Tank Performance and Multiple Uses in Tamil Nadu, South India" *Irrigation and Drainage Systems* 15: 173-195.

Ranganathan, C. R. & K. Palanisami 2004 "Modeling economics of conjunctive surface and groundwater irrigation systems" *Irrigation and Drainage Systems* 18: 127-143.

#### **Books/Bulletins**

Palanisami, K. 2000 Tank Irrigation - Revival for Prosperity, New Delhi: Asian Publication Services.

Palanisami, K. & K. W. Easter 2000 Tank Irrigation in the 21<sup>st</sup> Century - What next?, New Delhi: Discovery Publishing House.

Palanisami, K., P. Paramasivam & C. R. Ranganathan 2002 Agricultural Production Economics-Theory and Applications. New Delhi: Associated Publishing Company.

Palanisami, K., D. Sureshkumar & B. Chandrasekaran 2002 Watershed Management – Issues and Policies for 21<sup>st</sup> Century. New Delhi: Associated Publishing Company.

Palanisami, K. 2005 Sustainable Management of Tank Irrigation Systems in South India. Kyoto: Afrasian Centre for Peace and Development Studies.

Palanisami, K. and D. Sureshkumar 2006 Impact Assessment of Watershed Development – Issues, New Delhi: Methods and Experiences, Associated Publishing Company.

## **LEE, Ya-Fu**

Invited Research Fellow

Born in 1963. (Taiwan)

### **Curriculum Vitae**

#### **Academic Career**

Graduate School of Ecology and Evolutionary Biology, The University of Tennessee, TN, USA. Ph. D. Course (1994)

Graduate School of Ecology, The University of Tennessee, TN, USA. M. S. Course (1991)

Department of Transportation Engineering and Management, National Chiao Tung University, Taiwan (1984)

#### **Professional Career**

Invited Research Fellow, Research Institute for Humanity and Nature (2005)

Assistant Professor, Department of Life Sciences and Institute of Biodiversity, National Cheng Kung University (2003-present)

Assistant Professor, Department of Natural Resources, National I-Lan University (2002-2003)

Adjunct Assistant Professor, Department of Biological Resources, National Chia-Yi University (2002-2003)

Post-doctoral Research Fellow, Division of Forest Protection, Taiwan Forestry Research Institute (2001-2002)

Post-doctoral Research Fellow, Institute of Zoology, Academia Sinica (2000)

#### **Higher Degrees**

Ph. D. (University of Tennessee, 1999)

M. S. (University of Tennessee, 1993)

#### **Fields of Specialization / Background**

Animal population ecology, biogeography

**Academic Society Memberships**

Taiwan Bat Society

**Major Publications****Articles**

- Lee, Y.-F. and G. F. McCracken 2005 Dietary variation of Brazilian free-tailed bats links to migratory populations of pest insects. *Journal of Mammalogy* 86: 67-76.
- Lee, Y.-F. and L.-L. Lee 2005 Food habits of Japanese pipistrelles *Pipistrellus javanicus abramus* (Chiroptera: Vespertilionidae). *Zoological Studies* 44: 95-101.
- Lee, Y.-F. and G. F. McCracken 2004 Flight activity and food habits of three species of *Myotis* bats (Chiroptera: Vespertilionidae) in sympatry. *Zoological Studies* 43: 589-597.
- Lee, Y.-F. and L. L. Severinghaus 2004 Sexual and seasonal differences in the diet of Lanyu scops owls based on fecal analysis. *Journal of Wildlife Management* 68: 290-297.
- Lee, Y.-F. and G. F. McCracken 2002 Foraging activity and resource use of Brazilian free-tailed bats *Tadarida brasiliensis* (Molossidae). *Ecoscience* 9: 306-313.
- Lee, Y.-F. and G. F. McCracken 2001 Timing and variation in the emergence and return of a large colony of Mexican free-tailed bats (*Tadarida brasiliensis mexicana*). *Zoological Studies* 40: 309-316.
- Lee, Y.-F. and Y.-M. Kuo 2001 Predation on a Mexican free-tailed bat colony by peregrine falcons and red-tailed hawks. *Journal of Raptor Research* 35: 115-123.

**Li, Jun**

— Invited Research Fellow

Born in 1967. (China P. R.)

**Curriculum Vitae****Academic Career**

Department of archaeology, Faculty of field archaeology, University of Peking, Bachelor (1985~1989)  
 Japan Nara National Culture Property Institute (1995.3~1995.6)  
 Japan Nara Silk Road Research Center (1996.8~1997.5)

**Professional Career**

Cultural Heritage Bureau of Xinjiang Uygur Autonomous Region, Chief of office (2004~)  
 Cultural Heritage Bureau of Xinjiang Uygur Autonomous Region, Vice-Chief of office (1997~2004)  
 Xinjiang Institute of Archaeology researcher (1989~1997)

**Major Publications****Articles**

- 2005 The Relics of Xinjiang which Lost in Abroad. *Shan Dong Arts Publishing Company*, 200 pages.
- 2002 Siwen · Herding, *China National Photography Publishing Company*, 2002 pp148.
- 1999 The Gather of Xinjiang Relics and Ruins.
- 1999 The Briefing of Disentomb of 95MN1 tomb of Niya relics at Minfeng County. pp25-46.
- 1998 The Memorabilia of Cooperation and Communication with Overseas Partners of Xijiang Archaeology. *Cultural Relics of Xinjiang*, pp98-99.
- 1997 The Ancient Relics of Talimu Basin of Xinjiang. *Desert Research*, The Japan Desert Research Academy pp187-192.
- 1996 Excavated the Ravine of Subashi of Xijiang. pp65, *Xinjiang Annual*.

1995 The Protection of Xinjiang Large Scale of Ruins. Journal 4, pp100-101. *Cultural Relics of Xinjiang*.

1995 Silver Mountain Road of Tang Dynasty. Journal 1, pp55-58. *Cultural Relics of Xinjiang*.

### Research Activities

2002 Investigation of Dandanwulike Ruins.

1998 Cultural Heritage Bureau of Xinjiang Uygur Autonomous Region in Charge of the international Cultural Relics Cooperation Excavation of Niya Relics.

1996-1997 Attending Advanced Studies in the Nara Silk Road Institute.

1995 Attending Advanced Studies of Archaeology Survey and Relics Protection in Nara National Culture Property Institute, Japan.

1995 The Excavation of Niya.

1994-1995 The Project of Protection of Jiaohe Ancient City which organized by UNESCO.

1990-1993 The Field Excavation of Silver Mountain Road of Tang Dynasty.

## Qi, Wuyun

Invited Research Fellow

Born in 1967. (China P. R.)

### Curriculum Vitae

#### Academic Career

Department of Urban and Environmental Sciences, The Beijing University, D. Course (1993-1996)

Department of Resources and Environmental Sciences, The Beijing Normal University, M. Course (1990-1993)

Department of Geography, The Inner Mongolia Normal University (1986-1990)

#### Professional Career

Invited Research Fellow, Research Institute for Humanity and Nature (2005)

Associate Professor, Institute of Archaeology Chinese Academy of Social Sciences (2000-2006)

Lecturer, Institute of Archaeology Chinese Academy of Social Sciences (1996-2000)

#### Higher Degrees

Ph. D. (The University of Beijing, 1996)

M. Sc. (The Beijing Normal University, 1993)

#### Fields of Specialization / Background

Pollen analysis, Environmental changes, Environmental archaeology

#### Academic Society Memberships

Quaternary Research Association of China; Environmental Archaeology, Geological Society of China; Geography Information System Association of China; Science and technological Archaeology Association of China

### Major Publications

#### Books

Qi Wuyun, etc. 2007 A study on the human and land relationship of prehistorical culture in the Upper Shu River. *The Science Press*. (in press) (in Chinese)

Yuan Jing, Liang Zhonghe and Qi Wuyun, etc. 1999 Environmental Archaeology on the shell relics in the Jiaodong Peninsula. *The Social sciences literature press*. (in Chinese)

Ding Yaoqing and Qi Wuyun 1995 Lively Earth: a story of animals and plants. *Democracy and Construction*. (in Chinese)

## Articles

### Written in English

- ENDO, Kunihiko, Hidehiro SOHMA, Guijin MU, Wuyun QI, Kazuaki HORI and Taisuke MURATA 2005 Paleoenvironment and Migration of rivers, delta and lakes in the lowest reaches of Heihe River in *Project Report on an Oasis-region*, Japan, Vol. 5, No. 2, pp. 161-171. (in English)
- Qi, Wuyun, Liang Zhonghe, Gao Libing, Jia Xiaobing, Wang Shuzhi and Wang Jinxia 2005 A Study on Human-Land Relationship of the Prehistoric Culture In the Upper Shu River Valley, Shandong, China. in *The Collected Works of International symposium on GIS and Archaeology*, Kyoto, pp. 343-353. (in English)
- Qi, Wuyun, Kunihiko Endo, Guijin Mu, Hidehiro Sohma, Taisuke Murata, Kazuaki Hori and Masayoshi Nakawo 2003 Spore-pollen analysis of samples from the surface soil in the vicinity of lakes, at the end of Heihe river and their environmental indications in *Project Report on an Oasis-region*, Japan, Vol. 3, No. 2: 23-32. (in English)
- Mu, Guijin, Kunihiko Endo, Hidehiro Sohma, Kazuaki Hori, Wuyun Qi and Taisuke Murata 2003 A Preliminary Study on the Evolution of the Tail-lakes Related to the Migration of the Lower-reaches Channels, Heihe, Inner Mongolia, China in *Project Report on an Oasis-region*, Japan, 2003, Vol. 3, No. 2, pp. 11-22. (in English)
- Endo, Kunihiko, Hidehiro Sohma, Guijin Mu, Kazuaki Hori, Taisuke Murata and Wuyun Qi 2003 Reconstruction of paleoenvironments in the lower reaches of Heihe and Juyan Lake area – migration of river course and Juyan lakes in *Project Report on an Oasis-region*, Japan, 2003, Vol. 3, No. 2, pp. 1-10. (in English)
- Yuan, Jing, Liang Zhonghe, Qi Wuyun and Jia Xiaobing 2002 Shell Mounds in the Jiaodong Peninsula: A Study in Environmental Archaeology. *Journal of East Asian Archaeology*, Vol. 4, 1-4, America. (in English)

### Written in Japanese

- Qi-Wuyun, Liang-Zhonghe, Gao-Libing, Jia-Xiaobing, Wang-Shuzhi, Wang-Jinxia and Zhao Zhijun 2006 A Study on Environmental Archaeology of the Prehistoric Culture In the Upper Shu River Valley, Shandong, China, ed. by International Center of Japanese Cultural Studies, *Reading Historical Spatial Information from around the World: Studies of Culture and Civilization Based on Geographic Information Systems Data*, pp. 235-248. (in Japanese)

### Written in Chinese

- Qi, Wuyun 2007 An Application of Isotope and Trace Element in the Study on the Ancient Diet. *The Journal of Resource and Environment in Arid Area*, No. 1. (in Chinese)
- Qi, Wuyun 2006 "A study on the pollen analysis of the samples in the relics of Diaolongbei in Zaoyang, Hubei province, in *Diaolongbei in Zaoyang, Hubei province*" Science Press. (in Chinese)
- Qi, Wuyun 2006 The impact of living environmental change on the prehistoric cultural evolution in the Upper Shu River, Shandong Province. *Archaeology*, No. 12. (in Chinese)
- Qi, Wuyun, Liang Zhonghe, Gao Libing, Jia Xiaobing, Wang Shuzhi, Wang Jinxia and Zhao Zhijun 2006 Human-Nature Relationship Analysis of the Prehistoric Culture In the Upper Shu River Valley, Shandong, China. *Quaternary Sciences*, Vol. 26, No. 4: pp. 1-9. (in Chinese)
- Yuan, Jing, Liang Zhonghe, Qi Wuyun and Jia Xiaobing 2005 A study on the Environmental Archaeology of shell relics in the Jiaodong Peninsula, China. In the volume one of *Science and technology in Archaeology* (ed.) by the Center of Science and technology in Archaeology at the Institute of Archaeology, the academy of social sciences in China. *The Social sciences literature press*, P81-95. (in Chinese)
- Qi, Wuyun 2005 A study of ancient people's food structure based on isotope and trace elements test in Zhou Kunshu (ed.) *An Introduction of Environmental Archaeology*. The Sciences Press. (in Chinese)
- Qi, Wuyun 2005 A study on the human living environment based on pollen analysis at Dashanqian relic, Inner Mongolia in *The Corpus of Wang zhongshu*. (in Chinese)
- Qi, Wuyun, Zhou Chenghu and Wang Rongxun 2005 On the applications of geographical information system in the

- field of archaeological studies. *Huaxia Archaeology*, No. 4: pp. 108-112. (in Chinese)
- Qi, Wuyun, Liang Zhonghe and Jia Xiaobing 2004 A Comparative Study on the qualitative and quantitative analysis of the pollen samples and then human living environment at Jiaochangpu relic in Liaocheng city, Shandong province. *Archaeology and Culture Relic* (supplement). (in Chinese)
- Qi, Wuyun, Wang Jinxia and Liang Zhonghe, etc. 2004 A Study on Ancient Diet Based on the Analysis of Excavated Human Bones from Upper Shu River in Shandong Province, *Huaxia Archaeology*, No. 2: 41-47. (in Chinese)
- Qi, Wuyun, Ma Ainai, Zhou Daliang and Xu Haipeng 2004 An essay on the trend of soil-hydro erosion based on GIS in the coming ten years in Beijing area. *The Journal of Resource and Environment in Arid Area*, No. 4: 96-100. (in Chinese)
- Qi, Wuyun, Ma Ainai, Zhou Daliang and Xu Haipeng 2003 An assessment of soil-hydro erosion in Beijing area. *Journal of Soil and Water Conservation*, Vol. 10, No. 3: 137-139. (in Chinese)
- Qi, Wuyun, Kunihiko Endo, Mu Guijin, Hidehiro Sohma, Taisuke Murata, Kazuaki Hori and Masayoshi Nakawo 2003 Pollen analysis and its environmental significance based on the surface samples near the lake in the end of Heihe River. *Journal of Soil and Water Conservation*, Vol. 10, No. 4: 137-139. (in Chinese)
- Qi, Wuyun 2003 Sampling method for pollen analysis in archaeological studies. *China Cultural Relic News*, July, 11<sup>th</sup>. (in Chinese)
- Qi, Wuyun, Yuan jing, Liang Zhonghe and Jia Xiaobing 2002 A study on the human and land relationship based on the pollen analysis of shell relics in the Jiaodong Peninsula. *The Journal of Archaeology*, No. 7: 70-79. (in Chinese)
- Qi, Wuyun, Yuan jing, Liang Zhonghe and Jia Xiaobing 2002 A comparative study of qualitative and quantitative analysis of pollen samples in the shell relics in the Jiaodong Peninsula in Institute of Archaeology, CASC ed. *Archaeology in China and World in the 21<sup>st</sup> century*. Chinese Social Sciences Press, pp. 603-612. (in Chinese)
- Qi, Wuyun 2001 A study on the pollen analysis of Wengjiabu relic in Rushan city, Shandong province. *The Journal of Archaeology*, No. 6: 74-81. (in Chinese)
- Qi, Wuyun 2001 Pollen and environmental archaeology. *China Cultural Relic News*, March, 14<sup>th</sup>. (in Chinese)
- Qi, Wuyun and Liu Qingsi 1998 Analysis of core sediment and environmental changes since 600 years ago in the Daihai Lake. *The Journal of Chinese Geography* (supplement), No. 53: 76-82. (in Chinese)
- Qi, Wuyun, Liu Qingsi and Li Huazhang 1998 A study on the trend of environmental change in the future ten years in the Daihai Lake. *The Journal of Resource and Environment in Arid Area*, Vol. 12, No. 1: 44-51. (in Chinese)
- Qi, Wuyun and Liu Qingsi 1998 Pollen analysis and paleoclimatic changes since 2500 years ago based on the samples in the leisure park, Daihai Lake. *The Journal of Resource and Environment in Arid Area*, Vol. 12, No. 3: 21-27. (in Chinese)
- Qi, Wuyun, Xu Haipeng, Ma Ainai and Zhou Daliang 1997 A study of the impact of environmental changes on the soil-hydro erosion in diagnostic periods since mid-Holocene in Beijing area. *Journal of Basic Science and Engineering*. Vol. 5, No. 2: 146-154. (in Chinese)
- Qi, Wuyun and Xu Haipeng 1996 A study on the trend of environmental change in the coming ten years in Beijing area in the Steward Group to Commemorate Prof. Wang lailiang (ed.) *The Collected Works on Landform and Quaternary*. The Ocean Press, pp. 170-175. (in Chinese)
- Qingsi, Liu and Qi Wuyun 1996 An analysis on the sediment and environmental change since 3000 years ago based on the samples in the leisure park, Daihai Lake. *The Journal of Guizhou Normal University*, Vol. 14, No. 3: 25-32. (in Chinese)
- Qi, Wuyun and Liu Qingsi 1995 An Analysis of pollen in core sediment and its paleoclimatic changes since 600 years ago in the Daihai Lake in the subcommittee of landform and Quaternary, CGS ed. *Landform, Environment and Development*. Chinese Environmental Sciences Press. pp. 33-36. (in Chinese)

### Activities in Academic Societies

- August, 2005 Lake Level changes and paleoenvironmental evolution of the lakes at the end of Heihe River, China (English poster), at The "PAGES 2nd Open Science Meeting" International symposium, Beijing China at August 8-12, 2005.
- July, 2005 The pollen analysis on samples of lake core in the lower Heihe River and ice core in the Qilian Mountain, at the Symposium of Environmental Restoration in the Asian arid area in Hokkaido daigaku Japan at July 18-19, 2005.
- February, 2005 A study of the human-land relationship in the Upper Shu River. Presentation (in Japanese) at The GIS Symposium "Reading the Historical Spatial Information in the World" -Studies for Human Cultures and Civilizations based on Geographic Information System- held in the International center of Japanese Culture Studies, Kyoto Japan at February 7-11, 2005.
- June, 2004 A Study of Environmental Archaeology on the Prehistoric Culture. Paper presented at the Worldwide Conferences of the Society for East Asian Archaeology (SEAA) held in South Korea at June, 2004.
- March, 2003 Pollen analysis of samples from the surface soil in the vicinity of lakes, at the end of Heihe river and their environmental indications. Presentation (in Japanese) at Heihe River Symposium held at Kyodai kaikan by Research Institute for Humanity and Nature in March, 2003.
- September, 2002 A study of the human-land relationship at the prehistoric relics in the Upper Shu River, Shandong Province. Paper (in Chinese) presented at the 3<sup>rd</sup> Symposium on Environmental Archaeology, China held in Jinan, Shandong province in September, 2002.
- October, 2001 A Study on Ancient Diet Based on the Analysis of Excavated Human Bones with isotope and trace elements test from Upper Shu River in Shandong Province. Paper (in Chinese) presented at the 6<sup>th</sup> Symposium on Scientific and Technological Archaeology, China held in Guangzhou in October, 2001.
- August, 1999 A study of prehistoric human-land relationship with comparative analysis of qualitative and quantitative data of pollen samples in the shell relics in the Jiaodong Peninsula. Paper presented (in Chinese) at the International Conference on The Chinese Archaeology and World Archaeology in the 21st Century held in Beijing, China in August, 1999.

### Awards

- 2005 Award of Youth Scientist of Quaternary Sciences in China  
Quaternary Research Association in China  
An evaluation on the latest progress and achievements
- 2002 First-class Monograph Award  
3<sup>rd</sup> Chinese Research Symposium on Environmental Archaeology  
Book entitled by 'A study of environmental archeology on shelly hills in Jiaodong peninsula.'
- 2002 Excellent Achievement Award in Scientific Research  
Both the evaluation group from National Science Foundation and the academic committee of the Institute of Archaeology, Chinese Academy of Social Sciences  
A report on "A study of human-land relationship of prehistoric culture in the upper Shuhe River, Shandong province"
- 2001 Excellent Achievement Award  
Chinese Academy of Social Sciences  
Book entitled by 'A study of environmental archeology on shelly hills in Jiaodong peninsula.'
- 2000 Second prize of Excellent Scientific and Technical Papers Award

2<sup>nd</sup> Academic Exchange Symposium for universities of north China

Paper 'Analysis of the sediments from the heart of Daihai Lake and environmental evolution during the past 600 years' (1998)

1995 Peking University offered me *Jiudingxuan* fellowships.

## Research Activities

### Field Research in Japan

April, 2004 Sampling and sorting pollen specimens collected from ice core in Nagaoka

### Field Research in Foreign Countries

- August, 2004 Collecting pollen specimens from the sediments of the lake heart in the lower Heihe River for "Oasis Project"
- September, 2004 Investigating and studying human-land relationship in Guanting Basin, Qinghai province
- August, 2003 Collecting pollen specimens from the sediments of the lake heart in the lower Heihe River for "Oasis Project"
- July, 2003 Collecting specimens from loess profiles and archaeological sites in Guanting Basin, Qinghai province
- November, 2003 Collecting dating specimens from lake profiles and stream terraces in Linfen Basin, Shanxi province
- August, 2002 Collecting topsoil pollen specimens in Heihe River valley for "Oasis Project"
- September, 2002 Collecting pollen specimens at Taosi archaeological site, Shanxi province
- May, 2002 Collecting pollen specimens from Wucheng archaeological site, Jiangxi province
- October, 2002 Collecting pollen specimens from Xinglonggou archaeological site, Inner Mongolia
- May, 2001 Collecting pollen specimens from Zhouyuan archaeological site, Shanxi province
- October, 2001 Collecting pollen specimens from Erlitou and Yanshi archaeological sites, Henan province
- June, 2001 Collecting pollen specimens from Diaolongbei archaeological site, Hubei province
- October, 2001 Researching the paleoenvironment of Taosi archaeological site, Shanxi province
- May, 2001 Investigating and studying human-land relationship of prehistoric culture in the upper Shuhe River, Shandong province
- May, 2000 Collecting paleoenvironment specimens from archaeological sites in the upper Shuhe River, Shandong province
- September, 2000 Collecting pollen specimens from Jiaochangpu archaeological site, Shandong province
- October, 2000 Investigating the paleoenvironment of Qixinghe River valley, Heilongjiang province
- October, 1999 Locating and researching archaeological sites in the upper Shuhe River, Shandong province
- October, 1997 Collecting pollen specimens and researching the paleoenvironment at the south shore of Jiaodong Peninsula, Shandong province
- May, 1994 Collecting specimens from the heart of Lianhuachi Lake, Beijing
- August, 1991 Collecting specimens from the heart of Daihai Lake, Inner Mongolia

## Social Activities and Public Lectures

### Public Lectures

- March, 2004 10<sup>th</sup> International Research Symposium on Doigahama Archeological Sites held in Yamaguchiken county of Shimonoseki city of Japan, which was entitled by 'Excavated human bones and natural environment in Lajia village of Minhe county of Qinghai province in Neolithic Age.'
- February, 2004 Entitled by 'pollen analysis on samples collected from Gashunnur stratigraphic section in the lower reaches of Heihe River, was given in Shirukuroodo International Research Symposium of

'Nature, Archeology and Writings in Talimu Basin and its vicinal areas', which was held in Nara Joshidaigaku Kinenkan, Japan.

## SHEN, Weirong

Invited Research Fellow

Born in 1962. (China P. R.)

### Curriculum Vitae

#### Academic Career

Language and Cultural Science of Central Asia, University of Bonn, Germany, D. Course (1998)

Comparative Religious Studies, University of Bonn, Germany, D. Course (1992-1998)

Chinese History, Nanjing University, M. Course (1986)

#### Professional Career

Visiting Professor, Institute for Asian and African Studies, Humboldt University, Berlin, Germany (2001-2002)

Visiting Assistant Professor, History Department, Macalestr College, At. Paul, U.S.A. (2001)

#### Higher Degrees

Ph. D. for Language and Cultural Science of Central Asia (University of Bonn, Germany)

#### Fields of Specialization / Background

Chinese, Tibetan History and Religion, Buddhist Studies

### Major Publications

#### I. Chinese

- 2005 *Han zang yi shengru wufenbie jing zhi bijiao yanjiu (Entering the Dharani of Non-Conceptualization: A Comparative Study on Chinese and Tibetan Translations of Arya-avikalpapravesa dharani)*, Co-author with Tam Shek-wing and Henry Shiu, Taipei: All Buddha Publication, 2005.

#### Articles

##### Written in English

- 2006 "Background books and Book's Background: Images of Tibet and Tibetan Buddhism in Chinese Literature", *Volume thematique franco-anglais de l'EFEQ: L'IMAGE DU TIBET AUX XIX-XXe SIECLES*, Paris (forthcoming, 2006).
- 2006 "On the history of the Gling tshang Principality of mDo kham during Yuan and Ming Dynasty", *Festschrift in honor of Professor Dieter Schuh's Sixtieth Birthday*, Ed. by Professor Peter Schwieger, Bonn (Forthcoming Summer 2006).
- 2005 "Study of Chinese manuscripts concerning Tibetan tantric practice found in Khara-khoto of the Tangut empire: Essentials for the Dream Yoga", *Cahiers d'Extrême-Asie* (Dec. 2005).
- 2005 "The first Dalai Lama Gendün drup", *The Dalai Lamas: A Visual History*, Edited by Martin Brauen, Chicago: Serindia Publications, 2005, pp. 32-41.
- 2005 "Tibetan Tantric Buddhism at the Court of the Great Mongol Khans" – Sa skya panita and 'Phags pa's works in Chinese during the Yuan Period, *Disputation: Journal of International Association for Mongolian Studies*, Ed. By Uyunbilig, Futaki, Hohot and Tokyo, 2005.
- 2005 "Notes on the four Tibetan *Si tu* conferred by the Ming emperor Yongle in 1413". *Zentralasiatische Studien*, Bonn: University of Bonn.

##### Written in Japanese

- 2006 "11-14 世紀における西域佛教史の再構築—カラホト文書を中心に—", 《東アジアにおける国際秩序と交流の歴史的研究ニエスレタ》, 京都: 京都大学文学部, 2006 年, No. 4, 頁 3-6。

- 2003 "On the history of the Gling tshang Principality of mDo khams during the Yuan and Ming Dynasties", *The Tōyōshi-Kenkyū* (The Journal of Oriental Researches), Vol. LXI, No. 4, March 2003, Kyoto, pp. 76-114.

#### Written in Chinese

- 2006 "Apropos of Khara Khoto Chinese Manuscripts concerning Tibetan Tantric Buddhism in Tangut-Xia Kingdom and Mongol-Yuan Dynasty", *Ouya xuekan* (Journal of Eurasian Studies), No. 6, Beijing.
- 2006 "Shes bya rab gsal and Erdeniyin Tobči, Re-examined", *Journal of Historical and Philological Studies*, No. 77, 2. Taipei: Institute of History and Philology, Academia Sinica, June, 2006.
- 2005 "Brief Biography of Mi pham, the Great Master of Modern Ris med Movement", *Journal of Ethnographical Studies*, Taipei: National Zhenzhi University.
- 2005 "Huairou yuanyi huayu zhong de mingdai hanzang zhengzhi yu wenhua guanxi" (The Political and Cultural Interaction between Ming China and Tibet: Discourse of "Accommodating Barbarians from Afar"), *Guoji hanxue* (International Sinological Studies), No. 13, Shijiazhuang: Daxiang chubanshe, 2005.
- 2005 "Xizangwen wenxian zhong de heshang moheyan jiqi jiaofa: yige chuangzao chulai de chuantong" (Hvashang Mahayana and his Teachings in Tibetan Literature: An Invented Tradition). *Xi Shixue* (New History), Vol. 16, No. 1, Taipei, Jan. 2005, pp. 123-172.
- 2004 "Xixia heishuicheng suojian zangchuan fojiao yiguiwenshu yanjiu I: menghuan shen yaomen (Studies on Chinese Texts of Yogic Practices of Tibetan Tantric Buddhism found in Khara Khoto of Xi Xia (Tangut) [I]: Quintessential Instruction on the Illusory Body of the Dream)." *Dangdai zangxue xueshu yantaohui lunwenji* (Collected Papers of Symposium on Contemporary Tibetan Studies), Taipei: Mongolian and Tibetan Affairs Commission, 2004, pp. 382-473.
- 2003 "Shen tong yaoshu yu zaikun: lun yuandai wenren bixia de fanseng xingxiang" (Magic Power, Sorcery and Evil Spirit: On Images of Tibetan Lamas in Chinese Literature during the Yuan Dynasty 1260-1366), *Hanxue yanjiu* (Chinese Studies), Vol. 21, No. 2, Taipei, December 2003.

#### Research Activity

- 2002-2005 Guest Research Associate at Graduate School of Letters, Kyoto University as Recipient of a two-year Postdoctoral Fellowship for Foreign Researchers from Japan Society for the Promotion of Science

### SHINDE, Vasant Shivram

Invited Research Fellow

Born in 1956. (India)

#### Curriculum Vitae

##### Academic Career

- Ph. D in Proto-historic Archaeology (Early Settlements in the Central Tapi Basin), University of Poona (1985)
- M. A. (first class first) in Ancient Indian History, Culture and Archaeology, University of Poona (1979)
- B. A. (History) Hons, University of Poona (1977)

##### Professional Career

- Research Assistant (1982)
- Superintendent of Excavation (Research/Teaching post) (1985)
- Visiting Professor, International Research Center for Japanese Studies, Kyoto, Japan (2000~2001)

##### Higher Degrees

- Ph. D. (University of Poona, 1985)
- M. A. (University of Poona, 1979)

**Fields of Specialization / Background**

Indian Protohistory, Field Archaeology

**Major Publications****Books**

2005 *Gazetteer of Heritage sites in Gujarat*, Aryan International Books, New Delhi.

2004 *Monsoon and Civilization*, Roli Book- Lustre Press, Singapore.

**Articles****(In National Journals)**

2006 Excavations at Siddhapur 2003/04 with special reference to a Shrine, in *Archaeology of Early Historic Period and Buddhism*, B. R. Mani and S. C. Saran (eds.), Delhi: Sharada Publishing House: 124-28.

2005 The Geomorphological and Archaeological Investigations Along the Gulf of Khambat, *Journal of Indian Ocean Archaeology* 2: 25-32.

Vasant Shinde and Kanungo 2005 Excavations at Kopia 2005: A Preliminary Report. *Puratattva* 35: 126-34.

2004 Saurashtra and the Harappan sites of Padri and Kuntasi, *Marg* vol. 55, No. 3: 64-70.

2004 (in Marathi) Central Tapi Basin and Chalcolithic Cultures. In *Cultural History of Khandesh*, Part I, K. S. Wani Marathi Pragat Adhyayan Sanstha, Dhule: 1-65.

Vasant Shinde and Possehl and Ameri

2004 The Ahar-Banas Complex and the BMAC, *Man and Environment*, XXX (2): 1c-29.

2004 A Satavahana Period Shrine of Laxmi-Parvati at Siddhapur Solapur District, Maharashtra, *Man and Environment*, XXX (2): 117-118.

2004 A Review of *Environment and Culture: A Historical Perspective* by M. K. Dhavalikar, *Man and Environment*, XXX (2): 121-22.

Vasant Shinde and Lalit Pandey

2003 A Preliminary Report of the Excavations at Iswal, *Shodh Patrika*, 53/3-4: 83-90.

2003 New Light on the History of Pune City: The Results of an Archaeological Rescue Excavation, *Puratattva*

2003 Indian Archaeology Today: A Mature and Scientific Discipline, *Puratattva*

2002 Establishment of a farmstead at Walki in Western India 1400 B.C.: The Human Response to Climatic Change. In *Puratatna- Emerging Trends in Archaeology, Art, Anthropology, Conservation and History*, (In Honour of Shri Jagat Pati Joshi) C. Margabandhu, A. K. Sharma and R. S. Bisht (eds.), Vol. 1, Agam Kala Prakashan, New Delhi: 204-212.

2002 An Archaeological Reconnaissance of the Konkan Coast: From Bharuch to Janjira. *Man and Environment* Vol. XXVII No. 1: 73-82.

Vasant Shinde, Possehl and Sinha Deshpande

2001-2002 Ceramic Assemblage in Protohistoric Mewar (Rajasthan) with Special Reference to Gilund and Balathal, *Puratattva* 32: 5-24.

2002 Chalcolithic Phase in Western India (including Central Indian and the Deccan Region). In *Recent Studies in Indian Archaeology*, K. Paddayya (ed.) ICHR Publication, Munshiram Manoharlal Publishers Pvt. Ltd: 157-188.

**(In International Journals)**

2005 Excavations at Gilund 2001-2003: the seal impressions and other finds, in *South Asian Archaeology 2003* (eds Ute Franke-Vogt and Hans Jochim Weisshaar), Linden Soft, Aachen, Germany.

2005 Development of Chalcolithic Phase at Balathal, *South Asian Archaeology 2001*, (Raven Eds.), Leiden University, Netherlands.

Vasant Shinde and G. L. Possehl

2005 A Report on the Excavations at Gilund, 1999-2001. In *South Asian Archaeology*, Catherine Jarrige (ed.), Paris: 293-302.

Vasant Shinde and Sinha Deshpande

2005 Gujarat Between 2000-1400 BCE, *South Asian Studies* 21: 121-136.

Vasant Shinde, S. Sinha Deshpande and Y. Yasuda

2004 Human Response to Holocene Climate Changes- A Case Study of Western India Between 5<sup>th</sup> to 3<sup>rd</sup> Millennium BC. In Y. Yasuda and V. Shinde (eds), *Monsoon and Civilization*, Roli Books and Lustre Press, Singapore: 383-406.

Vasant Shinde, B. van Geel and Y. Yasuda

2004 Solar Forcing of Climate Change and a Monsoon-Related Cultural Shift in Western India around 800 ca. yrs. BC. In Y. Yasuda and V. Shinde (eds), *Monsoon and Civilization*, Roli Books and Lustre Press, Singapore: 275-79. 2004 Cord Impressed Ware and rice cultivation in South Asia, China and Japan: possibilities of inter-links, *Quaternary International*, 123-125: 105-115.

Vasant Shinde and S. Sinha Deshpande

2003 South Indian Chalcolithic, The *Encyclopedia of Prehistory*, Volume 8: *South and Southwest Asia* (Kluwer Academic / Plenum Publishers).

Vasant Shinde and S. Sinha Deshpande

2003 Central Indian Chalcolithic, The *Encyclopedia of Prehistory*, Volume 8: *South and Southwest Asia* (Kluwer Academic / Plenum Publishers).

2002 Emergence, Development and Spread of Agricultural Communities in South Asia. In *Origins of Pottery and Agriculture*, Y. Yasuda (ed.), Roli Books and Lustre Press, Singapore: 89-115.

Vasant Shinde and Y. Yasuda

2001 Holocene Climatic (Monsoon) Change and the Emergence and Decline of the Early Farming Community in Western India. *Monsoon* 2: 100-102.

Vasant Shinde, B. van Geel and Y. Yasuda

2001 Solar Forcing of Climate Change and a Monsoon-Related Cultural Shift in Western India around 800 ca BC. *Monsoon* 2: 35-39.

Vasant Shinde, M. Makohonienko, Y. Yasuda, H. Kitagawa and D. P. Agrawal

2001 Harappan Civilization and Palaeobotanical Evidences of Climatic Change in Eurasia around 4000 Years BP. *Monsoon* 2: 117-119.

Vasant Shinde and Y. Yasuda

2001 Problem Oriented Environmental Archaeology: an ALDP Research in India. *Terra Nostra* 2001/3: 197-99.

Vasant Shinde, Y. Yasuda, G. L. Possehl and J. Kharakwal

2001 Climate Fluctuations and Rise and Fall of the Harappan Civilization of South Asia. *Monsoon* 3: 92-94.

Vasant Shinde, J. Kharakwal, A. Yano and Y. Yasuda

2001 Cord Impressed Ware and Rice Cultivation in Different Regions of Asia: Possibilities of Inter-link. *Monsoon* 3: 48-49.

Vasant Shinde

2001-02 A Report on the Second International Workshop of ALDP (Asian Lake Drilling Programme) on Monsoon and Civilization, *Indian Archaeological Study*, 23: 117-19.

## Research Activities

### Field Research

#### (Participation)

October 2005

Explorations at and around Junnar.

August 2004	core and periphery zones of the site of Hampi, Bellary District, Karnataka.
August-September 2003	Godavari Delta Region, Andhra Pradesh in collaboration with the Yamaguchi University, Japan in connection with Geomorphological-Archaeological observations.
December 2002-February 2003	along the Gulf of Cambay to discover evidence of the 6 <sup>th</sup> -7 <sup>th</sup> millennium BC.
May 2002 Exploration	neighbourhood of Solapur city, Maharashtra, to select potential Early Historical site for excavation.
October 2001	around Gilund and Chavand, Rajasthan to study the evidence of early iron smelting and working.

**(Direction)**

December 2005-February 2006	Junnar- An Early Historic site in Maharashtra.
December 2004-February 2005	Gilund.
November-December 2003	Siddhapur- Early Historic-Early Medieval site in Solapur District of Maharashtra.
March 2003	Mudvi- An Early Historic site in Solapur district of Maharashtra.
December 2002-February 2003	Cambay Archaeological Research Project (Test Pitting at Padri and Sidhanath Temple area.
December 2002-February 2003	Gilund.
September 2003	Rescue Excavation in the city of Pune (Discovered Satavahana culture for the first time, thus taking back the antiquity of the city by 1000 years).
December 2001	Bagor- A Mesolithic site in Bhilwada District of Rajasthan.
December 2001-February 2002	Excavations at Gilund.
December 2000-February 2001	Excavations at Gilund.

**ZHENG, Hongxing**

Invited Research Fellow

Born in 1973. (China P. R.)

**Curriculum Vitae****Academic Career**

Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences, Ph. D. Course (1998)

Department of Geography, East China Normal University, M. (1995)

Department of Geography, Fujian Normal University (1991)

**Professional Career**

Invited Research Fellow, Research Institute for Humanity and Nature (2005)

Associate Professor, Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences (2003)

Post-doctor, Institute of Environmental Sciences, Beijing Normal University (2001)

Assistant Researcher, Department of Geography, Hong Kong Chinese University (2001)

**Higher Degrees**

Ph. D. (Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences, 2001)

M. Sc. (East China Normal University, 1998)

**Fields of Specialization / Background**

Hydrology, Water Resources Management

### Major Publications

- 2004 "Changes of Hydrologic Cycle Components in the Yellow River Basin During the Second Half of the 20th Century" *Hydrological Process*, Vol. 18: 2337-2345
- 2004 "Simulation of Hydrological Processes in Lushi Basin Basing Distributed Hydrological Model" *Geographical Research* (in Chinese), Vol. 23(4): 447-454
- 2004 "On Evolution Modes of Water Resources in the Yellow River Basin" *Acta Geographica Sinica* (in Chinese), Vol. 59(2): 267-273
- Zhonggen Wang and Hongxing Zheng 2004 "A Distributed Hydrological Model with Its Application to the Jinghe Watershed in the Yellow River Basin, *Science in China Ser.E Technological Sciences*, Vol. 34: 49-59
- 2004 GIS/RS Based Distributed Hydrological Modeling I: Model Theories and Structures, *Advances in Water Science*, Vol. 15(4): 501-505
- 2004 GIS/RS Based Distributed Hydrological Modeling II: Model Test and Application, *Advances in Water Science*, Vol. 15(4): 506-510
- 2004 "On Concepts of Ecological Water Demand" *Advances in Water Science*, Vol. 15(5)

### Research Activities

- 2005.8. GWSP-Asia meeting in Kyoto, Japan
- 2005.9. Field Investigation in Loess Plateau, China

## ICHIKAWA, Masahiro

Associate Professor

Born in 1962.

### Curriculum Vitae

#### Academic Career

- Graduate School of Human and Environmental Studies, Kyoto University, D. Course (2002)
- Graduate School of Human and Environmental Studies, Kyoto University, M. Course (1997)
- Environmental Studies for Open Space, Faculty of Horticulture, Chiba University (1984)

#### Professional Career

- Associate Professor, Research Institute for Humanity and Nature (2003)
- Environmental Department, Pacific Consultants Co. Ltd. (1989)
- Japan Overseas Cooperation Volunteers in Dominican Rep. (1987)
- Development and Planning Department, Pacific Consultants Co. Ltd. (1984)

#### Higher Degrees

- D. Human and Environmental Studies (Kyoto University, 2002)
- M. Human and Environmental Studies (Kyoto University, 1997)

#### Fields of Specialization / Background

Area Studies in Insular Southeast Asia

#### Academic Society Memberships

The Japan Society of Tropical Ecology, Japanese Society for Tropical Agriculture

### Major Publications

#### Articles

- Ichikawa, M. 2006 Large-scale forest development and land use by the Iban around the Lambir Hills National Park. *In Proceedings of International Symposium on Forest Ecology, Hydrometeorology and Forest Ecosystem*

*Rehabilitation in Sarawak*. 104-108. Sarawak Forestry Cooperation (SFC).

Ichikawa, M. 2005 Inheritance of Natural Resources and their Sustainable Use by the Iban of Sarawak, East Malaysia –Lands as a Common Resource among Generations–. Full paper submitted to *International Symposium on "Eco-Human Interactions in Tropical Forests"* organized by JASTE.

### **Activities in Academic Societies**

Officer in general affairs in the Japan Society of Tropical Ecology (2004-), Organizing member for the 15<sup>th</sup> annual congress of the Japan Society of Tropical Ecology (2005), Organizing member for the International Memorial Symposium for the 15<sup>th</sup> anniversary of the Japan Society of Tropical Ecology (2005)

### **Oral Presentation**

- 30/11/2005 Large-scale forest developments and landuse by the Iban around the Lambir Hills National Park. In International symposium on forest ecology, hydrometeorology and forest ecosystem rehabilitation in Sarawak. Co-sponsors: SFC, FDS, JST, and RIHN. Kuching
- 18/10/2005 Landuse by native people in Sarawak, East Malaysia: an evaluation from viewpoint of biodiversity conservation. In International symposium on "Sustainability an biodiversity of forest ecosystems -drivers, mechanisms, and effects of forest change-" organized by RIHN, Kyoto
- 28/7/2005 A Key of Biodiversity Conservation: Indigenous Land use. International workshop on Promotion of integrated terrestrial environment research under Global Land Project (oral presentation as a commentator), Hokkaido Univ.
- 17/6/2005 Natural resources and their uses by the Iban in swamp forests of Sarawak, East Malaysia. Memorial lecture of Oze price. Tokyo (in Japanese)
- 14/6/2005 Inheritance of Natural Resources and their Sustainable Use by the Iban of Sarawak, East Malaysia -Lands as a Common Resource among Generations- (Poster). In International Symposium on "Eco-Human Interactions in Tropical Forests" organized by JASTE, Kyoto
- 12/6/2005 Organization and social relations in mountain villages in the Dominican Republic. Annual Meeting of Japan Society of Tropical Ecology. Kyoto (in Japanese)

### **Moderator**

- 14/6/2005 "People, Policy and Mediation" in the International Symposium on "Eco-Human Interactions in Tropical Forests" organized by JASTE, Kyoto

### **Awards**

- Kira Price in the Japan Society of Tropical Ecology (2004)
- Oze Price from Oze Preservation Foundation (2005)

### **Research Activities**

#### **Field Research in Foreign Countries**

- April 2005, March 2006 Sarawak, East Malaysia (Research on the natural resources uses by the people living in/around forests)
- October and November 2005 Cuba, Jamaica and Dominican Rep. (Deforestation and Land uses by the people living in mountainous regions)
- August 2005, January 2006 East Kalimantan, Indonesia (Natural resource uses by local people under the decentralization policy)

### **Counterpart of Researchers**

Foreign visiting researcher (1), JSPS researcher (PD) (1), Visiting researcher (1)

## Social Activities and Public Lectures

### Social Activities

Technical adviser of EAC Co. Ltd.

## KANAE, Shinjiro

Associate Professor

Born in 1971.

### Curriculum Vitae

#### Academic Career

Department of Civil Engineering, University of Tokyo, Ph. D. (1999)

Department of Civil Engineering, University of Tokyo, M. Eng. (1996)

Department of Civil Engineering, University of Tokyo, B. S. (1994)

#### Professional Career

Associate Professor, Research Institute for Humanity and Nature (2003)

Associate Professor, Institute of Industrial Science, University of Tokyo (2003)

Lecturer, Institute of Industrial Science, University of Tokyo (2003)

Research Associate, Institute of Industrial Science, University of Tokyo (1999)

PD Research Fellow, Japan Society for the Promotion of Science (1999)

DC Research Fellow, Japan Society for the Promotion of Science (1996)

#### Higher Degrees

Ph. D. (University of Tokyo, 1999)

M. Eng. (University of Tokyo, 1996)

#### Fields of Specialization / Background

Civil Engineering, Hydrology, Meteorology

#### Academic Society Memberships

International Association of Hydrological Sciences, Japan Society of Civil Engineers, Japan Society of Hydrology & Water Resources, Meteorological Society of Japan

### Major Publications

#### Articles

Kim, W., S. Kanae, Y. Agata, T. Oki 2005 "Simulation of potential impacts of land use/cover changes on surface water fluxes in the Chaophraya river basin, Thailand" *J. Geophys. Res.*, 110(D8), D08110, doi:10.1029/2004JD004825.

Hirabayashi, Y., S. Kanae, I. Struthers, T. Oki 2005 "A 100-year (1901-2000) global retrospective estimation of the terrestrial water cycle", *J. Geophys. Res.*, 110(D19), D19101, doi:10.1029/2004JD005492.

Shen, Y., C. Tang, J. Xiao, T. Oki and S. Kanae 2005 "Effects of Urbanization on water resource development and its problems in Shijiazhuang, China", *Proceedings of a symposium held during the Seventh IAHS Scientific Assembly at Foz do Iguaçu, Brazil, IAHS Publ.* 293: 280-288.

Yang, D., G. Ni, S. Kanae, C. Li, T. Kusuda 2005 "Water resources variability from the past to future in the Yellow River, China", *IAHS Publication*, 295: 174-182.

Qiuhong Tang, T. Oki, S. Kanae 2005 "A distributed biosphere hydrological model (DBHM) for large river basin", pp37-42.

Shen, Y., C. Tang, J. Xiao, T. Oki, S. Kanae 2005 "Effects of urbanization on water resource development and its problems in Shijiazhuang, China, *IAHS-Publ.* No. 293: 280-288, 2005.

Lei, H., D. Yang, F. Sun, S. Kanae, S. Miyazaki, Y. Shen 2005 "Field experiment and analysis of the energy-water balances for the winter wheat in Weishan Irrigation District along the downstream of the Yellow River", *Proceedings of the International Symposium on Sustainable Water Resources Management and Oasis-Hydroshpere-Desert Interaction in Arid Regions*, Beijing.

### Activities in Academic Societies

#### Oral Presentation

Kanae, S., Y. Hirabayashi, T. Yamada, T. Oki 2006 "Influence of land-surface hydrologic conditions on inter-annual variability of precipitation in boreal summer, a GCM experiment", *The 5th International Conference on the Global Energy and Water Cycle*, Irvine, USA, p. 184.

#### Awards

Best Paper Award, Annual Journal of Hydraulic Engineering, JSCE (2005)

## KUBOTA, Jumpei

Associate Professor

Born in 1957.

### Curriculum Vitae

#### Academic Career

Department of Forestry, Faculty of Agriculture, Kyoto University, D. Course (1987)

Department of Forestry, Faculty of Agriculture, Kyoto University, M. Course (1983)

Department of Forestry, Faculty of Agriculture, Kyoto University (1981)

#### Professional Career

Associate Professor, Research Institute for Humanity and Nature (2002)

Associate Professor, Faculty of Agriculture, Tokyo University of Agriculture and Technology (1997)

Assistant Professor, Faculty of Agriculture, Tokyo University of Agriculture and Technology (1987)

#### Higher Degrees

D. Agr. (Kyoto University, 1987)

M. Agr. (Kyoto University, 1983)

#### Fields of Specialization / Background

Forest Hydrology, Erosion Control Engineering

#### Academic Society Memberships

The Japanese Forestry Society, The Japan Society of Hydrology and Water Resources, The Japan Society of Erosion Control Engineering

### Major Publications

#### Articles

Wang Genxu, Yang Lingyuan, Jumpei Kubota and Chen Ling 2005 "Impacts of land use changes on groundwater resources in Heihe River basin" *ACTA GEOGRAPHICA SINICA*, 60-3: 456-466 (in Chinese).

Kazuyoshi SUZUKI, Jumpei Kubota, Tetsuo Ohata and Varely Vuglinsky 2005 "The impact of snow processes on snowmelt runoff generation in the southern mountain taiga, eastern Siberia. *Journal of Agriculture Meteorology* 60(5), pp817-820.

Kazuyoshi Suzuki, Jumpei Kubota, Tetsuo Ohata and Valery Vuglinsky 2006 "Influence of snow ablation and frozen ground on spring runoff generation in the Mogot Experimental Watershed, southern mountainous taiga of

eastern Siberia", *Nordic Hydrology*, Vol. 37, No. 1, pp. 21-29.

Yusuke Yamazaki, Jumpei Kubota, Tetsuo Ohata, Varelly Vuglinsky and Takahisa Mizuyama 2006 "Seasonal changes in runoff characteristics on a permafrost watershed in the southern mountainous region of eastern Siberia" *Hydrological Processes* 20, pp453-467.

### Activities in Academic Societies

#### Oral presentations in international scientific meetings

- April, 2005 "Hydrological Modeling for Evaluating the Effects of Glaciers and Snow Cover on the Hydrological Cycle in an Inland River Basin of Western China", IAHS VIIth Scientific Assembly, Foz do Iguaçu, Brazil.
- June, 2005 "Impacts of Human Activities on the Hydrological Cycle in the Heihe River Basin, Western China". Asia Oceania Geosciences Society's 3rd Annual Meeting (AOGS 2006), Singapore, Singapore.
- March, 2006 "Who Possesses Water? -When Oases dry up-", in Water and Cultural Diversity Mediating for Sustainable Development, Session FT4-32, 4th World Water Forum, Mexico City, Mexico.

### Research Activities

#### Field Research in Foreign Countries

August, 2005 Kazakhstan (Preparatory field study in the Ili River basin)

#### Supervision and Host (Number of DC Students and JSPS Research Fellows)

DC student (1)

### Social Activities and Public Lectures

#### Committee Member

Accreditation Committee, Coordinating Committee on Accreditation and examination, Accreditation System for Engineering Education in Japan

## MOMOKI, Akiko

Associate Professor

Born in 1950.

### Curriculum Vitae

#### Academic Career

Department of Zoology, Faculty of Science, Kyoto University, Research Student (1987-94)

Department of Biology, Faculty of Science, Tohoku University, B. Sc. (1973)

#### Professional Career

Adjunct Lecturer, Faculty for the Study of Contemporary Society, Kyoto Women's University (2002)

Associate Professor, Research Institute for Humanity and Nature (2001-)

Part-time Lecturer, Osaka Bunka Fashion College (1992-2001)

Assistant Professor, Okayama University Dental School (1997-98)

Part-time Lecturer, Faculty of Science and Technology, Ryukoku University (1995-96)

Part-time Lecturer, The Center for Student Exchange, Kyoto University (1989-95)

Assistant, Technical Development Section/Senior Staff, Business Planning Section/Senior Staff, R&D Section, Rhône-Poulenc Japan, Ltd. (1977-89)

Technical Assistant, Gynecology Laboratory, Keio University Hospital (1973-74)

**Fields of Specialization / Background**

Biology, Ethology, Human Ethology

**Academic Society Memberships**

Japan Ethological Society, Société Franco-Japonaise de la Pharmacie, Japanese Association of Science & Technology Journalists

**Major Publications****Co-edition**

2005 *Dictionnaire des termes techniques et scientifiques français-japonais*, nouvelle édition 2005. Hakusuisha Publishing Co., Ltd.

**Other Activities**

May 2005 Presenter at the 1<sup>st</sup> Science wine bar-What does science communication convey? (Japanese Association of Science and Technology Journalists)

**Research Activities****Field Research in Foreign Countries**

October, 2005 France (Research on France's activities in the year 2005 for promoting dialogues between the scientists and the citizens)

October, 2005 Switzerland (Research on multi-disciplinary approach in environmental history studies)

**NONAKA, Kenichi**

Associate Professor

Born in 1964.

**Curriculum Vitae****Academic Career**

Department of Geography, Faculty of Literature, Nagoya University, D. Course (1991)

Department of Geography, Faculty of Literature, Nagoya University, M. Course (1989)

Department of Geography, Faculty of Literature, Nagoya University (1987)

**Professional Career**

Associate Professor, Research Institute for Humanity and Nature (2003)

Associate Professor, Faculty of Humanities and Social Sciences, Mie University (1996)

Lecturer, Faculty of Humanities and Social Sciences, Mie University (1994)

Research Fellow, Faculty of Literature, Nagoya University (1993)

Research Fellow, Faculty of Literature, Hokkaido University (1991)

**Higher Degrees**

D. Sc. (Kyoto University, 1999)

M. A. (Nagoya University, 1989)

**Fields of Specialization / Background**

Geography, Ecological Anthropology

**Academic Society Memberships**

The Association of Japanese Geographers, The Human Geographical Society of Japan, The Society of Bio-Sophia Studies, The Society of Human and Animals Relations, The Society of Ecological Anthropology

## Major Publications

### Books

Nonaka, Kenichi

2005 *Ethnoentomology -Insect Eating and Human-Insect Relationship*, Tokyo: University of Tokyo Press. (in Japanese)

### Articles

Nonaka, Kenichi

2006 "A Circle of Living Things" *Chiri* 51(2): 92-95. (in Japanese)

Nonaka, Kenichi

2005 "Going to See Monkey" *Chiri* 50(11): 86-89. (in Japanese)

Nonaka, Kenichi

2005 "A Habit of Yellow Jacket Eating" *Chiri* 50(6): 17-20. (in Japanese)

Toms, Rob and Nonaka, Kenichi

2005 "Harvesting of Insects in South Africa and Japan- Indigenous Knowledge in the Classroom" *Science in Africa* (Online Magazine) Augsut: <http://www.scienceinafrica.co.za/2005/july/edibleinsects.htm>.

Nonaka, Kenichi

2005 "Insect Eating in Lao PDR" *Biostory* 4: 108-109.

Nonaka, Kenichi

2005 "Eating Insects- A Relationship between Human and Nature" *UP* 398: 28-34.

## Activities in Academic Societies

10, November, 2005 *Miscellaneous Animal Use and Living Space in Vientiane Plain, Lao PDR*. Human Geographical Society of Japan, Kyushu University.

18, September, 2005 *Typology of Villages in Vientiane Plain, Lao PDR*. The Association of Japanese Geographers, Ibaraki University.

15, June, 2005 *Subsistence Complex and Diversified Resource Use in Xaythani District, Lao PDR*. International Symposium for resource management, Kunming, China.

12, June, 2005 *Resource Use in Wetland and Paddy field in Vientiane Plain, Lao PDR*. The Japan Society of Tropical Ecology, Kyoto.

12, May, 2005 *Stink-bug is Tasty*. The Society of Biosohia Studies, Aso. [in Japanese]

9, April, 2005 *Subsistence Complex in the Wetland Ecotone in the Vientiane Plain, Lao PDR*. AAG, Denver.

## Research Activities

### Field Research in Foreign Countries

February and March, 2006 Lao PDR (Ethno-Biological Research in Tropical Monsoon Asia)

August, October, and November, 2005 Lao PDR (Ethno-Biological Research in Tropical Monsoon Asia)

## OKUMIYA, Kiyohito

Associate Professor

Born in 1961.

## Curriculum Vitae

### Academic Career

Kochi Medical School (Kochi) (1986)

**Professional Career**

Associate professor, Research Institute for Humanity and Nature (2004)

Visiting clinical and research fellow, Division of Geriatrics, Department of Medicine, University of British Columbia, Canada (2002-2003)

Assistant professor (Lecturer), Department of Medicine and Geriatrics, Kochi Medical School (1999)

Assistant professor, Department of Medicine and Geriatrics, Kochi Medical School (1992)

Research resident, Department of Anatomy, Shiga University of Medical Science (1992)

Medical Staff, Department of Neurology in Sumitomo Hospital (1990)

Resident, Department of Circulatory Medicine, Tokyo Metropolitan Geriatric Hospital (1988)

Resident in Department of Medicine and Geriatrics, Kochi Medical School Hospital (1986)

**Higher Degrees**

Ph. D. (Kochi Medical School, 1996)

M. D. (Kochi Medical School, 1986), Japanese Medical License Registration (No. 299199)

**Fields of Specialization / Background**

Field Medicine, Geriatrics and Gerontology, Neurology, Internal Medicine

**Academic Society Memberships**

Japanese Society of Neurology, Japanese Society of Geriatrics, Japanese Society of Internal Medicine, Japanese Society of Public Health, Japanese Society of Hypertension

**Major Publications****Articles**

Rosset I, Roriz-Cruz M, Sakagami T, Ishine M, Wada T, DE Sa-Roriz J, Partezani-Rodrigues R, DE Souza AC, Okumiya K, Kita T and Matsubayashi K

2006 Is culture an independent variable in psychogeriatrics? The case of Japanese and Brazilian elderly. *Int Psychogeriatr.* 2006; 15: 1-3.

Masayuki Ishine, Taizo Wada, Teiji Sakagami, Pham Tien Dung, Tranc Duc Vienh, Toshiko Kawakita, Mutsuko Fushida, Kiyohito Okumiya, Toru Kita and Kozo Matsubayashi

2006 Comprehensive Geriatric Assessment for Community-Dwelling Elderly in Asia compared with those in Japan: IV. Khonkhen in Thailand. *Geriatrics Gerontology International* 2006; 6: 40-48.

Matsubayashi K, Ishine M, Wada T and Okumiya K

2006 Older adults' views of "successful aging": comparison of older Japanese and Americans. *J Am Geriatr Soc.* 2006; 54: 184-7.

K Okumiya, Y Morita, M Nishinaga, Y Osaki, Y Doi, M Ishine, T Wada, T Ozawa and K Matsubayashi

2005 Effect of group work program on community-dwelling elderly people with age-associated cognitive decline and/or mild depressive moods: A Kahoku Longitudinal Aging Study. *Geriatrics Gerontology International* 2005; 5: 267-75.

Kiyohito Okumiya, Masayuki Ishine, Taizo Wada, Matheus Cruz, Idiane Cruz, Naoko Ishine, Teiji Sakagami, Tohru Kita, Eiko Kaneda, Kazuhiko Moji, Tiengkham Pongvongsa, Satoshi Nakamura, Tomoya Akimichi, Bounnong Boupha, Toshiko Kawakita, Mutsuko Fushida and Kozo Matsubayashi

2005 Comprehensive Geriatric Assessment for Community-Dwelling Elderly in Asia compared with those in Japan: V. Savannakhet in Lao PDR *Geriatrics Gerontology International* 2005; 5: 159-167.

Kiyohito Okumiya, Taizo Wada, Masayuki Ishine, Teiji Sakagami, Kosuke Mizuno, Terry Arther Rambo and Kozo Matsubayashi

2005 Close Association of Geriatric Functional Ability with Economic Status in both Developing and Developed Countries. *J Am Geriatr Soc* 2005; 53-8: 1448-49.

- Kozo Matsubayashi, Ho Han Kwee, Kiyohito Okumiya, Taizo Wada, Masayuki Ishine and Tohru Kita  
2005 Comprehensive Geriatric Assessment for Community-Dwelling Elderly in Asia compared with those in Japan: I Singapore. *Geriatrics Gerontology International* 2005; 5: 99-106.
- Teiji Sakagami, Kiyohito Okumiya, Masayuki Ishine, Taizo Wada, Toru Kita, Toshiko Kawakita, Mutsuko Fushida, Kim Sang Kyu, Park Moo Sak, Choi Soon Yook, Cho Jai-Kook and Kozo Matsubayashi  
2005 Comprehensive Geriatric Assessment for Community-Dwelling Elderly in Asia compared with those in Japan: II. Hongchon in Korea. *Geriatrics Gerontology International* 2005; 5: 107-114.
- Masayuki Ishine, Taizo Wada, Teiji Sakagami, Pham Tien Dung, Tranc Duc Vienh, Toshiko Kawakita, Mutsuko Fushida, Kiyohito Okumiya, Toru Kita and Kozo Matsubayashi  
2005 Comprehensive Geriatric Assessment for Community-Dwelling Elderly in Asia compared with those in Japan: IV. Phuto in Vietnam. *Geriatrics Gerontology International* 2005; 5: 115-121.
- Taizo Wada, Masayuki Ishine, Kiyohito Okumiya, Toshiko Kawakita, Mutsuko Fushida, Toru Kita, Kosuke Mizuno and Kozo Matsubayashi  
2005 Comprehensive Geriatric Assessment for Community-Dwelling Elderly in Asia compared with those in Japan: III. West Java in Indonesia. *Geriatrics Gerontology International* 2005; 5: 53-58.
- K Akamatsu, A Saito, T Wada, M Ishine, M Roliz-Cruz, K Okumiya and K Matsubayashi  
2005 Analysis of Comprehensive Geriatric Assessment of Elderly in a Social Welfare Home for the Aged compared with those in a Residential Care Home in an Urban Area in Japan. *Geriatrics Gerontology International* 2005; 5: 168-75.
- T Wada, K Okumiya, K Suzuki, M Roliz-Cruz, M Ishine, T Sakagami, T Kita and K Matsubayashi  
2005 Comprehensive Geriatric Assessment for Community-Dwelling Elderly in Asia compared with those in Japan: VI. Maubin in Myanmar. *Geriatrics Gerontology International* 2005; 5: 53-58.
- Nishinaga M, Takata J, Okumiya K, Matsubayashi K, Ozawa T and Doi Y  
2005 High morning home blood pressure is associated with a loss of functional independence in the community-dwelling elderly aged 75 years or older. *Hypertens Res.* 2005 Aug; 28(8): 657-63.
- Otsuka K, Norboo T, Otsuka Y, Higuchi H, Hayajiri M, Narushima C, Sato Y, Tsugoshi T, Murakami S, Wada T, Ishine M, Okumiya K, Matsubayashi K, Yano S, Chogyal T, Angchuk D, Ichihara K, Cornelissen G and Halberg F  
2005 Chronoecological health watch of arterial stiffness and neuro-cardio-pulmonary function in elderly community at high altitude (3524 m), compared with Japanese town. *Biomed Pharmacother.* 2005; 59 Suppl 1: S58-67.
- Otsuka K, Norboo T, Otsuka Y, Higuchi H, Hayajiri M, Narushima C, Sato Y, Tsugoshi T, Murakami S, Wada T, Ishine M, Okumiya K, Matsubayashi K, Yano S, Chogyal T, Angchuk D, Ichihara K, Cornelissen G and Halberg F  
2005 Effect of aging on blood pressure in Leh, Ladakh, a high-altitude (3524 m) community, by comparison with a Japanese town. *Biomed Pharmacother.* 2005; 59 Suppl 1: S54-7.
- Murakami S, Otsuka K, Hotta N, Yamanaka G, Kubo Y, Matsuoka O, Yamanaka T, Shinagawa M, Nunoda S, Nishimura Y, Shibata K, Takasugi E, Nishinaga M, Ishine M, Wada T, Okumiya K, Matsubayashi K, Yano S, Ichihara K, Cornelissen G and Halberg F  
2005 Common carotid intima-media thickness is predictive of all-cause and cardiovascular mortality in elderly community-dwelling people: Longitudinal Investigation for the Longevity and Aging in Hokkaido County (LILAC) study. *Biomed Pharmacother.* 2005; 59 Suppl 1: S49-53.
- Hotta N, Otsuka K, Murakami S, Yamanaka G, Kubo Y, Matsuoka O, Yamanaka T, Shinagawa M, Nunoda S, Nishimura Y, Shibata K, Saitoh H, Nishinaga M, Ishine M, Wada T, Okumiya K, Matsubayashi K, Yano S, Ichihara K, Cornelissen G and Halberg F  
2005 Fractal analysis of heart rate variability and mortality in elderly community-dwelling people – Longitudinal Investigation for the Longevity and Aging in Hokkaido County (LILAC) study. *Biomed Pharmacother.* 2005; 59 Suppl 1: S45-8.

Matsuoka O, Otsuka K, Murakami S, Hotta N, Yamanaka G, Kubo Y, Yamanaka T, Shinagawa M, Nunoda S, Nishimura Y, Shibata K, Saitoh H, Nishinaga M, Ishine M, Wada T, Okumiya K, Matsubayashi K, Yano S, Ichihara K, Cornelissen G, Halberg F and Ozawa T

2005 Related Articles, Links Arterial stiffness independently predicts cardiovascular events in an elderly community – Longitudinal Investigation for the Longevity and Aging in Hokkaido County (LILAC) study. *Biomed Pharmacother.* 2005; 59 Suppl 1: S40-4.

Yamanaka G, Otsuka K, Hotta N, Murakami S, Kubo Y, Matsuoka O, Takasugi E, Yamanaka T, Shinagawa M, Nunoda S, Nishimura Y, Shibata K, Saitoh H, Nishinaga M, Ishine M, Wada T, Okumiya K, Matsubayashi K, Yano S, Ishizuka S, Ichihara K, Cornelissen G and Halberg F

2005 Depressive mood is independently related to stroke and cardiovascular events in a community. *Biomed Pharmacother.* 2005; 59 Suppl 1: S31-9.

Wada T, Ishine M, Sakagami T, Kita T, Okumiya K, Mizuno K, Rambo TA and Matsubayashi K

2005 Depression, activities of daily living, and quality of life of community-dwelling elderly in three Asian countries: Indonesia, Vietnam, and Japan. *Arch Gerontol Geriatr.* 2005; 41(3): 271-80.

Ishine M, Wada T, Akamatsu K, Cruz MR, Sakagami T, Kita T, Matsubayashi K and Okumiya K

2005 No positive correlation between anemia and disability in older people in Japan. *J Am Geriatr Soc.* 2005; 53(4): 733-4.

Okumiya K, Wada T, Ishine M, Fujisawa M, Nishinaga M, Doi Y, Ozawa T and Matsubayashi K

2005 Associated factors for activities of daily livings in 3 towns in Japan. *Nippon Ronen Igakkai Zasshi.* 2005 Mar; 42(2): 164-6. (in Japanese)

#### Activities in Academic Societies

Nov., 2004 Ajia shokoku no hizakansetsushou, koukettou no hindo, kettyu guroburi ni igi ni tuite Taiyou tikyu tsuki seitaiki kenkyukai. (Arthropathy, prevalence of high blood sugar, and serum globulin. (Meeting of the Sun, Moon and Ecology)

June, 2005 Honpou tiiki koureisha no seikatsu kinou. The 46<sup>th</sup> Nippon Ronen Igakkai (Activities of daily livings in community-dwelling elderly people in Japan. The 46<sup>th</sup> Japanese Geriatrics Society.) [in Japanese]

June, 2005 Tiiki zaiju koureisha no hokatsuteki kinouyogo ni kansuru judanteki kohoto kenkyu risk factor to Evidence ni motozuku yobouteiki kainyu sisutemu no kakuritsu-Kahoku judan kenkyu- The 46<sup>th</sup> Nippon Ronen Igakkai. (Risk factor of the deterioration of comprehensive geriatric function in community dwelling elderly and preventive care system. The 46<sup>th</sup> Japanese Geriatrics Society.) [in Japanese]

#### Research Activities

##### Field Research in Japan

July, 2004 Kahoku in Kochi (Longitudinal cohort study on health and comprehensive geriatric assessment in community-dwelling elderly)

August, 2004 Tosa in Kochi (Longitudinal cohort study on health and comprehensive geriatric assessment in community-dwelling elderly)

##### Field Research in Foreign Countries

February, 2004 Lao PDR (Research on the health and comprehensive geriatric assessment in Savannakhet)

April-May, 2004 Korea (Research on the health and comprehensive geriatric assessment in Hongchon)

October, 2004 China (Meeting for the planning of the research on the health and comprehensive geriatric assessment in Yunnan)

November, 2004 Myanmar (Research on the health and comprehensive geriatric assessment in Maubin)

December, 2004 Lao PDR (Research on the health and comprehensive geriatric assessment and Diabetes Mellitus)

in Savannakhet)  
 March, 2005 Thailand (Research on the health and comprehensive geriatric assessment in Khon Kaen)

### **Social Activities and Public Lectures**

#### **Public Lectures**

January, 2005 Oi to kenkou, kankyou to bunka tono kakawari no nakade "fiirudo igakuteki apurouti-yoroyoi raihusutairu towa" Tosatyo ikigaizukuri kouenkai, Tosa tyo kenkou hukushi senta (Age and health in culture and nature and better lifestyle - approach by field-medicine-, Tosa town office) [in Japanese]  
 December, 2004 Health of aged people in Lahanam. Evaluation meeting on the First Year Implementation of Health Development Study Project un Savannakhet Province, Lao PDR.  
 May, 2004 Oi to kenkou, kankyou to bunka tono kakawari no nakade "fiirudo igaku to nettowaaku" Tosatyo ikigaizukuri kouenkai, Tosa tyo kenkou hukushi senta (Age and health in culture and nature and field medicine and social network. Tosa town office) [in Japanese]

#### **Professional and society membership**

1991 Certification of Japanese Board of Neurology  
 1992 Fellowship in Japanese Society of Internal Medicine  
 1996 Certification of Japanese Board of Geriatric Medicine  
 2002 Board member of the Japanese Society of Geriatrics

## **SEKINO, Tatsuki**

Associate Professor

Born in 1969.

### **Curriculum Vitae**

#### **Academic Career**

Department of Zoology, Faculty of Science, Kyoto University, D. Course (1998)  
 Department of Biology, Faculty of Science, Shinshu University, M. Sc. (1993)  
 Department of Biology, Faculty of Science, Shinshu University (1991)

#### **Professional Career**

Associate Professor, Research Promotion Center, Research Institute for Humanity and Nature (2002)  
 Researcher, Research Division, International Lake Environment Committee Foundation (2001)  
 COE Scientist, Center for Ecological Research, Kyoto University (1999)

#### **Higher Degrees**

D. Sc. (University of Kyoto, 1998)  
 M. Sc. (University of Shishu, 1993)

#### **Fields of Specialization / Background**

Limnology, Ecology, Information Science

#### **Academic Society Memberships**

Japanese Society of Limnology, Ecological Society of Japan, Information Processing Society of Japan

### **Major Publications**

#### **Articles**

Sekino, Tatsuki and Takahito Yoshioka 2005 Diagrammatic representation of environmental monitoring data. *Korean J. of Limnol* 38: 76-83.

Urabe, Jotaro, Takehito Yoshida, Tek Bahadur Gurung, Tatsuki Sekino, Narumi Tsugeki, Kentaro Nozaki, Masahiro Maruo, Eiichiro Nakayama and Masami Nakanishi

2005 The production-to-respiration ration and its implication in Lake Biwa, Japan. *Ecol. Res.* 20: 367-375.

Kumagai, Michio, Jotaro Urabe, Clyde E. Goulden, Nerqui Soninkhishig, Kazuhide Hayakawa, Shigeo Tsujimura, Knako Ishikawa, D. Hadbaatar, Yuichi Hayami, Tatsuki Sekino and Masahiro Maruo

2005 Recent rise in water level at Lake Hövsgöl in Mongolia. In C. E. Goulden, T. Sitnikova, J. Gelhaus and B. Boldgiv (eds.) *The Geology, Biodiversity and Ecology of Lake Hövsgöl (Mongolia)*, pp. 77-91. Leiden: Backhuys.

Hayami, Yuichi, Michio Kumagai, Tatsuki Sekino, Shigeo Tsujimura and Jotaro Urabe 2005 Review of some physical processes in Lake Hövsgöl. In C. E. Goulden, T. Sitnikova, J. Gelhaus and B. Boldgiv (eds.) *The Geology, Biodiversity and Ecology of Lake Hövsgöl (Mongolia)*, pp. 115-124. Leiden: Backhuys.

Urabe, Jotaro, Tatsuki Sekino, Yuichi Hayami, Shigeo Tsujimura, Michio Kumagai, Bazartseren Boldgiv and Clyde E. Goulden

2005 Some biological and chemical characteristics of Lake Hövsgöl. In C. E. Goulden, T. Sitnikova, J. Gelhaus and B. Boldgiv (eds.) *The Geology, Biodiversity and Ecology of Lake Hövsgöl (Mongolia)*, pp. 387-402. Leiden: Backhuys.

Sekino, Tatsuki 2005 "Vertical distribution", "Population", "Population dynamics" and the other three items. Japanese Society of Limnology (eds.) *Dictionary of Limnology*. Tokyo: Kodansha. (in Japanese)

## **Social Activities and Public Lectures**

### **Public Lectures**

February 2006 Planning for Lake Monitoring, Group Training Course in Integrated Basin Management for Lake Environment, Osaka International Centre, Japan International Corporation Agency (OSIC JICA) and International Lake Environment Committee Foundation (ILEC).

## **SHIRAIWA, Takayuki**

— Associate Professor

Born in 1964.

### **Curriculum Vitae**

#### **Academic Career**

Division of Environmental Structure, Graduate School of Environmental Sciences, Hokkaido University, D. Course (1990)

Division of Environmental Structure, Graduate School of Environmental Sciences, Hokkaido University, M. Course (1989)

Department of Geography, Faculty of Education, Waseda University (1987)

#### **Professional Career**

Associate Professor, Research Institute for Humanity and Nature (2005)

Associate Professor, Institute of Low Temperature Science, Hokkaido University (2005)

Assistant Professor, Institute of Low Temperature Science, Hokkaido University (1990)

#### **Higher Degrees**

D. in Environmental Sci. (Hokkaido University, 1993)

M. in Environmental Sci. (Hokkaido University, 1989)

#### **Fields of Specialization / Background**

Glaciology, Physical Geography

### Academic Society Memberships

The Japanese Society of Snow and Ice, The Association of Japanese Geographers, Japan Association for Quaternary Research, Japanese Geomorphological Union, International Glaciological Society, American Geophysical Union

### Major Publications

#### Articles

Kanamori, Syosaku, Yoshitomi Okura, Shiraiwa Takayuki and Yoshikawa Kenji

2005 Snow pit studies and radio-echo soundings on Mt. McKinley 2004. *Bulletin of Glaciological Research* 22: 89-97.

Shiraiwa, Takayuki, Kanamori Syosaku, Carl S. Benson, Daniel Solie and Yaroslav D. Muravyev

2004 "Shallow ice-core drilling at Mount Wrangell, Alaska" *Bulletin of Glaciological Research* 21: 71-77.

Shiraiwa, Takayuki, Goto-Azuma Kumiko, Matoba Sumito, Yamasaki Tetsuhide, Segawa Takahiro, Kanamori Syosaku, Matsuoka Kenichi and Fujii Yoshiyuki

2003 "Ice core drilling at King Col, Mount Logan 2002" *Bulletin of Glaciological Research* 20: 57-63.

Ono, Yugo, Shiraiwa Takayuki and Dali Liu

2003 "Present and last-glacial Equilibrium Line Altitudes (ELAs) in the Japanese high mountains" *Z. Geomorph. N. F., Suppl.* 130: 217-236.

Goto-Azuma Kumiko, Shiraiwa Takayuki, Matoba Sumito, Segawa Takahiro, Kanamori Syosaku, Fujii Yoshiyuki and Yamasaki Tetsuhide

2003 "An overview of the Japanese glaciological studies on Mt. Logan, Yukon Territory, Canada in 2002" *Bulletin of Glaciological Research* 20: 65-72.

Hondo, Takeo, Narita Hideki, Hori Akira, Ikeda-Fukazawa Tomoko, Fujii-Miyamoto Michiko, Ohno Hiroshi, Shiraiwa Takayuki, Mae Shinji, Fujita Shuji, Fukazawa, H., Fukumura, T., Shoji Hitoshi, Kameda Takao, Miyamoto Atsushi, Azuma Nobuhiko, Wang, Y., Kawada, K., Nishio Fumihiko, Motoyama Hideaki and Watanabe Okitsugu

2003 Physical properties of the Dome Fuji deep ice core. *Memories of National Institute of Polar Research*, Special Issue, 57: 63-71.

Shiraiwa, Takayuki and Sergey Tchoumitchev

2002 "Mountain environment in Kamchatka: physical backgrounds and recent changes in the mountain cryosphere" *Global Environmental Research* 6(1): 19-30.

Shiraiwa, Takayuki, Kohshima Shiro, Uemura Ryu, Yoshida Naohiro, Matoba Sumito, Uetake Jun and Maria A. Godoi

2002 "High net accumulation rates at the Campo de Hielo Patagonico Sur, South America, revealed by analyses of a 45.97 m long ice core" *Annals of Glaciology* 35: 84-90.

Maria, A. Godoi, Shiraiwa Takayuki, Kohshima Shiro and Kubota Keiji

2002 "Firn-core drilling operation at Tyndall Glacier, Southern Patagonia Icefield" G. Casassa, F. Sepulveda and R. Sinclair (eds.), *The Patagonian Icefields*: 149-156.

Fujii, Yoshiyuki, Azuma Nobuhiko, Tanaka Youichi, Nakayama, Y., Kameda Takao, Shinbori Kunio, Katagiri, K., Fujita Shuji, Takahashi Akiyoshi, Kawada Kunio, Motoyama Hideaki, Narita Hideki, Kamiyama Koukichi, Furukawa Teruo, Takahashi Shuhei, Shoji Hitoshi, Enomoto Hiroyuki, Saitoh Takashi, Miyahara, M., Naruse Renji, Hondoh Takeo, Shiraiwa Takayuki, Yokoyama Kotaro, Ageta Yutaka, Saitoh, T. and Watanabe Okitsugu

2002 "Deep ice core drilling to 2503 m depth at Dome Fuji, Antarctica" *Memoirs of the Nat. Inst. of Polar Research*, Special Issue, 56: 103-116.

Kohshima, Shiro, Shiraiwa Takayuki, Maria A. Godoi, Kubota Keiji, Takeuchi Nozomu and Shinbori Kunio

2002 "Ice core drilling on Southern Patagonia Icefield - Development of a new portable drill and the field expedition in 1999" *Memoirs of the Nat. Inst. of Polar Research*, Special Issue, 56: 49-58.

- Yamada, Tomomi, Takahashi Shuhei, Shiraiwa Takayuki, Fujii Yoshiyuki, Yuri Kononov, Maria D. Ananicheva, Michael M. Koreisha, Yaroslav D. Muravyev and Talas Samborsky  
2002 "Reconnaissance on the No. 31 Glacier in the Suntar-Khayata Range, Sakha Republic, Russian Federation" *Bulletin of Glaciological Research* 19: 101-106.
- Andrey N. Salamatina, Shiraiwa Takayuki, Yaroslav D. Muravyev and Marat F. Ziganshin  
2002 "Heat transfer in the seasonal active layer of Gorshkov Ice Cap on the summit of Ushkovsky volcano, Kamchatka Peninsula" *Bulletin of Glaciological Research* 19: 47-52.
- Shiraiwa, Takayuki, Yaroslav D. Muravyev, Kameda Takao, Nishio Fumihiko, Toyama Yoko, Takahashi Akiyoshi, Alexandr A. Ovsyannikov, Andrey N. Salamatina and Yamagata Kotaro  
2001 "Characteristics of a crater glacier at Ushkovsky volcano as revealed by the physical properties of ice cores and borehole thermometry" *J. Glaciology* 47(158): 423-432.
- Maria A. Godoi, Gino Casassa and Shiraiwa Takayuki  
2001 "Review of paleoclimatic studies derived from ice core analyses: Potentialities and evidence from Southernmost South America. Anales Instituto Patagonia" *Serie Cs. Nat. (Chile)* 29: 45-54.
- Takahashi, Kouichi, Homma Kousuke, Shiraiwa Takayuki, Petrova Valentina and Hara Toshihiko  
2001 "Climate factors affecting the growth of *Larix cajanderi* in the Kamchatka Peninsula, Russia" *Eurasian Journal of Forest Research* 3: 1-9.
- Iizuka, Yoshinori, Satake, H., Shiraiwa Takayuki and Naruse Renji  
2001 "Formation processes of basal ice at Hamna Glacier, Soya Coast East Antarctica, inferred by detailed co-isotopic analyses" *J. Glaciology* 47(157): 223-231.
- Takeuchi, Nozomu, Kohshima Shiro, Shiraiwa Takayuki and Kubota Keiji  
2001 "Characteristics of cryoconite (surface dust on glaciers) and surface albedo of a Patagonian glacier, Tyndall glacier, Southern Patagonia Icefield" *Bull. Glacier Res.* 18: 65-69.
- Andrey N. Salamatina, Shiraiwa Takayuki, Yaroslav D. Muravyev and Marat F. Ziganshin  
2001 "Heat transfer in seasonal active layer of Gorshkov Ice Cap, Ushkovsky Volcano summit, Kamchatka" *Data of Glaciological Studies* 90: 100-106 (In Russian with English abstract).

#### Miscellaneous

- Shiraiwa Takayuki 2005 "The Amur-Okhotsk Project" *The Japan Journal*, 2(2): 30.
- Yaroslav D. Muravyev and Shiraiwa Takayuki 2004 "400 years of climatic change in Kamchatka Peninsula, Russia: paleoglaciologic, tree-ring and ice-core evidence" In Yamano et al. (eds) *Proc. 2002 International Matsuyama Workshop on Geothermal/Dendrochronological Paleoclimate Reconstruction across Eastern Margin of Eurasia*: 76-91.
- Shiraiwa Takayuki, Fujikawa Tetsuya, Tanaka Noriyuki, Matoba Sumito, Toyama Yoko, Nishio Fumihiko and Yaroslav D. Muravyev  
2001 "A 170-year proxy climate record derived from co-isotopic and chemical analyses of ice core recovered from Ushkovsky ice cap, Kamchatka" *Proc. the Int. Symp. on Atmosphere-Ocean-Cryosphere Interaction in the Sea of Okhotsk and the Surrounding Environment*: 142-143.
- Shiraiwa Takayuki, Yaroslav D. Muravyev, Kameda Takao, Nishio Fumihiko, Toyama Yoko, Takahashi Akiyoshi, Alexandr A. Ovsyannikov, Andrey N. Salamatina and Yamagata Kotaro  
2001 "Characteristics of a crater glacier at Ushkovsky volcano as revealed by the Physical properties of ice core and the borehole thermometry" *Proc. the Int. Symp. on Atmosphere-Ocean-Cryosphere Interaction in the Sea of Okhotsk and the Surrounding Environment*: 144-145.
- Andrey N. Salamatina, Shiraiwa Takayuki, Yaroslav D. Muravyev and Marat F. Ziganshin  
2001 "Heat transfer in the seasonal active layer of Gorshkov ice cap on the summit of Ushkovsky volcano, Kamchatka peninsula" *Proc. the Int. Symp. on Atmosphere-Ocean-Cryosphere Interaction in the Sea of*

*Okhotsk and the Surrounding Environment*: 138-139.

Andrey N. Salamatın, Shiraiwa Takayuki, Yaroslav D. Muravyev, Kameda Takao, Silantyeva, E. V. and Marat F. Ziganshin

2001 Dynamics and borehole temperature memory of Gorshkov ice cap on the summit of Ushkovsky volcano, Kamchatka peninsula. *Proc. the Int. Symp. on Atmosphere-Ocean-Cryosphere Interaction in the Sea of Okhotsk and the Surrounding Environment*: 120-121.

Toyama, Yoko, Nishio Fumihiko, Shiraiwa Takayuki, Kameda Takao, Takahashi Akiyoshi, Yaroslav D. Muravyev and Alexandr A.

2001 Dating of Ushkovsky ice cap in Kamchatka by DC-electrical conductivity measurement method. *Proc. the Int. Symp. on Atmosphere-Ocean-Cryosphere Interaction in the Sea of Okhotsk and the Surrounding Environment*: 150-151.

Matsumoto Takane, Konya Keiko, Yaroslav D. Muravyev, Shiraiwa Takayuki, Kodama Yuji, Nishimura Kouichi, Yamada Tomomi, Gleb E. Glazirin, Yamaguchi Satoru, Aoki Tatsuto and Naruse Renji

2001 Climatic features of Koryto glacier, Kamchatka peninsula, Russia. *Proc. the Int. Symp. on Atmosphere-Ocean-Cryosphere Interaction in the Sea of Okhotsk and the Surrounding Environment*: 156-157.

Yaroslav D. Muravyev, Shiraiwa Takayuki, Matsumoto Takane, Yamaguchi Satoru and Konya Keiko

2001 Mass balance of Koryto glacier 1996-2000, -response of a maritime glacier to changing climate in Kamchatka-. *Proc. the Int. Symp. on Atmosphere-Ocean-Cryosphere Interaction in the Sea of Okhotsk and the Surrounding Environment*: 158-159.

Yuri Macheret, Evgeny Vasilenko, Andrey Glazovsky, Moshina, O., Miroshnichenko, D. and Shiraiwa Takayuki

2001 Radio-echo sounding of Koryto glacier (Kamchatka, Russia), 2000. *Proc. the Int. Symp. on Atmosphere-Ocean-Cryosphere Interaction in the Sea of Okhotsk and the Surrounding Environment*: 160-161.

## TANIGUCHI, Makoto

Associate Professor

Born in 1959.

### Curriculum Vitae

#### Academic Career

Institute of Earth Sciences, The University of Tsukuba, D. Course (1987)

Institute of Earth Sciences, The University of Tsukuba, M. Course (1984)

Department of Natural Sciences, Faculty of Science, The University of Tsukuba (1982)

#### Professional Career

Associate Professor; 2003, Research Institute for Humanity and Nature

Professor, 2000 Department of Earth Sciences, Nara University of Education

Associate Professor, 1993 Department of Earth Sciences, Nara University of Education

Assistant Professor 1990 Department of Earth Sciences, Nara University of Education

Researcher 1988 Environmental Research Center, University of Tsukuba, Japan, Researcher

1987 Researcher Division of Water Resources, CSIRO, Australia

#### Higher Degrees

D. Sc. (The University of Tsukuba, 1987)

M. Sc. (The University of Tsukuba, 1982)

#### Fields of Specialization / Background

Hydrology, Geophysics, Natural Geography

### Academic Society Memberships

American Geophysical Union, National Ground Water Association, IASPEI/IUGG IAHS/IUGG, Japanese Association of Groundwater Hydrology, The Japanese Association of Hydrological Sciences, Japan Society of Hydrology and Water Resources, International Association of Hydrogeologists, The Japanese Society of Limnology, Japanese Society of Snow and Ice, The Association of Japanese Geographers

### Major Publications

#### Scientific Papers

- Taniguchi, M., T. Ishitobi, J. Shimada and N. Takamoto 2006 Evaluation of spatial distribution of submarine groundwater discharge, *Geophys. Res. Lett.*, 33, doi:10.1029/2005GL025288.
- Taniguchi, M. 2006 Submarine groundwater discharge measured by seepage meters in Sicilian coastal waters, *Continental Shelf Res.*, doi:10.1016/j.csr.2005.12.002.
- Taniguchi, M., T. Ishitobi and J. Shimada 2006 Dynamics of submarine groundwater discharge and freshwater-seawater interface, *J. Geophys. Res.*, 111, C01008, doi:10.1029/2005JC002924.
- Taniguchi, M., T. Ishitobi and K. Saeki 2006 Evaluation of time-space distributions of submarine ground water discharge, *Ground Water* 43(3): 1-9.
- Okubo, Y., Y. Uchida, M. Taniguchi, A. Miyakoshi and J. Safanda 2005 Statistical analysis for thermal data in the Japanese Islands, *Physics Earth Planetary Inter.*, 152: 277-291.
- Miyakoshi, A., M. Taniguchi, Y. Okubo and T. Uemura 2005 Evaluations of subsurface flow for reconstructions of climate change using borehole temperature and isotope data in Kamchatka, *Physics Earth Planetary Inter.* 152: 335-342.
- Taniguchi, M. and T. Uemura 2005 Effects of urbanization and groundwater flow on the subsurface temperature in Osaka, Japan, *Physics Earth Planetary Inter.* 152: 305-313.
- Taniguchi, M. and I. Kukkonen 2005 Thermally controlled processes and preserved thermal signatures within the Earth, *Physics Earth Planetary Inter.* 152: 221-222.
- Miyakoshi, A., M. Taniguchi, Y. Okubo and T. Uemura 2005 Evaluation of subsurface thermal environment in the high latitude region – Effects of snow cover and global warming –, *J. Geotherm.* 27(2): 163-172.
- Taniguchi, M., T. Ishitobi and K. Saeki 2005 Evaluation of time-space distributions of submarine groundwater discharge, *Ground Water* 43(3): 336-342.
- Taniguchi, M., T. Uemura and Y. Sakura 2005 Effects of urbanization and groundwater flow on subsurface temperature in three megacities in Japan, *J. Geophys and Eng.* 2: 320-325.

#### CD

GRAPHIC-CD: Groundwater Resources Assessment under the Pressures of Humanity and Nature Brochure- CD  
RIHN-2-4PR-CD: Proceeding of the International workshop on "Human impacts on urban subsurface environment"

### Activities in Academic Societies

#### Oral Presentation and Others

- April 3, 2005 "UNESCO-GRAPHIC" meeting  
2<sup>nd</sup> GRAPHIC meeting at Norwich, at room ARTS 2.0, UEA, England.
- August 1-2, 2005 "International Workshop on Submarine Groundwater Discharge" School of Earth & Environmental Sciences, BK21, Seoul National University, Korea.
- August 29-31, 2005 "GWSP Asia Meeting" Co-op Inn Kyoto, Kyoto.
- October 18-20, 2005 RIHN International Symposium, Palulu plaza, Kyoto.
- November 2-4, 2005 Asian Water Cycle Symposium, The University of Tokyo, "UNESCO-GRAPHIC in International Science Programs/Projects" Tokyo.

- December 13-17, 2005 American Geophysical Union, San Francisco, CA, Session, H55 "Groundwater Resources Assessment under the Pressures of Humanity and Nature", USA.
- January 23-25, 2006 Groundwater Resources and Human Security: Identifying Research and Capacity Development Needs, UNU-IEH (Institute for Environment and Human Security), Bonn, UNESCO/UNU, "Groundwater Resources Assessment under the Pressures of Humanity and Nature" Germany.
- March 18-23, 2006 4<sup>th</sup> World Water Forum, Mexico City, Session FT5.09 Groundwater and risk management: coping with water scarcity, climate change and emergency situations, "Comments on local actions by the expert panel - Groundwater Resources Assessment under the Pressures of Humanity and Nature", Mexico.
- September 8-9, 2005 Inland Sea forum in Nara, Preservation of Setonaikai.
- May 25-26, 2005 Japan Geoscience meeting, session H071, Submarine groundwater discharge, Chiba.
- June 5, 2005 Benefit and disaster of water, Human and Water.
- November 25, 2005 Effects of urbanization and climate change on subsurface environment in Asian cities, Symposium of subsurface environment, Osaka.

#### Awards

Award of 7<sup>th</sup> Japanese Association of Limnology (Yoshimura Prize, 2005)

#### Research Activities

##### Field Works

- May 2005 Yellow River delta (Interaction between surface water and groundwater, seawater)
- June 2005 Central USA (Groundwater survey at High Plain Aquifer)
- September 2005 Seoul, Korea (Observation on submarine groundwater discharge)
- November 2005 (Groundwater survey at coastal zone near Taipei)

#### Education

JSPS summer program; Kelly McGowan (University of Florida, Japan), subject: Material transports into the ocean by groundwater discharge.

### UCHIYAMA, Junzo

Associate Professor

Born in 1967.

#### Curriculum Vitae

##### Academic Career

- Graduate School of Human and Environmental Studies, Kyoto University, D. Course (1997)
- Department of Archaeology, University of Durham, M. A. Course (1996)
- Graduate School of Human and Environmental Studies, Kyoto University, M. Course (1993)
- Department of Archaeology, Faculty of Literature, The University of Tokyo, B. A. Course (1991)

##### Professional Career

- Associate Professor, Research Institute for Human and Nature (2003)
- Associate Professor, Faculty of Humanities, Toyama University (2001)
- Lecturer, Faculty of Humanities, Toyama University (1998)

**Higher Degrees**

Ph. D. (The Graduate University for Advanced Studies, 2002)

M. A. (University of Durham, 1996)

M. A. (Kyoto University, 1993)

**Fields of Specialization / Background**

Zooarchaeology, Cultural Anthropology

**Academic Society Memberships**

The Society of Bio-Sophia Studies (executive director), International Council for Archaeozoology

**Major Publications****Books**

Uchiyama, Junzo

2006 *Beyond Affluent Foragers: Rethinking Hunter-Gatherer Complexity*. eds. by C. Grier, J. Kim and Junzo Uchiyama. Oxford: Oxbow Books.

2005 *Seibutsu tayousei wa naze taisetsu ka* (Why is "biodiversity" important?). Kyoto: Showado. [in Japanese] Toshitaka Hidaka (ed.).

2004a *Nihonkai engan no chiikitokusei to kotoba* (Local characteristics and dialects on the Japan Sea coasts). Toyama: Katsura Shobou. [in Japanese] Shinji Sanada, Junzo Uchiyama, Sei'ichi Nakai and Koji Takahashi (eds.).

2004b *Nihonkai: Higashi Ajia no Chichukai* (Japan Sea: The Mediterranean of East Asia). Toyama: Katsura Shobou. [in Japanese] Hiroshi Kanaseki, Junzo Uchiyama, Sei'ichi Nakai and Koji Takahashi (eds.).

2003 *Chikyu kankyo mondai no jinruigaku: shizensigen heno hyuman impakuto* (Anthropology of the environmental problems: human impact over natural resources). Kyoto: Sekai-shisou sya. [in Japanese] Kazunobu Ikeya (ed.).

**Articles**

Uchiyama, Junzo

2003 Syakaikukan riyoukouzou no kaimei to chirijouhousisutemu no kanousei: senshijinruigaku no shitenkara (Investigation of land use structure of prehistoric societies and possibilities of geographic information system: archaeological perspectives). In The Society of the study of GIS, Faculty of Humanities, Toyama University (ed.) *Jinbunkagaku to GIS (Humanities and GIS)*, pp. 2-9. [in Japanese]

2002 Torihama kaizuka ni okeru Jomon jidai zenki syuryousaisyusyakai no seigyokouzou ni kansuru tenbou: nihonjika to inoshishi izontai no kisetuseisatei wo chushin toshite (Prospects on subsistence activities of the foraging group in Torihama shellmound in the Early Jomon: based on the assessment of hunting seasons of deer and wild boar). In Shiro Sasaki (ed.) *Kokuritsu minzokugaku hakubutukan chousahoukoku 33: Senshi syuryousaishubunka kenkyu no atarashi'I shiya (Senri Ethnological Reports 33: New Perspectives on the Study of Prehistoric Hunter-Gatherer Cultures)*: 185-238. [in Japanese]

2001 Dai 6 shou: Funa to Koi no Jomon Bunka (Chapter6 Jomon culture based on carp family fish). *Gekkan Chikyu (Chikyu Monthly)*, 23-6, Kaiyou shuppan: 405-412. [in Japanese]

2000 Torihama kaizuka ni okeru shika/inoshishi mondai: 1984nen shutsudo nihonjika to inoshishi izontai ni miru isekikinou (Prospects on the so-called 'deer-wild boar mystery' in Torihama shellmound: the site function analysis based on the deer and wild boar remains in the 1984 excavation). *Torihama kaizuka kenkyu (Torihama Shellmound Studies)* 2: 1-22. [in Japanese]

1999 Seasonality and Age Structure in an Archaeological Assemblage of Sika Deer (*Cervus Nippon*), *International Journal of Osteoarchaeology*, 9-4, John Wiley & Sons, Ltd.: 209-218.

### Activities in Academic Societies

- January, 2006 Higashi ajia naikai no shinsekkika to gendaika. (The 4th Open Seminar of the Project for the Japan Sea Studies in the fiscal year of 2005, Toyama University) [in Japanese]
- October, 2005 Why did shell-middens disappear?: culture roles in the landscape shift in prehistoric foraging societies. (RIHN Pre-Symposium 'Bridging Times and Seas: Historical landscape change on the shores of Northern inland seas') Pa-lu-lu Praza, Kyoto.
- October, 2005 Organizer, RIHN Pre-Symposium 'Bridging Times and Seas: Historical landscape change on the shores of Northern inland seas'. Pa-lu-lu Praza, Kyoto.
- September, 2005 Yuki no minzoku to shoku. (Folk customs and traditional foods in the Hokuriku snow zone, The 1<sup>st</sup> RIHN Regional Seminar) (Toyama Prefectural Hall) [in Japanese]
- July, 2005 "Kokoro no mizu" ga tachikirareru to. (When "water in our hearts" stops flowing, The 4th RIHN Forum) (Kyoto International Conference Hall) [in Japanese]
- May, 2005 Jomon jidai inoshishi no kachikuka ni kansuru aratana chicken. (New perspectives on wild boar domestication in the Jomon period, The Society for biosophia studies 3rd Conference, Aso no tsukasa villa park hotel, Kumamoto Prefecture) [in Japanese]
- July, 2004 Seizon senryaku toshiteno bunka no tayousei. (Cultural diversity as surviving strategy, The 3<sup>rd</sup> RIHN Forum) (Kyoto International Conference Annex Hall) [in Japanese]
- May, 2004 Hitsuji no chichukai, inoshishi no nihonkai. Dai 2 kai ikimonobunkashi gakkai gakujutsu taikai. (Sheep of the Mediterranean, Wild boar of the Japan Sea. The Society for biosophia studies 2nd Conference) (Lake Biwa Museum, Shiga Prefecture) [in Japanese]
- May, 2004 Executive committee, The Society for biosophia studies 2nd Conference. (Lake Biwa Museum, Shiga Prefecture)
- May, 2004 Executive committee, The Society for biosophia studies 2nd Regular Meeting. (Toyama University, Toyama Prefecture)
- November, 2003 Nishinohon no kisoubunka to koika gyoruisou: funa to koi no Jomon bunka. Dai 1 kai ikimonobunkashi gakkai gakujutsu taikai. (Substratum culture of the western part of Japan and carp family fish: Jomon culture based on carp family fish. The Society for biosophia studies 2nd Conference) (Toba City Hall, Mie Prefecture) [in Japanese]
- August, 2002 Residential base as a hunting camp: subsistence complex at Torihama Jomon shellmidden. (International Council of Archaeozoology 9th Conference) (Durham University, UK)
- August, 2002 Session Organizer, International Council of Archaeozoology 9th Conference. (Durham University, UK)
- October, 2001 Jomon iseki kara mita Am-sa-dong iseki no keizai katsudou (Economic activities at Am-sa-dong site: Jomon perspectives). International Symposium on the Am-sa-dong Korean neolithic site. (Am-sa-dong Prehistoric Culture Museum, Seoul, Korean Republic) [in Japanese]
- March, 2001 Koi to funa no Jomon bunka: koika gyorui ken no sensisyuryousaisyuu syakai ni miru seigyuu kouzou (Jomon culture based on carp family fish: prehistoric subsistence structures in the area of carp family fish distribution). International Symposium: New perspectives on the study of foraging cultures in East Asia and North Pacific Rim. (National Museum of Ethnology, Osaka) [in Japanese]

### Research Activities

#### Field Research in Japan

- July-August, 2005 Chiba, Fukui, Hiroshima and Kumamoto Prefectures (Research on the Jomon subsistence)
- August, 2004 Kumamoto and Chiba Prefectures (Research on the Jomon subsistence)

March, 2004 Toyama and Nagano Prefectures (Research on the trading activities in the Jomon era)

### **Field Research in Foreign Countries**

April, 2001-January, 2002 Korean Republic (Zooarchaeological research on the Korean Neolithic culture)

### **Social Activities and Public Lectures**

#### **Public Lectures**

- 6 May, 2005 Chikyu kankyou mondai no henshitsu tsugeru aichi banpaku. (Expo 2005: Recent trends on the environmental problems) Article on the Kyoto Keizai shimbun [in Japanese]
- October, 2002 Syakai sinkaron wo koete: senshijinruigaku to kankyou no shiten (Beyond Social Evolutionism: Perspectives of Environmental Archaeology). Toyamaken koutou gakkou kyouikukenkuyukai rekishibukai (Toyama Prefecture Highschool Teachers' Association for Educational Studies: History Section). [in Japanese]
- October, 2001 Ningen to kankyou no bunmeishi (History of Human-Nature Relationships). Toyamakenmin syougai gakusyu karejji kouiki kyanpasu kouza shizenkagaku kousu: kankyou eno apurouchi (Toyama Prefectural Lifelong Learning Course: Approach to the Environmental Issues). [in Japanese]
- September, 2001 Ningen to kankyou no bunmeishi: Jomon jidai no shiten kara (History of Human-Nature Relationships: Jomon Perspectives). Toyama daigaku koukai kouza (Public Lecture Course of Toyama University).

## **UMETSU, Chieko**

Associate Professor

### **Curriculum Vitae**

#### **Academic Career**

Department of Agricultural and Resource Economics, University of Hawaii at Manoa, Honolulu, U.S.A, Ph. D. (1995)  
School of International Relations, International University of Japan, Niigata, Japan, M. A. (1989)

#### **Professional Career**

Associate Professor, Research Institute for Humanity and Nature (2002)  
Visiting Scholar, Environmental Studies, Research Program, East-West Center, Honolulu, Hawaii, U.S.A. (2001)  
Assistant Professor, The Graduate School of Science and Technology, Kobe University, Japan (1997)  
Visiting Fellow, Program on Environment, East-West Center, Honolulu, Hawaii, U.S.A. (1995)  
Training Co-ordinator, Tohoku Branch Office, Japan International Cooperation Agency (JICA), Sendai, Japan (1982)  
Science & Math Teacher (O level), Kiriani High School, Meru, Kenya, Japan Overseas Cooperation Volunteers, JICA (1979)

#### **Higher Degrees**

Ph. D. (University of Hawaii, 1995)  
M. A. (International University of Japan, 1989)

#### **Fields of Specialization / Background**

Resource and Environmental Economics, Development Economics / International Relations, Biology

#### **Academic Society Memberships**

International Association of Agricultural Economists (IAAE), American Agricultural Economics Association (AAEA), International Society for Ecological Economics (ISEE), East Asian Economic Association (EAEA), Agricultural Economics Society of Japan, Society for Environmental Economics and Policy Studies (SEEPS), Japan Society for International Development (JASID)

## Major Publications

### Articles

- Ujjayant Chakravorty and Chieko Umetsu 2005 "Basinwide Water Management: A Spatial Model," In Jacqueline Geoghegan and Wayne Gray eds. *Spatial Aspects of Environmental Policy* (Series editors, Tom Tietenberg and Kathy Segerson. THE INTERNATIONAL LIBRARY OF ENVIRONMENTAL ECONOMICS AND POLICY) Hampshire, UK: Ashgate Publishing. pp. 5-27.
- Umetsu, Chieko, Sevgi Donma, Takanori Nagano and Ziya Coçkun 2005 "The Efficiency of WUA Management in the Lower Seyhan Irrigation Project," *Journal of Rural Economics: Special Issue*, pp. 440-444.
- Umetsu, Chieko, Sevgi Donma, Takanori Nagano and Ziya Coçkun 2005 "The Efficient Management of Water User Associations: The Case of Lower Seyhan Irrigation Project in Turkey" proceedings of the International Conference on Policy Modeling -EcoMod2005-, June 29-July 2, 2005, Istanbul, Turkey.  
[http://www.ecomod.net/conferences/ecomod2005/ecomod2005\\_papers/668.pdf](http://www.ecomod.net/conferences/ecomod2005/ecomod2005_papers/668.pdf)
- Umetsu, Chieko, Sevgi Donma, Takanori Nagano and Ziya Coçkun 2005 "The Efficiency of WUA Management in the Lower Seyhan Irrigation Project (in Japanese)," Proceedings of Annual Conference of the Japanese Society for International Development, November 26-27, 2005. pp. 252-255.
- Ujjayant Chakravorty, Eithan Hochman, Chieko Umetsu and David Zilberman 2005 "Alternative Institutions for Water Distribution", Working paper #5-17, Department of Economics, Central Florida University, Orlando FL, U.S.A.  
<http://www.bus.ucf.edu/wp/content/archives/05-17Chakravorty.pdf>
- Umetsu, Chieko, K. Palanisami, Ziya Coçkun, Sevgi Donma, Takanori Nagano 2006 "Water Scarcity and Alternative Cropping Patterns in Lower Seyhan Irrigation Project: A Simulation Analysis." Proceedings of the International Workshop for the Research Project on the Impact of Climate Change on Agricultural Production System in Arid Areas (ICCAP), March 9-10, 2006. pp. 135-143. Research Institute for Humanity and Nature (RIHN), Kyoto Japan, 2006.

### Activities in Academic Societies

- |              |  |
|--------------|--|
| June 2005    | "The Efficient Management of Water User Associations: The Case of Lower Seyhan Irrigation Project in Turkey" presented at the International Conference on Policy Modeling -EcoMod2005-, June 29-July 2, 2005, Istanbul, Turkey.  |
| July 2005    | "Groundwater Irrigation and Growing Risk in Tamilnadu, India," presented at the TEA (Theoretical Economics of Agriculture) Spring Meeting, 19 July 2005, Faculty of Agriculture, Hokkaido University.  |
| July 2005    | "The Efficiency of WUA Management in the Lower Seyhan Irrigation Project," presented at the Agricultural Economics Society of Japan Annual Meeting, 17-18 July, 2005, Hokkaido University.   |
| July 2005    | "Tank irrigation farmers and resilience in south India", presented at the Society for Commons Studies 4 <sup>th</sup> Conference, 31 July 2005, Osaka University of Commerce.  |
| August 2005  | "The Efficiency of WUA Management in the Lower Seyhan Irrigation Project," presented at the Japanese Society of Irrigation, Drainage and Reclamation Engineering (JSIDRE) Annual Meeting, 23-25 August, 2005, Gifu University.   |
| October 2005 | "The Efficient Management of Water User Associations: A Case of Lower Seyhan Irrigation Project in Turkey," presented at the 6th Open Meeting of the Human Dimensions of Global Environmental Change Research Community, 9-13 October 2005, University of Bonn, Bonn, Germany. Theme 1. Adaptive Management and Resilience; Session 1.4 Local Responses to Environmental Stress and Risks (Session organizer). |
| October 2005 | "Privatizing Water Distribution", presented at the 34 <sup>th</sup> Environmental Economics Seminar (Co-   |

- organized with COE project), 27 October, 2005, Department of Economics, Kobe University.
- November 2005 "The Efficiency of WUA Management in the Lower Seyhan Irrigation Project (in Japanese)," presented at the Japan Society of International Development Annual Meeting, Graduate School of International Cooperation, 26-27 November, 2005, Kobe University.
- December 2005 "Water Distribution and Market Power," presented at the FASID Hakone Seminar, 10-11 December 2005, JICA Hakone Seminar House, Hakone.
- February 2006 "Groundwater Over-Exploitation in Hard Rock Regions: Analysis of Farm Efficiency, Cost of Uncertainty and User Costs," K. Palanisami and Chieko Umetsu, Groundwater for Sustainable Development: Problems, Perspectives and Challenges (IGC-2006), 1-4 February, 2006, Jawaharlal Nehru University, New Delhi, India.

### **Awards**

IAAE-JB Research Award from the Japan Branch of the International Association of Agricultural Economists (2001)  
Best Article Award from the Agricultural Economics Society of Japan (2003)

### **Research Activities**

#### **Field Research in Foreign Countries**

- January 2006 India India (Research on Water Users' Association of Tank Irrigation Systems in the State of Tamil Nadu, Tsunami affected agricultural households in the coastal area of the State of Tamil Nadu)
- August, November 2005 Zambia (Incubation Research for Social-Ecological Resilience)
- July, September 2005 Turkey (Project 1-1: Research on Water Users' Association in Seyhan River Basin)

### **YACHI, Shigeo**

Associate Professor

Born in 1962.

### **Curriculum Vitae**

#### **Academic Career**

Department of Biophysics, Faculty of Science, Kyoto University, D. Sc. (1995)

Department of Biophysics, Faculty of Science, Kyoto University, M. Sc. (1988)

Faculty of Science, Kyoto University, B. Sc. (1985)

#### **Professional Career**

Associate Professor, Research Institute for Humanity and Nature (2001-)

Associate Professor, Center for Ecological Research, Kyoto University (2001)

Research Associate, Kyoto University (1999-2001)

Postdoctoral Fellow, Laboratoire d'Ecologie, Ecole Normale Supérieure and Université Pierre et Marie Curie, CNRS-URA 258, Paris, France (1997-1999)

Lecturer (part time), Doshisha University, Kyoto, Japan (1993-1997)

Lecturer (part time), Osaka Institute of Technology, Osaka, Japan (1992-1997)

#### **Higher Degrees**

D. Sc. (Kyoto University, 1995)

M. Sc. (Kyoto University, 1988)

#### **Fields of Specialization / Background**

Mathematical Ecology

### Academic Society Memberships

The Ecological Society of Japan, the Japanese Society for Mathematical Biology, Society of Evolutionary Studies, Japan

### Major Publications

#### Articles

- S. Yachi 2005 "Multi-disciplinary research for understanding interactions between humans and nature in the Lake biwa-yodo River watershed -Hierarchical watershed management concept-" *Japanese Journal of Ecology* 55: 177-181. [in Japanese]
- T. Nagata and S. Yachi 2005 "Strategies for conservation and restoration of watershed ecosystems-Ecological tools and applications" *Japanese Journal of Ecology* 55: 175-176. [in Japanese]
- S. Yachi, T. Tanaka, T. Sugimoto and METOCEAN ENVIRONMENT INC. 2006 "*P3-1 report on a critical relationships of factors causing water environmental degradation in the Yodo River Watershed*" Project 3-1 Report. [in Japanese]

### Activities in Academic Societies

#### Oral Presentation

- 2005 August R. Ishii, H. Nakajima, S. Yachi and M. Higashi "Ecosystem structural transition between macro-cycle and microbial-loop dominance." ESA & INTECOL, Montreal, Canada
- 2005 September S. Yachi, M. Kondoh, A. Yamauchi, N. Yamamura, Y. Morita, H. Ezoe Organized session "My Mathematical Biology" Annual Meeting of the Japanese Society for Mathematical Biology, Yokohama [in Japanese]
- 2005 October "Multi-disciplinary research for understanding interactions between humans and nature in the Lake Biwa-Yodo River watershed –a *RIHN* project stressing on spatial scale". 11<sup>th</sup> Japan-U.S. workshop on Global Change, Yokohama
- 2006 March S. Yachi, R. Ishii, G-M. Kato, H. Nakajima, T. Tanaka and T. Nakano "Cross- scenario approach for the enhancement of communication between stakeholders towards lake ecosystems management" 53<sup>rd</sup> Annual meeting of the Ecological Society of Japan, Niigata [in Japanese]

### Research Activities

#### Field Research in Japan

- 2005 May Shiga Prefecture (Field survey in the eastern areas of the Lake Biwa)
- 2005 August Osaka Bay and a sewage plant in Osaka (Field survey and interview)

#### Organizer of Seminar and Workshop

- 2005 October P3-1 workshop on "Synthesis of the P3-1 Yodo River watershed research", Kyoto

#### Scientific Meetings

- 2005~ Watershed research meeting Otsu

#### Social Activities and Other Activities

- 2005 October "Multi-disciplinary research for understanding interactions between humans and nature in the Lake Biwa-Yodo River watershed -hierarchical watershed management concept-" 2<sup>nd</sup> Field Science and Education Research Center seminar, Kyoto University, Kyoto [in Japanese]

### Committee Work for Other Organizations

Member of the "Dai-kibo tyouki seitai-gaku senmon iinkai (committee on large scale and long term ecological research)", the Ecological Society of Japan

Editorial board of the Japanese Association for Mathematical Biology *Newsletter*

Editorial board of the *Ecological Research*, the Ecological Society of Japan

Member of the "Yodo-gawa suikei ryuiki iinkai (committee on the Yodo River watershed management)"

Collaborative researcher at Center for Ecological Research, Kyoto University

## **YOSHIMURA, Mitsunori**

Associate Professor

Born in 1962.

### **Curriculum Vitae**

#### **Academic Career**

Department of Construction, Faculty of Engineering, Hosei University, M. Eng. (1987)

Department of Civil Engineering, Faculty of engineering, Hosei University (1985)

#### **Professional Career**

Associate Professor, Research Institute for Humanity and Nature (2001)

Assistant Professor, Center for Southeast Asian Studies, Kyoto University (1996)

Senior Research Scientist, Remote Sensing Technology Center of Japan (1996)

Research Scientist, Remote Sensing Technology Center of Japan (1987)

#### **Higher Degree**

M. Eng. (Hosei University, 1987)

#### **Fields of Specialization / Background**

Geoinformatics, Remote Sensing, GIS

#### **Academic Society Memberships**

The Japan Society of Civil Engineering, The Japan Society of Photogrammetry and Remote Sensing, The Japan Society of Remote Sensing, The Japan Society of GIS, The American Society of Photogrammetry and Remote Sensing

### **Major Publications**

#### **Articles**

Yoshimura, M., Yamashita, M. and Ichie, T. 2005 "Measurements and applications of forest physical properties using a canopy crane" *Proceedings of International Symposium on Forest Ecology, Hydrometeorology and Forest Ecosystem Rehabilitation in Sarawak*: 109-112.

Yoshimura, M., Yamashita, M. and Ichie, T. 2005 "Remote sensing and 3D structure measurement for photosynthetic functions monitoring in tropical rainforest" *Proceedings of 1st international Symposium of 21st Century COEProgram "Satellite Ecology"*: 25-32.

Yoshimura, M., Yamashita, M. and Iwao, K. 2005 Monitoring and Discrimination for Sky Conditions using Whole Sky Imageries, *Proceedings of the 26th Asian Conference on Remote Sensing*.

Yoshimura, M., Yamashita, M. and Iwao, K. 2005 Sky Condition Monitoring using Full Sky Imageries, *Proceeding on JSPRS H17 Annual Conference*: 53-56.

Yoshimura, M., Kumagai, T., Ichie, T., Yamashita, M., Kenzo, T., Saitoh, T. M., Ohashi, M., Suzuki, M., Koike, T. and Komatsu, H.

2006 "Modeling CO<sub>2</sub> exchange over a Bornean tropical rainforest using measured vertical and horizontal variations in leaf-level physiological parameters and leaf area densities" *Journal of Geophysical Research-Atmospheres*.

### Activities in Academic Societies

Japan Society of Photogrammetry and Remote Sensing, Chair of Conference Organization Committee of Japan Society of Photogrammetry and Remote Sensing, Vice-Chair of Japan Society of Photogrammetry and Remote Sensing Kansai Branch, Reviewer of Environment Information Science

### Oral Presentations

- October Remote sensing and 3D structure measurement for photosynthetic functions monitoring in tropical rainforest, 1st International Symposium of 21th Century COE Program 'Satellite Ecology' -Linking Remote Sensing, Ecology and Meteorology for Regional Ecosystem Studies- at Gifu University
- November Measurements and applications of forest physical properties using a canopy crane, International Symposium on Forest Ecology, Hydrometeorology and Forest Ecosystem Rehabilitation in Sarawak in Kuching, Sarawak, Malaysia

### Research Activities

#### Field Research in Foreign Countries

- March, 2005 Malaysia (Research on PAR, LAI, on Tropical Rain Forest in Malaysia)
- August, 2005 Zambia (Site Inspection and Field Investigation Related to Resilience Project)
- August, 2005 Malaysia (Research on PAR, LAI, on Tropical Rain Forest in Malaysia)

### Social Activities and Public Lectures

Lecture of Ritsumeikan University, Lecture of Doshisha University

## YOSHIOKA, Takahito

Associate Professor

Born in 1955.

### Curriculum Vitae

#### Academic Career

Department of Hydrospheric-Atmospheric Sciences, Graduate School of Science, Nagoya University, D. Course (1983)

Department of Hydrospheric-Atmospheric Sciences, Graduate School of Science, Nagoya University, M. Course (1980)

Department of Biology, Faculty of Science, Osaka University (1978)

#### Professional Career

Associate Professor, Research Institute for Humanity and Nature (2001)

Assistant Professor, Research Institute for Humanity and Nature (2001)

Assistant Professor, Institute for Hydrospheric-Atmospheric Sciences, Nagoya University (1993)

Assistant Professor, Faculty of Science, Shinshu University (1988)

#### Higher Degrees

D. Sc. (Nagoya University, 1985)

M. Sc. (Nagoya University, 1980)

#### Fields of Specialization / Background

Biogeochemistry

#### Academic Society Memberships

The Japanese Society of Limnology, The Ecological Society of Japan, The Japanese Society of Microbial Ecology, The American Society of Limnology and Oceanography

**Major Publications****Books**

Minagawa, M. and T. Yoshioka (eds.)

2006 *Biogeochemistry*. Tokyo: Baihu-kan. (in Japanese)

**Articles**

Konohira, E. and T. Yoshioka 2005 "Stream dissolved organic carbon and nitrate concentrations - an useful index indicating carbon and nitrogen availability in catchments" *Ecological Research* 20: 359-365.

Mostofa, K. M. G., T. Yoshioka, E. Konohira, E. Tanoue, K. Hayakawa and M. Takahashi 2005 "Three-dimensional fluorescence as a tool for investigating the dynamics of dissolved organic matter in the Lake Biwa watershed" *Limnology* 6: 101-115.

Sekino, T. and T. Yoshioka 2005 "Diagrammatic representation of environmental monitoring data" *Korean Journal of Limnology* 38: 76-83.

Shindo, J., E. Konohira, T. Yoshioka, K. Okamoto and H. Kawashima 2005 "Nationwide estimation of nitrogen load and nitrogen concentration in natural stream water" *Environmental Science* 18: 455-463 (in Japanese with English abstract).

**Reports**

Takahito, Yoshioka 2006 Interactions between the environmental quality of a watershed and the environmental consciousness: With reference to environmental changes caused by the human use of land and water resources. *Interim report of project 5-2*, p. 139.

Takahito, Yoshioka 2006 Development of a evaluation method on environmental effects in forest ecosystems using simulation model for streamwater chemistry. *Report of a Grant-in-Aid for Scientific Research* (No. 15310029), p. 91. (in Japanese)

**Academic Lectures**

Bashenkhaeva, N. V., Tomberg, I. V. and Yoshioka, T.

September 2005 "Characteristic of allochthonous organic matter in the water of small tributaries of the western coast of Lake Baikal" (The Conference "Fundamental problems of studies and usage of the water and water resources") Oral presentation, Institute of Geography SD RAS, Irkutsk, Russia.

Kawano, T., Nomura, T., Takahara, H., Kitagawa, H., Shibata, H., Uemura, S., Sasaki, N. and Yoshioka, T.

March 2006 "Holocene dynamics of spruce-broadleaved stands on Dorokawa bog, Uryu experimental forest of Hokkaido University, Japan, based on phytolith record" (The 2nd EAFES International Congress on "Global Environmental Change and Ecosystems in East Asia) Poster presentation, Toki Messe, Niigata.

Konohira, E., Shindo, J. and Yoshioka, T.

March 2005 "Nitrogen deposition from atmosphere to forest and streamwater quality: from a nationwide stream survey" (The 22nd symposium on Acid Rain Society) Oral presentation, Keio University, Tokyo. (in Japanese)

Nomura, T., Kawano, T., Sasaki, N., Takahara, H., Shibata, H., Uemura, S., Kitagawa, H. and Yoshioka, T.

March 2005 "Development of Akaezo-matsu forest in Dorokawa bog, Uryu experimental forest of Hokkaido University, Japan, based on fossil pollen and phytolith records" (The 52nd meeting of the Ecological Society of Japan) Oral presentation, Grand Cube Osaka, Osaka. (in Japanese)

Nomura, T., Kawano, T., Takahara, H., Kitagawa, H., Shibata, H., Uemura, S., Sasaki, N. and Yoshioka, T.

March 2006 "Holocene dynamics of spruce-broadleaved stands on Dorokawa bog, Uryu experimental forest of Hokkaido University, Japan, based on pollen record" (The 2nd EAFES International Congress on "Global Environmental Change and Ecosystems in East Asia) Poster presentation, Toki Messe, Niigata.

Sasaki, N., Ogawa, A., Yoshioka, T., Hino, S., Takahara, H., Shibata, H. and Yoshida, T.

March 2006 "Vegetation changes in the Lake Shumarinai watershed based on the pollen record during past 60 years" (The 23rd meeting of the Ecological Society of Japan) Oral presentation, Toki Messe, Niigata. (in Japanese)

Shibata, H., Xiu, X., Ogawa, A., Satoh, F. and Yoshioka, T.

June 2005 "Spatial pattern of stream chemistry and biogeochemical processes in a natural unpolluted forested basin, northern Japan" (The 7th International Conference on Acid Deposition) Oral presentation, Prague, Czech Republic.

Yoshioka, Takahito

July 2005 "Can human beings learn from their environments?" (The 23rd Bacchus Saloon) Oral presentation, Research Institute for Humanity and Nature, Kyoto, Kyoto. (in Japanese)

September 2005 "Interdisciplinary research on freshwater environments" (Symposium on Long-term Ecological research in lake and river environments in Japan, held in the 70th meeting of the Japanese Society of Limnology) Oral presentation, Osaka Kyoiku University, Kasihara, Osaka. (in Japanese)

September 2005 "Prospects of simulation models in watershed studies" (The 70th meeting of the Japanese Society of Limnology) Oral presentation, Osaka Kyoiku University, Kasihara, Osaka. (in Japanese)

November 2005 "Interaction between environmental quality of the watershed and environmental consciousness: a methodological consideration" (The 11th Japan-US workshop on global change "Biodiversity, Ecosystem Function, and Dynamic Human-Nature Interactions") Oral presentation, Yokohama Institute for Earth Sciences, Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Yokohama, Japan.

December 2005 "Stable isotope analysis on aquatic ecosystems" (Workshop on Isotopic tracer techniques for diagnosing environmental circulatory system) Oral presentation, Terrestrial Environment Research Center, University of Tsukuba, Tsukuba, Ibaraki. (in Japanese)

January 2006 "Studies on the inter-relationship between humans and nature in watershed environments" (Lecture on Mori-Sato-Umi Renkan-gaku) Oral presentation, Kyoto University, Kyoto. (in Japanese)

January 2006 "Relationship between environmental qualities of watershed environments and people's environmental consciousness" (Seminar on the forest environments and resources) Oral presentation, Nagoya University, Nagoya, Aichi. (in Japanese)

Yoshioka, T. and Yoh, M.

September 2005 "Biogeochemistry in watershed environments: simulation models based on material cycling and hydrologic processes" (Special session in the 70th meeting of the Japanese Society of Limnology) Convener, Osaka Kyoiku University, Kasihara, Osaka. (in Japanese)

## Awards

The 9th BIWAKO Prize for Ecology in 1999 (Shiga prefecture)

The 5th YOSHIMURA Prize for Limnology in 2003 (Award for a paper (Lee, Yoshioka and Hanazato, *Limnology*, 3: 151-158, 2002) by the Japanese Society of Limnology)

## Research Activities

### Field Research in Japan

June 2005 Hydrochemical survey of Lake Shumarinai, Hokkaido, Japan.

September 2005 Social survey on people's interest in the watershed environment in Horokanai-cho and Nayoro city, Hokkaido.

**Social Activities and Public Lectures****Public Lectures**

- July 2005 "Relationship between people's environmental consciousness and environmental qualities, from the viewpoint of material cyclings in a forest-river-lake ecosystem" (Lecture in the Hirakata Kankyo Network), Hirakata Civic Hall, Hirakata, Osaka. (in Japanese)
- February 2006 "Narrative Theory of Environment - Environmental Quality and Environmental Consciousness" (The 10th RIHN Public Seminar), Nijima Hall, Kyoto. (in Japanese)

**ZHENG, Yuejun**

Associate Professor

Born in 1962.

**Curriculum Vitae****Academic Career**

- Graduate School of Agricultural and Life Science, The University of Tokyo, D. Course (1995)
- Graduate School of Forest Resources, Beijing Forestry University, M. Course (1987)
- Department of Forest Science, Inner Mongolia Agricultural University (1984)

**Professional Career**

- Associate Professor, Research Institute for Humanity and Nature (2003)
- Assistant Professor, The Graduate University for Advanced Studies (2001)
- Visiting Scholar, Department of Natural Resources, University of New Hampshire (1998)
- Assistant Professor, The Institute of Statistical Mathematics (1995)
- Lecturer, College of Forest Resources, Beijing Forestry University (1988)
- Assistant Professor, College of Forest Resources, Beijing Forestry University (1987)

**Higher Degrees**

- D. Sc. (The University of Tokyo, 1995)
- M. Sc. (Beijing Forestry University, 1987)

**Fields of Specialization / Background**

Environmental Statistics, Environmental Economics, Social Survey Research

**Academic Society Memberships**

The Behaviormetric Society of Japan, Japan Statistical Society, Society for Environmental Economics and Policy Studies, Japanese Society of Forest Planning, International Institute of Sociology

**Major Publications****Books**

- Nagase, N. and Zheng, Y. et al
- 2005 Cross-national Comparison on Family, Work and Housekeeping: A Panel Survey in Beijing, China (the pretest survey result), Ochanomizu University Tokyo 134pp. (In Japanese)
- Nagase, N. and Zheng, Y. et al
- 2005 Cross-national Comparison on Family, Work and Housekeeping: A Panel Survey in Beijing, China (The 1st survey result), Ochanomizu University Tokyo 253pp. (In Japanese)

**Articles**

- ZHENG, Yuejun 2005 "Transition of Confucian Philosophy: Cross-national Comparison on East Asia Ethics". *The 37th world Congress of the International Institute of Sociology*: 38.
- Zheng, Yuejun and Yoshino, Ryoza 2005 "Characteristic of National Character of Chinese and Japanese (3) –

Focusing on Consciousness of Life Sphere, Philosophy of Life—". *Proc. of 33rd Conference of the Behaviormetric Society of Japan*: 74-77. (In Japanese)

ZHENG, Yuejun 2005 "Cross-national Comparison of Transitions of Traditional Values in Eastern Asian Countries". *The Japanese Journal of Behaviormetrics* 32(2): 161-172.

ZHENG, Yuejun and Matsukawa, Taichi 2005 "Possibilities of Harmonious Society for Resolution of Cross-national Environmental Issues –A Case Study in the East Asia—" *Proc. of Society for Environmental Economics and Policy Studies* 2005: 192-193.

ZHENG, Yuejun, YOSHINO, Ryoza and MURAKAMI, Masakatsu 2006 "An Analysis on Attitudes toward Nature and Environment in the East Asia –Main Factors in Formation of Environmental Consciousness—". *The Japanese Journal of Behaviormetrics* 33(1): 57-70.

ZHENG, Yuejun 2006 "Theoretical Analysis on People's Environmental Concerns in the Watershed". *RIHN 5-2 IDEA Project Interim Report*: 84-91.

## **ABE, Hiroshi**

Assistant Professor

Born in 1971.

### **Curriculum Vitae**

#### **Academic Career**

Department of Human and Environmental Studies, Graduate School of Human and Environmental Studies, Kyoto University, D. Course (1999)

Department of Human and Environmental Studies, Graduate School of Human and Environmental Studies, Kyoto University, M. Course (1995)

Department of Philosophy, Faculty of letters, Kyoto University (1993)

#### **Professional Career**

Assistant Professor, Research Institute for Humanity and Nature (2003)

Assistant Professor, Graduate School of Human and Environmental Studies, Kyoto University (2000)

Research Fellow, Japan Society for the Promotion of Science (1996)

#### **Higher Degrees**

Ph. D. (Kyoto University, 1999)

M. A. (Kyoto University, 1995)

#### **Fields of Specialization / Background**

Philosophy, Ecological thought, Ethics, and Comparative philosophy

#### **Academic Society Memberships**

The Japanese Society of Philosophy, The Japanese Society of Ethics, The Japanese Society of Phenomenology, The Society of Philosophy Kansai, The Society of Ethics Kansai, and The Society of Comparative philosophy

### **Major Publications**

#### **Articles**

ABE, H. 2005 "From Symbiosis (*kyohsei*) to Ontology of Co-generation (*guhshoh*)" In A. Takeichi and Y. Obama (eds.) *What must Philosophy ask?*, pp. 63-89. Kyoto: Kohyo-Shoboh. (in Japanese)

**ENDO, Takahiro**

Assistant Professor

Born in 1974.

**Curriculum Vitae****Academic Career**

Department of Political Science, Faculty of Law, Keio University, D. Course (2002)

Department of Political Science, Faculty of Law, Keio University, M. Course (1999)

Department of Political Science, Faculty of Law, Keio University (1997)

**Professional Career**

Assistant Professor, Research Institute for Humanity and Nature (2004)

Part-Time Lecturer, Department of Political Science, Faculty of Law, Keio University (2004)

**Higher Degrees**

Ph. D. (Law) (Keio University, 2002)

Master (Law) (Keio University, 1999)

**Fields of Specialization / Background**

Political Science (Political Theory)

**Academic Society Memberships**

The Japan Public Choice Society, Japanese Political Science Association, Public Policy Studies Association, The Japan Association of International Relations, The Japanese Association of Law and Political Science

**Major Publications****Non-Referred Papers**

Endo, Takahiro 2005 "River Basin Management in Japan -Idea and Practices-," *Proceedings of Interdisciplinary Workshop on Multi-scale Governance of Forests, Village and Water in the Upper Ping River Basin*, Chiang Mai, Thailand: 65-68.

Endo, Takahiro 2006 "Water Management," *Human and Water* 0: 8-9. (in Japanese)

**Activities in Academic Societies****Oral Presentation**

2005 Endo, Takahiro River Basin Management in Japan -Ideas and Practices-, Interdisciplinary Workshop on Multi-scale Governance of Forests, Village and Water in the Upper Ping River Basin, 7-9 March 2005, Chiang Mai, Thailand.

Endo, Takahiro A Study of International River Conflict -Turkey and the Harmon Doctrine-, AOGS 2<sup>nd</sup> Annual Meeting, 20-24 June 2005, Singapore, Singapore.

Endo, Takahiro River Basin Management and Local Government, Symposium: New Movements on River Basin Management, Organized by Research Group of "Blue Revolution and Water Governance" and RIHN Project 5-1, 26 December 2005, RIHN, Kyoto, Japan. (in Japanese)

2006 Endo, Takahiro Roles of Local Government in Headwater Management, The 2<sup>nd</sup> Numaguchi Commemoration Symposium: Approaches of Hydrological Science, 29-30 March 2006, Institute of Industrial Science, University of Tokyo, Tokyo, Japan. (in Japanese)

**Research Activities****Field Research in Foreign Countries**

June 2005 The United States (Research on water management)

November 2005 Cambodia, Vietnam (Research on water management)

January 2006 Laos (The Mekong River Commission)

**KATO, Yuzo**

Assistant Professor

Born in 1971.

**Curriculum Vitae****Academic Career**

Graduate School of Law, Kyoto University, Doctor of Laws program (2000)

Graduate School of Law, Kyoto University, Master's programs (1996)

Faculty of Law, Kyoto University (1994)

**Professional Career**

Assistant Professor, Research Institute for Humanity and Nature (2001)

Junior Research Fellows, Institute for Research in Humanities, Kyoto University (2001)

Research Associates, Graduate School of Law, Kyoto University (2000)

**Higher Degree**

Master of Laws (LL. M.) (Kyoto University, 1996)

**Fields of Specialization / Background**

Chinese Legal History

**Academic Society Memberships**

Japan Legal History Association, Comparative Law History Association

**Major Publications****Books**

Co-author

KATO, Yuzo (ed.)

2006 *Interim report of "Socio System in & around the Far Eastern Archipelago" II* Kyoto. (in Japanese)**Articles**KATO, Yuzo and KICENGGE 2005 "Climate and Irrigation Systems of the Heihe River Basin in the Qing Dynasty", *Project Report on an Oasis-region* 5(2): 141-148.

INOUE, Mitsuyuki, KATO, Yuzo, ARAKAWA, Shintaro, SATO, Takayasu, FURUMATSU, Takashi and IGURO, Shinobu

2005 "Environmental Change and Human Activity at Ejina in the 14th Century turned out through written historical materials", *Project Report on an Oasis-region* 5(2): 149-159.**Activities in Academic Societies**KATO, Yuzo, Mitsuyuki INOUE, Kazuki MORIYA, Hidehiro SOHMA, Takashi FURUMATSU, Shinobu IGURO, KICENGGE, Masaaki SUGIYAMA, Masayoshi NAKAWO 18<sup>th</sup> Oct 2005 "Climate change and water use in the Heihe River Basin: information from historical documents", RIHN Inaugural International Pre-Symposium (Pa-lu-lu Plaza, Kyoto)INOUE, Mitsuyuki and Yuzo KATO 2<sup>nd</sup> Dec 2005 "Human Responses to Environmental Changes in the Heihe River Basin from Historical Documents of Late Imperial China", International Water History Association 4th Conference (Unesco Headquarters, Paris, France)**Research Activities****Field Research in Foreign Countries**

Jun 2005 U.K. (Research on transaction of real property in concession and settlement during Chinese Republican period)

- Aug 2005 Central Asia (Reconnaissance studies on Yili river region)
- Oct 2005 China (Research on agricultural ruins in Eqina Banner)
- Jan 2006 U.K. (Research on transaction of real property in concession and settlement during Chinese Republican period)
- Mar 2006 U.K. (Research on transaction of real property in concession and settlement during Chinese Republican period)

## **KAWAMOTO, Kazuaki**

Assistant Professor

Born in 1970.

### **Curriculum Vitae**

#### **Academic Career**

Department of Earth and Planetary Physics, Graduate School of Science, The University of Tokyo, Doctor of Philosophy (1999)

Department of Earth and Planetary Physics, Graduate School of Science, The University of Tokyo, Master of Science (1996)

Department of Physics, Faculty of Science, Rikkyo University (1993)

#### **Professional Career**

Assistant Professor, Research Institute for Humanity and Nature (2002)

Research Scientist, Mechanical Engineering, Virginia Polytechnic Institute and State University (postdoc researcher, Atmospheric Sciences, NASA Langley Research Center) (1999)

#### **Higher Degrees**

Ph. D. (The University of Tokyo, 1999)

M. Sc. (The University of Tokyo, 1996)

#### **Fields of Specialization / Background**

Atmospheric Physics, Satellite Climatology

#### **Academic Society Memberships**

The Meteorological Society of Japan

### **Major Publications**

#### **Articles**

##### **Referred Original Papers**

Kawamoto, K. 2006 Relationships between cloud properties and precipitation amount over the Amazon basin, *Atmos. Res.*, in press.

Hayasaka, T., K. Kawamoto, G. Shi and A. Ohmura 2006 Importance of aerosols in satellite-derived estimates of surface shortwave irradiance over China, *Geophys. Res. Lett.*, 33, L06802, doi:10.1029/2005GL025093.

### **Activities in Academic Societies**

#### **Chairperson**

Asian Conference on Remote Sensing 2005, Hanoi, Vietnam Nov. 7-11, 'Remote sensing applications – Climate' session

#### **Oral Presentations**

Kawamoto, K., and T. Hayasaka

2005 Long-term trends of surface radiation over China and water cloud microphysics on a global scale, Cloud

Climatology Assessment, Apr. 5-7, Madison, WI, USA.

Kawamoto, K.

2005 Examining the relationships between cloud properties and precipitation, ABC-EAREX05 Jun. 29-Jul. 1, Kyoto, Japan.

Kawamoto, K.

2005 Statistical relationship between cloud properties and precipitation, IAMAS (International Association of Meteorology and Atmospheric Sciences), Aug. 2-11, Beijing, China.

Kawamoto, K.

2005 Variations of low cloud properties by aerosols and precipitation viewed from satellites, Asian Conference on Remote Sensing, Nov. 7-11, Hanoi, Vietnam.

Kawamoto, K.

2005 Aerosol indirect effects over East Asia using cloud information from satellites, Nagoya University Hyarc research meeting, November, Nagoya, Japan. (in Japanese)

Kawamoto, K., T. Hayasaka, I. Uno and T. Ohara

2005 Anthropogenic aerosol indirect effect over East Asia, fall meeting of Japan Meteorological Society, November, Kobe, Japan. (in Japanese)

Kawamoto, K. and T. Hayasaka

2005 Variations and the causal analysis of radiation budget over the yellow river basin, domestic joint meeting of the RIHN and RR yellow river projects, December, Fukuoka. (in Japanese)

Kawamoto, K.

2006 Research on aerosol indirect effects with satellite remote sensing, Environmental information sciences group seminar at Nara women's University, February, Nara. (in Japanese)

#### **Poster Presentations**

Kawamoto, K.

2005 Correspondence of the low cloud microphysics to the aerosol amount over China, Gordon Research Conference, Jul. 24-29, Waterville, ME, USA.

Kawamoto, K.

2005 Climate variations over Asia on decadal time scale, session of 'Human Impacts on Urban Subsurface Environment', RIHN pre-symposium, Oct. 18-20, Kyoto.

Kawamoto, K.

2005 Influences of aerosols and precipitation on low clouds from satellite remote sensing, American Geophysical Union fall meeting, Dec. 5-9, San Francisco, CA, USA.

#### **Research Activities**

##### **Field Research in Foreign Countries**

June, 2005 United States of America (Washington, D.C., Tennessee, Illinois, Colorado, California, and so on), investigation of major dam circumstances and water supply in USA.

#### **KOHMATSU, Yukihiro**

Assistant Professor

Born in 1973.

#### **Curriculum Vitae**

##### **Academic Career**

Department of Zoology, Faculty of Science, Kyoto University, D. Course (2001)

Department of Zoology, Faculty of Science, Kyoto University, M. Sc. (1998)

Department of Geography, Faculty of Science, Ritsumeikan University (1996)

#### **Professional Career**

Assistant Professor, Research Institute for Humanity and Nature (2003)

Technical Assistant, Research Institute for Humanity and Nature (2002)

Postdoctoral Scientist, Center for Ecological Research, Kyoto University (2001)

#### **Higher Degrees**

D. Sc. (Kyoto University, 2001)

M. Sc. (Kyoto University, 1998)

#### **Fields of Specialization / Background**

Animal Ecology, Geography

#### **Major Publications**

Hiroki Yamanaka, Yukihiro Kohmatsu and Masahide Yuma 2005 Outline of the study: The function of macrophyte zone as a physiological refugia for indigenous fishes (in English) *Memoirs of International Symposium on Wetland Restoration 2006*. (in press)

Yukihiro Kohmatsu 2006 Various value of water in Lake Biwa. *Water and People* 0: 26-27.

#### **Activities in Academic Societies**

January, 2006 Macrophyte zone as a refugia of indigenous fish species: function of hypoxic water area. International Symposium on Wetland Restoration 2006, Otsu [Poster presentation in English]

March, 2006 Functional mechanism of anti-predator behavior by chemical communication in freshwater The 53rd Annual Meeting of the Ecological Society of Japan, Niigata [in Japanese]

#### **Social Activities and Public Lectures**

##### **Social Activities**

Guest scientist of the Center for Ecological Research, Kyoto University

### **SAEKI, Tazu**

Assistant Professor

Born in 1970.

#### **Curriculum Vitae**

##### **Academic Career**

Department of Geophysics, Faculty of Science, Tohoku University, D. Course (1998)

Department of Geophysics, Faculty of Science, Tohoku University, M. Sc. (1995)

Division of Natural Science, The College of Liberal Arts, International Christian University (1993)

##### **Professional Career**

Assistant Professor, Research Institute for Humanity and Nature (2002)

Assistant Professor, Information Synergy Center, Tohoku University (2001)

Assistant Professor, Computer Center, Tohoku University (1998)

##### **Higher Degree**

M. Sc. (Tohoku University, 1995)

##### **Fields of Specialization / Background**

Meteorology, Atmospheric Physics

### Academic Society Memberships

Meteorological Society of Japan

### Major Publications

#### Academic Articles

- Tazu Saeki, S. Maksyutov and T. Nakazawa 2005 "Simulation of methane concentration and carbon isotopic composition using a global atmospheric transport model" *Non-CO<sub>2</sub> Greenhouse Gases (NCGG-4) Science, Control, Policy and Implementation*, pp. 337-344, Rotterdam: Millpress.
- Satoshi Sugawara, Shuji Aoki, Takakiyo Nakazawa, Sigeyuki Ishidoya, Jie Tang, Dongqi Zhang, Guang-Yu Shi, Yu-Zhi Liu, Shuji Morimoto, Tazu Saeki, Tadahiro Hayasaka and Misa Ishizawa  
2005 "Observations of atmospheric co<sub>2</sub> concentration and its carbon isotopic ratio in china" *Proc. of Eleventh Atmospheric Chemistry Panel* p. 17. (in Japanese)
- Tazu Saeki, Satoshi Sugawara, Shuji Aoki, Takakiyo Nakazawa, Sigeyuki Ishidoya, Jie Tang, Dongqi Zhang, Guang-Yu Shi, Yu-Zhi Liu, Shuji Morimoto and Tadahiro Hayasaka  
2005 "Observations of atmospheric methane concentration in china" *Proc. of Eleventh Atmospheric Chemistry Panel* p. 18. (in Japanese)
- Tazu Saeki, Takakiyo Nakazawa and Shamil Maksyutov 2005 "Simulation of atmospheric methane concentration and its isotopes using a global transport model –Variations of methane concentrations due to difference in methane scenarios–" *Proc. of Eleventh Atmospheric Chemistry Panel* p. 728. (in Japanese)
- Tazu Saeki, Takakiyo Nakazawa and Shamil Maksyutov 2005 "Simulation of atmospheric methane using a global transport model –Variations of methane concentrations due to difference in methane scenarios–" *Proc. of 2005FY Spring meeting of Japan Meteorological Society*, p. 500. (in Japanese)
- Takakiyo Nakazawa, Shuji Aoki, Sigeyuki Ishidoya, Shamil Maksyutov, Misa Ishizawa, Prabir Patra, Satoshi Sugawara, Tazu Saeki, Shuji Morimoto, Gen Hashia and Toshinobu Machida  
2005 "Investigation of carbon dioxide and methane cycles using a top-down approach" Simulation of atmospheric methane using a global transport model –Variations of methane concentrations due to difference in methane scenarios–" *Report of Advanced parameterization of physical processes (atmosphere and ocean) group of Research Revolution 2002 in FY 2004*, pp. 95-103. (in Japanese)

#### Activities in Academic Societies

- Xia Zhang, Takakiyo Nakazawa, Shuji Aoki, Sin-ichiro Nakaoka, Misa Ishizawa, Shamil Maksyutov, Satoshi Sugawara, Tazu Saeki, Tadahiro Hayasaka  
2005 "Temporal variations of the atmospheric co<sub>2</sub> concentration in the southernmost part of Japan." Seventh International Carbon Dioxide Conference, Broomfield, Colorado, September 26-30.
- Satoshi Sugawara, Shuji Aoki, Takakiyo Nakazawa, Jie Tang, Dongqi Zhang, Guang-Yu Shi, Yu-Zhi Liu, Shuji Morimoto, Sigeyuki Ishidoya, Tazu Saeki, Tadahiro Hayasaka and Misa Ishizawa  
2005 "Observations of atmospheric co<sub>2</sub> concentration and its carbon isotopic ratio in China." Seventh International Carbon Dioxide Conference, Broomfield, Colorado, September 26-30.

#### Research Activities

##### Field Research in Foreign Countries

August 2005, Zambia (Feasibility study for Social-Ecological Resilience)

#### Social Activities and Public Lectures

April 2005 - present, A lecturer, the faculty of literature, Ritsumeikan University

**Other Research Activities**

2005 - present, A member of "Comprehensive studies of global greenhouse gas cycles in the atmosphere, terrestrial biosphere and oceans" for Grants-in-Aid for Scientific Research (Creative Scientific Research).

**TAKEUCHI, Nozomu**

Assistant Professor

Born in 1972.

**Curriculum Vitae****Academic Career**

Department of Bioscience, Faculty of Bioscience and Biotechnology, Tokyo Institute of Technology. D. Course (1999)

Department of Bioscience, Faculty of Bioscience and Biotechnology, Tokyo Institute of Technology. M. Sc. (1996)

Department of Bioscience, Faculty of Bioscience and Biotechnology, Tokyo Institute of Technology. B. Sc. (1994)

**Professional Career**

Assistant Professor, Research Institute for Humanity and Nature (2002)

Research scientist (Post-doc) of Frontier Observational Research System for Global Change (FORSGC) in IARC, University of Alaska Fairbanks, U.S.A. (2000)

Research fellow of the Japan Society for the promotion science, Tokyo Institute of Technology, Japan (1996)

**Higher Degrees**

Ph. D. (Science) (Tokyo Institute of Technology, 1999)

M. (Science) (Tokyo Institute of Technology, 1999)

**Fields of Specialization / Background**

Glacial biology

**Academic Society Memberships**

The Japanese Society of Snow and Ice, International Glaciological Society, American Geophysical Union

**Major Publications****Articles**

2005 Stable-isotope time series and precipitation origin from firn cores and snow samples, Altai glaciers, Siberia. *Journal of Glaciology* 51(175): 637-654.

Nakazawa, F., Fujita, K., Takeuchi, N., Fujiki, T., Uetake, J., Aizen, V. and Nakawo, M.

2005 Dating of seasonal snow/firn accumulation layers using pollen analysis. *Journal of Glaciology* 51(174): 483-490.

**Activities in Academic Societies**

Council in Academic Societies

Member of a steering committee of the Data Center for Glaciological Research of the Japanese Society of Snow and Ice.

**Research Activities****Field Research in Foreign Countries**

July, 2005 Kyrgyz Republic (Glaciological Research on a glacier in the Tianshan Mountains)

August-September, 2005 Gansu, China (Glaciological Research on a glacier in the Qilian Mountains)

**YATAGAI, Akiyo**

Assistant Professor

Born in 1968.

**Curriculum Vitae****Academic Career**

Department of Geoscience, University of Tsukuba, D. Course (1996)

Department of Geoscience, University of Tsukuba, M. S. (1992)

Department of Natural Sciences, 1<sup>st</sup> cluster of colleges, University of Tsukuba, B. S. (1990)**Professional Career**

Assistant Professor, Research Institute for Humanity and Nature (RIHN) (2002)-present

Lecturer (temporary), Meiji University (2003, 2004)

COE Research Fellow, Disaster Prevention Research Institute, Kyoto University (2001)

Research Fellow, National Space Development Agency of Japan/Earth Observation Research Center (NASDA/EORC) (1995-2001)

**Higher Degrees**

Ph. D. (Science) (University of Tsukuba, 1996)

M. S. (University of Tsukuba, 1992)

**Fields of Specialization / Background**

Climatology, Atmospheric science

**Academic Society Memberships**

Meteorological Society of Japan, The American Meteorological Society, American Geophysical Union, The Japan Society of Hydrology and Water Resources, The Association of Geographers

**Major Publications****Articles**Akiyo Yatagai, Pingping Xie and Akio Kitoh 2005 "Utilization of a new gauge-based daily precipitation dataset over monsoon Asia for validation of the daily precipitation climatology simulated by the MRI/JMA 20-km-mesh AGCM" *SOLA* 1: 193-196.Akiyo Yatagai 2005 "Interannual Variation of Summertime Precipitation over the Qilian Mountains in Northwest China" *Bulletin of Glaciological Research*. (submitted)Akiyo Yatagai, Nobuo Yamazaki and Toshiyuki Kurino 2005 "GAME reanalysis and its validation. Part 1: Surface Fluxes, *Hydrological Processes*". (accepted)**Miscellaneous**

Akiyo Yatagai

2005 "Preliminary analysis of Turkish precipitation" *The Progress Report of ICCAP*, April 2005, 13-18.

Akiyo Yatagai, Fujio Kimura and Akio Kitoh

2005 "Analyses of Precipitation for Projecting Impact of the Global Warming to the Hydrological Condition around Adana, Turkey., Proceeding of the International Workshop for the Research Project on the Impact of Climate Changes on Agricultural Production System in arid Areas" *ICCAP*, March 2006, 23-30.**Activities in Academic Societies****Session Convener**

October, 2005 Fall meeting of Japanese Meteorological Society (Kobe, Japan)

**Presentation (International conferences)**

March, 2005 Akiyo Yatagai

- Validation of precipitation of 20C run over the East Asia Workshop on Analyses of Climate Model Simulations for the IPCC AR4, March 2005, 1-4.
- April, 2005 Akiyo Yatagai, Pingping Xie, Mingyue Chen  
An Analysis of Daily Precipitation over East Asia: Algorithm, Validation and Its Application for the Hydrological Budget Studies over the Yellow River.  
VIIIth IAHS Scientific Assembly, Brazil, April, 2005.
- April, 2005 Akiyo Yatagai, Atsuko Sugimori, Masayoshi Nakao  
The Isotopic Composition of Water Vapor and Concurrent Meteorological Conditions Around the Northeastern Tibetan Plateau.  
VIIIth IAHS Scientific Assembly, Brazil, April, 2005.
- April, 2005 Akiyo Yatagai, Pingping Xie, Mingyue Chen  
An Analysis of Daily Presentation over the Arid/Semi-arid Regions in Eurasia.  
General Assembly of the European Geosciences union, Vienna, April 2005.
- June, 2005 Akiyo Yatagai, Pingping Xie, Mingyue Chen  
Recent variations in the atmospheric branch of the hydrologic cycle over the Yellow River, 5<sup>th</sup> International Scientific Conference on the Global Energy and Water Cycle (GEWEX), 20-24 June 2005, Costa Mesa, USA.
- June, 2005 Akiyo Yatagai, Pingping Xie, Mingyue Chen, Tadahiro Hayasaka, Yoshihiro Fukushima, Changming Liu and Song Yang  
An Analysis of Daily Precipitation over Asian Monsoon Region: Orographic Enhancements, International Association of Meteorology and Atmospheric Sciences (IAMAS) 2005 Scientific Assembly, 2-11 Beijing, China.

#### **Presentation (Domestic conferences)**

- May, 2005 Spring meeting, Japan Meteorological Society, Tokyo  
Akiyo YATAGAI  
"Evapotranspiration computed by both atmospheric water balance method and land surface model of the four dimensional assimilation scheme"
- October, 2005 Fall meeting, Japan Meteorological Society, Kobe  
Akiyo YATAGAI and Pingping XIE  
"Validation of TRMM/PR Ver. 5 and Ver. 6 precipitation by using a rain-gauge based precipitation dataset"

#### **Research Activities**

##### **Field Research in Foreign Countries**

- April, 2005 USA (Discussion with NOAA researcher on developing daily grid precipitation dataset)
- June, 2005 USA (Yellow River Project, TUMEST)
- September, 2005 India (Field research on the water usage over Tamil Nadu and Pune, India)
- September, 2005 Israel (Investigation on the availability of Israeli rainfall data)
- November-December, 2005 Nepal and India (Investigation on the rainfall characteristics over the South Asia)
- January, 2006 Uzbekistan (Research on the precipitation and hydrological resources over the Central Asia)

##### **Other Research Activities**

- 2004-2006 The Grant-in-Aid for scientific research (No. 1674027) from JSPS "Continental scale hydrological circulation and global warming – Development of statistical downscaling methods by using satellite information"

- 2005-2006 Global Environmental Research Fund (GERF) by Ministry of Environment of Japan (FS051)  
 "Development of daily grid precipitation dataset towards evaluation of hydrological resources over the arid areas"

## HOSHIKAWA, Keisuke

Research Fellow

Born in 1975.

### Curriculum Vitae

#### Academic Career

Department of Regional Environment, Kyoto University, D. Course (2003)

Department of Regional Environment, Kyoto University, M. Course (2000)

Department of Agricultural Engineering, Kyoto University (1998)

#### Professional Career

Research Fellow, Research Institute for Humanity and Nature

#### Higher Degrees

D. Agr. (Kyoto University, 2004)

M. Agr. (Kyoto University, 2000)

#### Fields of Specialization / Background

Irrigation, Drainage and Reclamation Engineering, Regional planning

#### Academic Society Memberships

The Japanese Society of Irrigation, Drainage and Reclamation Engineering, The Japan Society of Hydrology and Water Resources

### Major Publications

Hoshikawa, Keisuke, Watanabe, Tsugihiko, Kume, Takashi and Nagano, Takanori

- 2005 "A model for assessing the performance of irrigation management systems and studying regional water balances in arid zones" *Proceedings of the 19th congress of International Commission on Irrigation and Drainage*, September 10-18, 2005, Beijing, China.

Watanabe, Tsugihiko and Hoshikawa, Keisuke

- 2005 Water-balance models for irrigated areas. In Yang, Dawen and Kusuda, Tetsuya (ed.) *Assessment models for water resource and application to the Yellow Riv.*

### Activities in Academic Societies

August 2004 "An evaluation model of impact of crop and irrigation management to water, balance in irrigated agriculture in arid zones" 2004 Western Pacific Geophysics Meeting

August 2004 "A development of a water balance model for irrigated area with considering water management and cropping systems" The Japan Society of Hydrology and Water Resources Annual Meeting (in Japanese)

August 2004 "A traditional irrigation system and paddy expansion in Northeast Thailand" The Japanese Society of Irrigation, Drainage and Reclamation Engineering Annually Meeting (in Japanese)

### Research Activities

#### Field Research in Foreign Countries

June-July, 2004 China (Research on the Environment, Irrigation and Agriculture in the Yellow River basin)

- September, 2004 Kingdom of Cambodia (Research on traditional small scale irrigation systems)  
 November, 2004 Turkey (Research on agriculture and water management in the Lower Seihan Irrigation District)  
 February, 2005 China (Research on water management in the Lower Yellow River basin)  
 June 2005 United States of America (Research on water resource management and utilization in the USA)  
 September 2005 PR China (Research on water use and agriculture in Weishan Irrigation District, Shandong Province)

**IMAMURA, Akio**

Research Fellow

Born in 1973.

**Curriculum Vitae****Academic Career**

- Graduate School of Human and Environmental Studies, Kyoto University, D. Course (2003)  
 Graduate School of Human and Environmental Studies, Kyoto University, M. Course (1999)  
 Faculty of Science, Kyoto University (1997)

**Professional Career**

- Research Fellow, Research Institute for Humanity and Nature (2004)  
 Assistant, Research Institute for Humanity and Nature (2003)

**Higher Degrees**

- D. Human and Environmental Studies (Kyoto University, 1999)  
 M. Human and Environmental Studies (Kyoto University, 2003)

**Fields of Specialization / Background**

Fungal Ecology, Plant Ecology, Bioenvironmental Science

**Academic Society Memberships**

The Mycological Society of Japan, The Ecological Society of Japan, British Mycological Society

**Major Publications****Articles**

- Imamura, A., Yumoto, T. and Yanai, J. 2006 Urease activity in soil as a factor affecting the succession of ammonia fungi. *Journal of Forest Research* 11: 131-135.

**Research Activities****Field Research in Japan**

- April-July, 2004 Shiga Prefecture (Research on myco-heterotrophic plant *Monotropastrum globosum* on Mt. Nagara)  
 April-July, 2004 Kagoshima Prefecture (Ecological research on ectomycorrhizas of *Pinus armandi* var. *amamiana*)

**Social Activities and Public Lectures**

A member of NPO, Center for Restoration of Regional Nature

April-July, 2005 Lecturer for Biology, Faculty of Science and Engineering, Ritsumeikan University

April, 2005-February, 2006 "What are living in the Botanical Garden of Faculty of Science, Kyoto University?"  
 Essay for Kyoto University CO-OP

April-December 2005 Management of public short tours in the Botanical Garden, Faculty of Science, Kyoto University and in Mt. Yoshida, Kyoto City

September, 2005-February, 2006 Lecturer for Biology, Kyoto University

**ISHII, Reiichiro**

Research Fellow

Born in 1969.

**Curriculum Vitae****Academic Career**

Graduate School of Science, Kyoto University, Dr. Sc. (1999)

Graduate School of Science, Kyoto University, M. Sc. (1996)

Faculty of Agriculture, Kyoto University, B. Sc. (1994)

**Professional Career**

AIST Postdoctoral Research Fellow (PD), National Institute of Advanced Industrial Science and Technology (2002-2004)

JSPS Postdoctoral Research Fellow (PD), Kyoto University (2001-2002)

JSPS Postdoctoral Research Fellow (PD), University of Tokyo (1999-2001)

JSPS Research Fellow (DC2), Kyoto University (1997-1999)

**Fields of Specialization / Background**

Global Environmental Studies, Theoretical Ecology

**Academic Society Memberships**

Ecological Society of Japan, Botanical Society of Japan

**Major Publications**

Ishii, Reiichiro and Higashi, Masahiko 2001 Coexistence induced by pollen-limitation in flowering plant species.  
*Proceedings of the Royal Society of London Series B*. 268: 579-586

**Oral Activities in Academic Societies**

Ishii, R., Suzuki, R., Dye, D. and Wada, E.

2006 Mar. "The effects of climate change and herbivory on vegetation patterns: a theoretical study on the possibility and the condition of catastrophic transition in desert-grassland-forest ecotones." The 53rd Annual Meeting of the Ecological Society of Japan, Niigata

Reiichiro Ishii, Hisao Nakajima, Shigeo Yachi &amp; Masahiko Higashi

2005 Aug. "Ecosystem structural transition between macro-cycle and microbial-loop dominance" INTECOL, Montreal Canada

Ishii, R., Horiguchi, F., Nakanishi, J. and Yachi, S.

2005 Mar. "To evaluate relative effect of chemicals on aquatic population among multiple anthropological threats" The 52nd Annual Meeting of the Ecological Society of Japan, Osaka

Yachi, S. and Ishii, R.

2005 Mar. "An trans-scale approach for understanding the spatial and temporal ecological patterns" The 52nd Annual Meeting of the Ecological Society of Japan, Osaka

Ishii, R.

2004 Oct. "Effects of anthropological impacts on lake ecosystem – modeling approach" in workshop on "Regime shifts in lake ecosystems – seeking an effective interdisciplinary methodology for lake ecosystem diagnosis and its management" Kyoto

Ishii, R. and Crawley, M.

2002 Mar. "Herbivory-induced coexistence of plant species" The 49th Annual Meeting of the Ecological Society of Japan, Sendai

**Proposition in Academic Societies**

- 2004 Oct. Workshop on "Regime shifts in lake ecosystems – seeking an effective interdisciplinary methodology for lake ecosystem diagnosis and its management", Kyoto
- 2004 Sept. Human-Impact Seminar #1, Otsu
- 2004 Oct. Human-Impact Seminar #2, Otsu
- 2004 Nov. Human-Impact Seminar #3, Kyoto
- 2005 Jan. Human-Impact Seminar #4, Otsu

**Research Activities****Field Research in Japan**

- 2004 May, Sept. and Nov. Lake Biwa watershed (Biological Observation)

**KATAGIRI, Shuichiro**

Research Fellow

Born in 1970.

**Curriculum Vitae****Academic Career**

- Graduate School of Science and Technology, The University of Tokyo, D. Course (1998)
- Graduate School of Science and Technology, The University of Tokyo, M. Course (1995)
- Faculty of Engineering, Waseda University (1995)

**Professional Career**

- Research fellow, Research Institute for Humanity and Nature (2004)
- COE research fellow, Center for Climate Research (2001)
- Post-doctoral researcher, National Space Development Agency of Japan (2001)

**Higher Degrees**

- Doctor (Science) (The University of Tokyo, 2001)
- Master of Science (The University of Tokyo, 1997)

**Fields of Specialization / Background**

Remote sensing

**Major Publications****Articles**

- Shuichiro KATAGIRI and Teruyuki NAKAJIMA 2004 Radiative Characteristics of Cirrus Clouds as Retrieved from AVHRR, JMSJ.

**KIMOTO, Yukitoshi**

Research Fellow

Born in 1973.

**Curriculum Vitae****Academic Career**

- Department of Botany, Graduate School of Science, Kyoto University, D. Course (2004)
- Division of Human and Environmental Studies, Graduate School of Human and Environmental Studies, Kyoto University, M. Course (2001)

Department of Environmental Studies, Faculty of Integrated Human Studies, Kyoto University (1999)

#### Professional Career

Research Fellow, Research Institute for Humanity and Nature (2004)

#### Higher Degrees

Ph. D. (Science) (Kyoto University, 2004)

M. Human and Environment (Kyoto University, 2001)

#### Fields of Specialization / Background

Plant Systematics, Plant Morphology, Plant Anatomy

#### Academic Society Memberships

The Japan Society for Plant Systematics, The Botanical Society of Japan, The Botanical Society of America

#### Major Publications

##### Articles

Kimoto, Y., N. Utami and H. Tobe 2006 "Embryology of *Eusideroxylon* (Cryptocaryeae, Lauraceae): character evolution in the family" *Botanical Journal of the Linnean Society* 150: 187-201.

#### Activities in Academic Societies

##### Oral Presentation

Kimoto, Y. and M. Nakagawa

September 2005 "Embryology of *Triglochin maritima* (Juncaginaceae, Alismatales): characteristics and re-evaluation of character-state evolution" (The 69th Annual Meeting of the Botanical Society of Japan) Toyama University, Japan (in Japanese)

##### Poster Presentation

Kimoto, Y., M. Nakagawa, A. Naiki and T. Takaso

March 2006 "Morphological analysis of a cryptic dioecious shrub, *Mussaenda parviflora* (Rubiaceae)" (The 5th Annual Meetings of Japanese Society for Plant Systematics) Ryukyu University, Japan (in Japanese)

## KUME, Takashi

Research Fellow

Born in 1973.

#### Curriculum Vitae

##### Academic Career

Graduate School of Agriculture, Kyoto University, D. Course (2004)

Graduate School of Agriculture, Gifu University, M. Course (2000)

Faculty of Agriculture, Gifu University (1998)

##### Professional Career

Research Fellow, Research Institute for Humanity and Nature (2004)

##### Higher Degrees

D. Agr. (Kyoto University, 2004)

M. Agr. (Gifu University, 2000)

##### Fields of Specialization / Background

Irrigation and Drainage, Soil Hydrology

### Academic Society Memberships

The Japanese Society of Irrigation, Drainage and Reclamation Engineering

The Japanese Association for Arid Land Studies

### Major Publications

Takashi KUME, Takanori NAGANO, Tsugihiko WATANABE, Toru MITSUNO and CHAOLUNBAGEN

2005 EFFECT OF LEACHING IRRIGATION ON THE SPATIAL DISTRIBUTION OF SOIL SALINITY IN THE HETAO IRRIGATION DISTRICT IN CHINA, ICID, Beijing, China (CD-ROM)

Keisuke HOSHIKAWA, Tsugihiko WATANABE, Takashi KUME and Takanori NAGANO

2005 A MODEL FOR ASSESSING THE PERFORMANCE OF IRRIGATION MANAGEMENT SYSTEMS AND STUDYING REGIONAL WATER BALANCES IN ARID ZONES, ICID, Beijing, China (CD-ROM)

Takashi KUME, Erhan AKÇA, Takanori NAGANO, Sevgi DONMA, Musa SERDEM, Selim KAPUR and Tsugihiko WATANABE

2006 The problem of Soil Salinity in the Fourth Stage Area in LSIP –An Analysis of Spatial Variability of Soil Salinity–: WATER AND LAND MANAGEMENT FOR FUSTAINABLE IRRIGATED AGRIDULTURE, Çukurova University Press (CD-ROM)

Takanori NAGANO, Sevgi DONMA, Keisuke HOSHIKAWA, Takashi KUME, Chieko UMETSU, Selim KAPUR, Erhan AKÇA, Sermet ÖNDER, Suha BERBEROĞLU, Bülent OZEKICI, Tsugihiko WATANABE

2006 An Integrated Approach for Assessment of Irrigation System in Lower Seyhan Plain: WATER AND LAND MANAGEMENT FOR FUSTAINABLE IRRIGATED AGRIDULTURE, Çukurova University Press (CD-ROM)

Hoshikawa, Keisuke, Kume, Takashi, Nagano, Takanori and Watanabe, Tsugihiko

2006 Development of a model for assessing the performance of irrigation management systems and evaluation of impact of climate changes on the Lower Seyhan Irrigation Project, WATER AND LAND MANAGEMENT FOR FUSTAINABLE IRRIGATED AGRIDULTURE, Çukurova University Press (CD-ROM)

### Activities in Academic Societies

Hiroki Oue, Toshiyuki Tamoto, Takashi Kume, Takeo Akae, Keiji Takase

2005 Estimation of distribution of evapotranspiration in the Hetao irrigation district using SPAC model, Meeting on environmental engineering in Agriculture, Kanazawa City

Takashi KUME, Takanori Nagano, Sevgi Donma, Selim Kapur, Keisuke Hoshikawa, Tsugihiko Watanabe

2005 Results of monitoring of soil salinity distribution in Adana, Turkey, JSIDRE, Gifu City

Keisuke Hoshikawa, Takashi KUME, Takanori Nagano, Tsugihiko Watanabe

2005 Development and application of IMPAM, JSIDRE, Gifu City

Nagano, Takanori, Hoshikawa, Keisuke, Kume, Takashi, Watanabe, Tsugihiko, Donma, Sevgi

2005 Water Use Efficiency of the Selected Tertiary Canals in the Lower Seyhan Irrigation Project Area, Trukey, JSIDRE, Gifu City

### Research Activities

#### Field Research in Foreign Countries

June, 2005 Turkey (Impact of Climate Change on Agricultural Production System in the Arid Areas)

Sep., 2005 People of Rep. of China (Impact of Climate Change on Agricultural Production System in the Arid Areas)

Nov.-Dec., 2004 Turkey (Impact of Climate Change on Agricultural Production System in the Arid Areas)

**MATSUOKA, Masayuki**

Research Fellow

Born in 1970.

**Curriculum Vitae****Academic Career**

Graduate School of Science and Technology, Chiba University, D. Course (1998)

Graduate School of Science and Technology, Chiba University, M. Course (1995)

Faculty of Engineering, Chiba University (1993)

**Professional Career**

Research fellow, Research Institute for Humanity and Nature (2003)

Post-doctoral researcher, National Space Development Agency of Japan (2000)

Post-doctoral researcher, Japan Science and Technology Agency (1998)

**Higher Degrees**

Doctor (Engineering) (Chiba University, 1998)

Master of Engineering (Chiba University, 1995)

**Fields of Specialization / Background**

Remote sensing

**Academic Society Memberships**

Japan Society of Photogrammetry and Remote Sensing, Remote Sensing Society of Japan

**Major Publications****Articles**

Masayuki Matsuoka, Yoshihiro Fukushima, Tadahiro Hayasaka and Yoshiaki Honda

2006 "Land cover in East Asia classified using Terra MODIS and DMSP OLS products" *International Journal of Remote Sensing* (in press).**Activities in Academic Societies**

2005.10.17 "Change Detection of the Agricultural Area in Large Irrigation Districts in the Yellow River Basin, China using AVHRR and Landsat data", (The 9th International Symposium on Physical Measurements and Signature in Remote Sensing) Oral presentation, Beijing, China.

2005.11.26 "Combinational Utilization of Landsat and AVHRR for the Change Detection of Agricultural Area in Quingtongxia Irrigation District", (Japan Society of Photogrammetry and Remote Sensing) Oral presentation, Kumamoto, Japan.

2005.11.7 "Analysis of the Land Cover Change in Large Irrigated Districts in the Yellow River Basin using Time Series of Landsat and AVHRR", (26th Asian Conference on Remote Sensing) Oral presentation, Hanoi, Vietnam.

2005.12.13 "Land Cover Monitoring over Yellow River Basin in China using Remote Sensing", (11th CERES International Symposium on Remote Sensing) Oral presentation, Chiba, Japan.

2006.3.9 "The Water Balance Modeling of the Yellow River for the Water Resource Management", (International Symposium on Management Systems for Disaster Prevention) Oral presentation, Kochi, Japan.

**Research Activities****Field Research in Foreign Countries**

June, 2005 USA (Hydrological research)

**MORIYA, Kazuki**

Research Fellow

Born in 1974.

**Curriculum Vitae****Academic Career**

Department of Oriental History, Graduate School of Letters, Kyoto University, D. Course (2002)

Department of Oriental History, Graduate School of Letters, Kyoto University, M. Course (1999)

Department of Oriental History, Faculty of Letters, Kyoto University (1997)

**Professional Career**

Research Fellow, Research Institute for Human and Nature (2005)

Research Assistant, Institute for Research in Humanities, Kyoto University (2003)

**Higher Degree**

Litt. D. (Kyoto University, 2005)

**Fields of Specialization / Background**

Oriental History

**Academic Society Memberships**

The Toyoshi-Kenkyu-Kai (The Society of Oriental Researches), The Shigaku Kenkyukai (The Society of Historical Research), Rakuohoku Shigaku Kai (The Rakuohoku Society of Historical Studies)

**Major Publications****Articles**

Moriya, Kazuki

2001 "On the Xiang-bang in Qin of the Warring States Period", *Toyoshi-Kenkyu* 60-1: 1-29. (in Japanese)2004 "Statues of Salary Ranks Excavated at Zhangjiashan", *Rakuohoku Shigaku* No. 6: 22-49. (in Japanese)**Research Activities****Field Research in Foreign Countries**

August, 2005 China (Research on the documents in Neimenggu and Gansu Districts)

October, 2005 (Research on the ruins in Neimengu District)

**MURATA, Fumie**

Research Fellow

Born in 1976.

**Curriculum Vitae****Academic Career**

Graduate School of Science and Technology, Kobe University, D. Course (2003)

Graduate School of Science and Technology, Kobe University, M. Course (2000)

Faculty of Human Development, Kobe University (1998)

**Professional Career**

Research fellow, Research Institute for Humanity and Nature (2004)

Research fellow, Disaster Prevention Research Institute, Kyoto University (2003)

**Higher Degrees**

D. Sc. (Kobe University, 2003)

M. Sc. (Kobe University, 2000)

**Fields of Specialization / Background**

Meteorology

**Academic Society Memberships**

Meteorological Society of Japan

**Major Publications****Articles**

Sakurai, N., F. Murata, M. D. Yamanaka, S. Mori, J.-I. Hamada, H. Hashiguchi, Y. I. Tauhid, T. Sribimawati  
2005 "Diurnal cycle of cloud system migration over Sumatera Island", *J. Meteor. Soc. Japan*, 83: 835-850.

**Activities in Academic Societies**

February, 2006 Murata, F., T. Terao, T. Hayashi, H. Asada, J. Matsumoto, "Relationship between atmospheric condition at Dhaka, Bangladesh, and rainfall at Cherrapunjee", International Conference on Mesoscale Processes in Atmosphere, Ocean and Environmental Systems (IMPA), Delhi.

**Research Activities****Field Research in Foreign Countries**

July, 2005	Bangladesh (Rain gauge data collection and maintenance)
August, 2005	India (Research meeting)
November-December, 2005	Indonesia (Observation)
March, 2006	Bangladesh (Installation of rain gauges)

**NAKAGAWA, Michiko**

JSPS Research Fellow

Born in 1975.

**Curriculum Vitae****Academic Career**

Doctor Course of Center for Ecological Research, Kyoto University (2003)  
Master Course of Center for Ecological Research, Kyoto University (2000)  
Faculty of Agriculture, Kyoto University (1998)

**Professional Career**

JSPS Research Fellow PD (2004)  
JSPS Research Fellow (2001)

**Higher Degrees**

Ph. D. (Kyoto University, 2003)  
M. Sc. (Kyoto University, 2000)

**Fields of Specialization / Background**

Forest ecology

**Academic Society Memberships**

Japanese Ecological Association

**Major Publications****Published Papers**

Nakagawa, M., Takeuchi, Y., Kenta, T. and Nakashizuka, T. 2005 Pre-dispersal seed predation by insects vs.

vertebrates in six dipterocarp species in Sarawak, Malaysia. *Biotropica* 37: 388-395.

Ichie, T., Kenta, T., Nakagawa, M., Sato, K. and Nakashizuka, T. 2005 Resource allocation to reproductive organs during masting in the tropical emergent tree, *Dipterocarpus tempehes*. *Journal of Tropical Ecology*, 21: 237-241.

Nakagawa, M., Itioka, T., Momose, K. and Nakashizuka, T. 2005 Insect predators of dipterocarp seeds. in D. W. Roubik, S. Sakai, A. Hamid (Eds.) *Pollination Ecology and the Rainforest Canopy. Sarawak Studies*. Springer. pp. 145-157.

### **Presentation**

Nakagawa, M., Miguchi, H., Sato, K. and Nakashizuka, T.

2005 Arboreal and terrestrial mammals at Lambir Hills National Park. International symposium on forest ecology, hydrometeorology and forest ecosystem rehabilitation in Sarawak, Malaysia, November 2005.

Nakagawa, M., Miguchi, H. and Nakashizuka, T.

2006 The effects of forest uses on small mammal communities in Sarawak, Malaysia. 53<sup>th</sup> Meeting of Japanese Ecological Association. March, 2006.

### **Research Activities**

Sarawak, Malaysia: Biodiversity and canopy ecology in a tropical forest (May-Aug., Dec., 2005)

## **NISHIMOTO, Futoshi**

Research Fellow

Born in 1972.

### **Curriculum Vitae**

#### **Academic Career**

Faculty of Letters, National University of Laos (1999-2000)

Doctoral Course, Graduate School of Social Sciences, Hitotsubashi University (1998)

M. A., Graduate School of Social Sciences, Hitotsubashi University (1998)

Faculty of Social Sciences, Hitotsubashi University (1996)

#### **Professional Career**

Research Fellow, Research Institute for Humanity and Nature (2005)

Part-time Lecturer, Shoin University (2005)

Part-time Lecturer, Jikei Nursing School (2005)

Part-time Lecturer, Shibaura Institute of Technology (2004)

#### **Higher Degree**

M. A. (Graduate School of Social Sciences, Hitotsubashi University, 1998)

#### **Fields of Specialization / Background**

Social Anthropology, Ethnography of mainland Southeast Asia

#### **Academic Society Memberships**

The Japanese Society of Cultural Anthropology

### **Major Publications**

#### **Articles**

Nishimoto, Futoshi 2005 Fieldwork and Anthropology: How does an anthropologist conduct her/his research? In Okuno, Katsumi and Hanabuchi Keiya (eds.) *Lessons of Cultural Anthropology: Starting from Fieldwork*, pp.

1-24. Tokyo: Gakuyo-Shobo (in Japanese)

Nishimoto, Futoshi 2005 "They don't use mosquito nets': Notes on the sociological myth of Public Health in Southern Laos". In Okuno, Katsumi (ed.) *Reconsideration on the globalizing modern medicine and ethno-medicine* (Final Report to the Grants-in-Aid for Scientific Research, Japan Society for the Promotion Science), pp. 59-64. (in Japanese)

Nishimoto, Futoshi 2005 "Research Themes in the Modern Lao History: Preliminary Survey to the Lao Eco-Chronicle". *A Trans-disciplinary Study on the Regional Eco-History in Tropical Monsoon Asia: 1945-2005*, Annual Report 2004, Research Institute for Humanity and Nature: 590-592. (in Japanese)

#### **Collaboration**

Institute for Cultural Reseach (Somphavanh Sayavong, Thanongsonh Sibounheuang, Yoshino Akira, Nishimoto Futoshi)

2005 *Everyday Tools of Sekong Peoples*. Vientiane: Institute for Cultural Reseach (in Lao)

#### **Activities in Academic Societies**

Nishimoto, Futoshi

2005 Anti-Imperial Medicine: From the Perspectives of the Ethnic Minorities in the Lao-Viet Border. The 39th Annual Meeting of Japanese Society of Cultural Anthropology, May 21, 2005, Hokkaido University.

Nishimoto, Futoshi

2005 Lecture: Being the Ethnic Minority in Lao Society. The 4th Seminar on the Foreign Affairs, Shibaura Institute of Technology, July 1, 2005.

#### **Research Activities**

##### **Field Research in Foreign Countries**

August, 2005 Laos (on the History of Japan's Development Aid to Laos)

March, 2006 Laos (on the Natural Resource Management in a Vientiane Suburb)

#### **Works in Ooutside Organizations**

Member of the Joint Research Project, National Museum of Ethnology

## **NISHIMURA, Yuichiro**

Research Fellow

Born in 1970.

#### **Curriculum Vitae**

##### **Academic Career**

Department of Geography, Faculty of Letters, Nagoya University, D. Course (2003)

Department of Geography, Faculty of Letters, Nagoya University, M. Course (1997)

##### **Professional Career**

Research Fellow, Research Institute for Humanity and Nature (2003)

Post-doctoral fellow, Disaster Prevention Research Center, Aichi Institute of Technology (2005)

##### **Higher Degrees**

Ph. D. Geography (Nagoya University, 2003)

M. Geography (Nagoya University, 1997)

##### **Fields of Specialization / Background**

Socio-Economic Geography, Time Geography

**Academic Society Memberships**

The Association of Japanese Geographers, The Human Geographical Society of Japan, The Japan Association of Economic Geographers, Association of American Geographers

**Major Publications****Articles**

Yuichiro Nishimura and Kohei Okamoto 2005 Time-geographical Analysis on the Daily Lives of Village People in Laos. *RIHN project 4-2 annual report 2005*: 405-410.

Akiko Ikeguchi, Haruo Saito, Yoshinao Adachi, Kenichi Nonaka and Yuichiro Nishimura 2005 Marketplace networks and distribution of natural resources in Vientiane City and Xythani District, Laos. *RIHN project 4-2 annual report 2005*: 359-369.

**Activities in Academic Societies**

- April, 2005 Time-geographical Analysis on the Daily Lives of Village People in Laos. The Association of American Geographers 2005 Annual Meeting. Denver, Colorado.
- April, 2005 Session Organizer: Humanity and Nature in Vientiane Plain, Laos. The Association of American Geographers 2005 Annual Meeting, Denver, Colorado.
- September, 2005 Daily living time-space in Xaithani district, Laos. The Association of Japanese Geographers 2005 Annual Meeting, Ibaragi Univ., Mito. (in Japanese)
- November, 2005 Industrialization and daily living space. The Association of human Geographers 2005 Annual Meeting, Kyushu Univ., Fukuoka. (in Japanese)
- March, 2006 Time-spatial allocation survey using GPS and GIS in Dongkhuaai village in Xaythani District. International workshop in NAFRI, Laos.
- March, 2006 The development of time-spatial allocation survey using GPS and GIS in Vientiane suburban village, Laos. The Association of Japanese Geographers 2005 Annual Meeting, Saitama Univ., Saitama. (in Japanese)

**Research Activities****Field Research in Japan**

- November, 2005 Niigata Pref. (Research about the corporate damages and reconstruction of the daily life by Chuetsu earthquake)

**Field Research in Foreign Countries**

- August, 2005 Laos (Eco-history and time-geographical study on wetland)
- February, 2006 Laos (Eco-history and time-geographical study on wetland)

**SATO, Yoshinobu**

Researcher (RR)

Born in 1973.

**Curriculum Vitae****Academic Career**

- Graduate School of Bioresource and Bioenvironmental Sciences, Kyushu University, D. Course (2003)
- Graduate School of Bioresource and Bioenvironmental Sciences, Kyushu University, M. Course (2000)
- Faculty of Agriculture, Kyushu University (1998)

**Professional Career**

Research fellow, Research Institute for Humanity and Nature (2004)

Research fellow, Institute of Tropical Agriculture, Kyushu University (2003)

JSPS Research fellow, Kyushu University (2000)

**Higher Degrees**

D. Agr. (Kyushu University, 2003)

M. Agr. (Kyushu University, 2000)

**Fields of Specialization / Background**

Forest Hydrology

**Academic Society Memberships**

The Japan Society of Forestry, The Japan Society of Hydrology and Water Resources

**Major Publications****Articles**

Sato Yoshinobu, Matsuoka Masayuki, Watanabe Tsugihiko, Fukushima Yoshihiro and Ma Xieyao

2005 Long-term runoff formation and runoff control system in upstream area of the Yellow river. *In Proceedings of 2005 Annual Conference of Japan Society of Hydrology and Water Resources, Japan*, pp152-153 (in Japanese).

Ma Xieyao, Fukushima Yoshihiro, Yasunari Tetsuzo, Sato Yoshinobu, Matsuoka Masayuki, Wu Xianfeng and Zheng Hongxing

2005 Hydrological simulation in Tangnaihai and Lushi watersheds. *YRIS: Yellow River Studies News Letter* Vol. 5 1-4.

Matsuoka Masayuki, Ma MA, Sato Yoshinobu and Fukushima Yoshihiro

2006 The water balance of the Yellow River for the water resource management. *Proceedings of the International Symposium on Management Systems for Disaster Prevention, March 2006, Kochi, Japan*.

**Activities in Academic Societies**

August, 2005 Long-term runoff formation and runoff control system in upstream area of the Yellow River (Tsukuba University) [in Japanese]

**Research Activities****Field Research in Foreign Countries**

June, 2005 USA (TUWREST: Trans-USA Water Management and Environment Study Tour)

September, 2005 China (Hydrological research of loess plateau in the Yellow River basin)

November, 2005 China (Investigation for video taking using airplane for the lower reaches of the Yellow River)

**TAKAHASHI, Atsuhiko**

Research Fellow

Born in 1971.

**Curriculum Vitae****Academic Career**

Department of Earth and Planetary Science, Graduate School of Science, Nagoya University, D. Course (2003)

Department of Earth and Planetary Science, Graduate School of Science, Nagoya University, M. Course (1999)

Department of Geophysics, Faculty of Science, Tohoku University (1997)

**Professional Career**

Research Fellow, Research Institute for Humanity and Nature (2003)

**Higher Degrees**

D. Sc. (Nagoya University, 2004)

M. Sc. (Nagoya University, 1999)

**Fields of Specialization / Background**

Meteorology, Soil Physics

**Academic Society Memberships**

The Japan Society of Hydrology and Water Resources

**Major Publications****Articles**

Takahashi, Atsuhiko, Tetsuya Hiyama, Atsushi Higuchi, Masanori Nishikawa, Wei Li and Yoshihiro Fukushima  
2005 Koudo-kougen-nanbu ni-okeru kongou-sou no hattatsu-katei no sūchi-modeling ni-kansuru kousatsu,  
*Proceedings of YRiS Joint Meeting*: 88-89. (in Japanese)

**Activities in Academic Societies**

December, 2005 Koudo-kougen-nanbu ni-okeru kongou-sou no hattatsu-katei no sūchi-modeling ni-kansuru  
kousatsu (Kouga Goudou Kenkyu-kai, Fukuoka). (in Japanese)

**Research Activities****Field Research in Foreign Countries**

April, 2005	China (Observations of the atmospheric boundary layer in Loess plateau)
May, 2005	China (Observations of the atmospheric boundary layer in Loess plateau)
June-July, 2005	China (Observations of the atmospheric boundary layer in Loess plateau)
August-September, 2005	China (Observations of the atmospheric boundary layer in Loess plateau)
October-November, 2005	China (Observations of the atmospheric boundary layer in Loess plateau)
January, 2006	China (Observations of the atmospheric boundary layer in Loess plateau)
March, 2006	China (Observations of the atmospheric boundary layer in Loess plateau)

**TANNO, Ken-ichi**

Senior Researcher

Born in 1971.

**Curriculum Vitae****Academic Career**

Faculty of Agriculture and Forestry, University of Tsukuba, D. Course (1995-1999)

Faculty of Bioresources, University of Tsukuba (1991-1994)

**Professional Career**

Senior Researcher, Research Institute for Humanity and Nature (2006-)

Researcher (part-time), Research Institute for Humanity and Nature (2005)

Post-Doctoral Fellow (for Research Abroad), Japan Society for Promotion of Science & Visiting Researcher, Centre National de la Recherche Scientifique, France (2003-2004)

Post-Doctoral Fellow (PD), Japan Society for Promotion of Science (2000-2002)

**Higher Degrees**

D. Sc. (University of Tsukuba, 2000.3)

M. Sc. (University of Tsukuba, 1997.3)

**Fields of Specialization / Background**

Plant Genetics, Archaeobotany

**Academic Society Memberships**

Japan Society of Breeding

**Major Publications****Articles**

Tanno, K. & Willcox, G. 2006 How fast was wild wheat domesticated? *Science* 311: 1886.

Tanno, K. & Takeda, K. 2004 On the origin of six-rowed barley with brittle rachis, *agriocrithon* (*Hordeum vulgare* ssp. *vulgare* f. *agriocrithon* (Åberg) Bowd.), based on a DNA marker closely linked to the *vrs1* (six-row gene) locus. *Theoretical and Applied Genetics* 110: 145-150.

Saisho, D., Tanno, K., Chono, M., Honda, I., Kitano, H. & Takeda, K. 2004 Spontaneous brassinolide-insensitive barley mutants 'uzu' adapted to east Asia. *Breeding Science* 54: 409-416.

Tsuneki, A., Tanno, K., Anezaki, T., Arimura, M. & Maeda, O. 2004 Early PPNB between the Euphrates and Cyprus: the excavations at Tell Ain el-Kerkh, northwest Syria. *Orient Express* 2004/4: 93-95.

Komatsuda, T. & Tanno, K. 2004 Comparative high resolution map of the six-rowed spike locus 1 (*vrs1*) in several populations of barley, *Hordeum vulgare* L. *Hereditas* 141: 68-73.

Saisho, D., Tanno, K., Chono, M., Honda, I., Kitano, H. & Takeda, K. 2004 Identification of barley semi-dwarf gene "uzu". *Barley Genetics* 9: 220-225.

Tanno, K., Taketa, S., Takeda, K. & Komatsuda, T. 2002 A DNA marker closely linked to the *vrs1* locus (row type gene) indicates multiple origins of six-rowed cultivated barley (*Hordeum vulgare* L.). *Theoretical and Applied Genetics* 104: 54-60.

Tsuneki, A., Hydar, J., Miyake, Y., Maeda, O., Odaka, T., Tanno, K. & Hasegawa, A. 2001 Fourth preliminary report of the excavations at Tell el-Kerkh, Northwestern Syria. *Bulletin of the Ancient Orient Museum* 21: 1-30.

**Activities in Academic Societies****Social Activities and Public Lectures**

2004. 4. "Plant Remains from Archaeological Sites" (Memorial symposium for opening a branch school of Aleppo University in Dayr Az Zawr)

**Activities in Academic Societies**

13th Symposium of the International Work Group for Palaeoethnobotany, 16-22 May 2004, Girona, Spain.  
"Identification of PPNB plant remains from Tell el-Kerkh, northwest Syria"

**Awards**

Best Paper in 2004, Japan Society of Breeding ("Breeding Science")

**Research Activities****Field Research in Foreign Countries**

2006.3. Jordan and Syria (Vegetation study)

2005.8-9. Syria (Archaeological excavations)

2004.10. Syria (Archaeological excavations)

2004.3-4. Syria (Vegetation study)

- 2003.10-11. Syria (Archaeological excavations)  
2002.8-9. Syria (Archaeological excavations)  
2001.8. Syria (Archaeological excavations)

**TATENO, Ryunosuke**

Research Fellow

Born in 1973.

**Curriculum Vitae****Academic Career**

Graduate School of Agriculture, Kyoto University, D. Course (2003)

Graduate School of Agriculture, Kyoto University, M. Course (1998)

Faculty of Agriculture, Kyoto University (1996)

**Professional Career**

Research Fellow, Research Institute for Humanity and Nature (2004)

Technical Assistant, Field Science Education and Research Center, Kyoto University (2003)

**Higher Degrees**

D. Agr. (Kyoto University, 2003)

M. Agr. (Kyoto University, 1998)

**Fields of Specialization / Background**

Forest Ecology

**Academic Society Memberships**

Ecological Society of Japan, Japanese Forestry Society, The Japanese Society of Forest Environment

**Major Publications****Articles**

Tateno, R., N. Osada, M. Terai, N. Tokuchi and H. Takeda 2005 "Inorganic nitrogen source utilization by *Fagus crenata* on different soil types" *Trees* 19: 477-481.

Tateno, R., T. Aikawa and H. Takeda 2005 "Leaf-fall phenology along a topography-mediated environmental gradient in a cool-temperate deciduous broad-leaved forest in Japan" *Journal of Forest Research* 10: 269-274.

Hishi, T., R. Tateno and H. Takeda 2006 "Distribution of heterorhizic individuals within a fine root system architecture of *Chamaecyparis obtusa* in different soil conditions" *Ecological Research* 21: 754-758.

Tateno, R. and T. Yoshioka 2006 "An attempt to clarify the relationship between environmental quality and people's environmental consciousness of a watershed" *Shinrin Kagaku (Forest Sciences)* 47: 70-72.

**TERASHIMA, Motoki**

Research Fellow

Born in 1975.

**Curriculum Vitae****Academic Career**

Graduate School of Environmental Earth Science, Hokkaido University, D. Course (2004)

Graduate School of Environmental Earth Science, Hokkaido University, M. Course (2000)

Faculty of Science, Toyama University (1998)

### Professional Career

Research Fellow, Research Institute for Humanity and Nature (2005)

Research Fellow, Japan Society for the Promotion of Science (2003)

### Higher Degrees

D. Environ. Earth Sci. (Hokkaido University, 2004)

M. Environ. Earth Sci. (Hokkaido University, 2000)

### Fields of Specialization / Background

Environmental Chemistry, Analytical Chemistry

### Academic Society Memberships

The Chemical Society of Japan, Division of Colloid and Surface Chemistry, The Japan Society for Analytical Chemistry, Japan Society on Water Environment, Japanese Humic Substances Society, International Humic Substances Society

### Major Publications

- Issei Kasahara, Motoki Terashima, Tomoko Mukaiyama and Shigeru Taguchi 1998 "Synthesis of silica-gel immobilized xanthurenic acid and its application to the preconcentration/determination of trace metals in natural water samples" *Bunseki Kagaku* 47, pp. 1061-1067.
- Motoki Terashima 2001 "Structure characteristics of natural organic matters and its Influence on the partition of polycyclic aromatic hydrocarbons" *Kagaku To Kougyou* 54, p. 1396.
- Motoki Terashima, Masami Fukushima and Shunitz Tanaka 2002 Effects of pH on the surface activity of humic acid: Aspects on adsorption behavior at air-water interface, *Proceedings of the international symposium on land management and biodiversity in southeast Asia*, September 17-20, pp. 289-293.
- Yustiawati, M. Suhaemi Syawal, Motoki Terashima and Shunitz Tanaka 2002 Speciation analysis of mercury in river water in west Java-Indonesia, *Proceedings of the international symposium on land management and biodiversity in southeast Asia*, September 17-20, pp. 439-442.
- Yustiawati, M. Suhaemi Syawal, Motoki Terashima, Tomoyuki Kimura and Shunitz Tanaka 2003 Speciation Analysis of Mercury in River Water and Sediment in West-Java and Kalimantan, Indonesia", *Annual report for environmental conservation and land use management of wetland ecosystem in southeast Asia*, March, pp. 210-218.
- Motoki Terashima, Shunitz Tanaka and Masami Fukushima 2003 Distribution behavior of pyrene to adsorbed humic acid on kaolin. *Journal of Environmental Quality* 32, pp. 591-598.
- Shunitz Tanaka, Masayuki Kawai, Yosuke Nakata, Motoki Terashima, Hideki Kuramitz and Masami Fukushima 2003 Degradation of bisphenol A by photo-Fenton processes. *Toxicological and Environmental Chemistry* 85, pp. 95-102.
- Motoki Terashima, Shunitz Tanaka and Masami Fukushima 2004 Control of coagulation property of humic acid by the modification with bio-related compound, *Humic substances and soil and water environment*, Proceedings of XII International Meeting of International Humic Substances Society, pp. 380-382.
- Takamitsu Shibata, Masami Fukushima, Motoki Terashima and Shunitz Tanaka 2004 Effects of humic acid on the light-induced degradation of Chlorophenols. *Humic Substances Research* 1: 11-17.
- Motoki Terashima, Masami Fukushima and Shunitz Tanaka 2004 Influence of pH on the surface activity of humic acid: micelle-like aggregate formation and interfacial adsorption. *Colloids and Surfaces A: Physicochemical Engineering Aspects* 247: 77-83.
- Motoki Terashima, Masami Fukushima and Shunitz Tanaka 2004 Evaluation of solubilizing ability of humic aggregate basing on the phase-separation model. *Chemosphere* 57: 439-445.
- Masami Fukushima, Motoki Terashima, Hikaru Yabuta, Fumiko Tanaka and Kenji Tatsumi 2005 Evaluation of

Interactions between humic substances and hydrophobic organic pollutants (Review), *Humic Substances Research* 2: 9-26.

#### **Presentation in International Conference**

- 1) ○ Motoki Terashima, Masami Fukushima and Shunitz Tanaka, "Effects of pH on the surface activity of humic acid: Aspects on adsorption behavior at air-water interface", Proceedings of the international symposium on land management and biodiversity in southeast Asia, September 17-20, 2002, Bali, Indonesia.
- 2) ○ Yustiawati, M. Suhaemi Syawal, Motoki Terashima and Shunitz Tanaka, "Speciation analysis of mercury in river water in west Java-Indonesia", Proceedings of the international symposium on land management and biodiversity in southeast Asia, September 17-20, 2002, Bali, Indonesia.
- 3) ○ Motoki Terashima, Shunitz Tanaka and Masami Fukushima, "Control of coagulation property of humic acid by the modification with bio-related compound", XII International Meeting of International Humic Substances Society: humic substances and soil and water environment, July 2004, Brazil.

#### **CHENG, Zhi (Kicengge)**

————— JSPS Research Fellow

Born in 1968.

#### **Curriculum Vitae**

##### **Academic Career**

Department of Oriental History, Graduat School of Letters, Kyoto University, D. Course (2003)

Department of Oriental History, Graduat School of Letters, Kyoto University, M. Course (2000)

Department of Chinese language literature, Ili Normal University, China (1990)

##### **Professional Career**

Research Fellow, Faculty of Letters, Kyoto University (2004)

JSPS Research Fellow, Research Institute for Humanity and Nature (2005)

##### **Higher Degrees**

Litt. D. (Kyoto University, 2004)

Litt. M. (Kyoto University, 2000)

##### **Fields of Specialization / Background**

Oriental History, History of Qing Empire, Manchu Philology

##### **Academic Society Memberships**

Tōyōshi Kenkyūkai (The Society of Oriental), Shigaku Kenkyūkai (The Society of Historical Research), Manzokushi Kenkyūkai (The Japanese Association for Manchu and Qing studies)

#### **Major Publications**

##### **Books**

Furumatu, Takashi, Cheng, Zhi and Sugiyama, masaaki

2006 Ryo bunka Ryoneishō Chōsa Houkoku Shō, Kyōto Daigaku Daigakuin Bungaku Kenkyūka 21seiki COE Puroguramu, Faculty of Letters, Kyōto university, The 21st Century COE Program, [in Japanese]

Furumatu, Takashi, Cheng, Zhi and Sugiyama, masaaki

2005 Ryo bunka Keiryō ittai Chōsa Houkoku Shō, Kyōto Daigaku Daigakuin Bungaku Kenkyūka 21seiki COE Puroguramu, Faculty of Letters, Kyōto university, The 21st Century COE Program, [in Japanese]

##### **Articles**

Cheng, Zhi (Kicengge)

- 2006 Study of the "Manchu Dailiyoo i kooli" The dailiyoo i kooli ningguci; singdzung, Ryo bunka Ryoneishō Chōsa Houkoku Shō, Kyōto Daigaku Daigakuin Bungaku Kenkyūka 21seiki COE Puroguramu, Faculty of Letters, Kyōto university, The 21st Century COE Program, pp. 61-101. [in Japanese]
- 2006 "On the Origin of the Eight-Banner *Niru* and the Classification of the *Niru*" *The Tōyōshi-Kenkyū* (The Journal of Oriental Researches) Vol. LXV, No. 1. pp. 1-34. [in Japanese]
- 2005 Climate and Irrigation systems of the Heihe River Basin in the Qin Dynasty, *Project Report on an Oasis-region*, Vol. 5 No. 2. 2005, pp. 141-145. (Kato, yuzo and Kicengge)
- 2005 The Manchurian Version of the Three History, Ryo bunka Keiryō ittai Chōsa Houkoku Shō, Kyōto Daigaku Daigakuin Bungaku Kenkyūka 21seiki COE Puroguramu, Faculty of Letters, Kyōto university, The 21st Century COE Program, pp. 133-152. [in Japanese]
- 2002 "Six annotated translation of Early Ch'ing Manchu documents" *Disquisitions on the Past & Present*, No. 7. pp. 81-102. [in Chinese]
- 2001 The Formation of the *Niru* of the Oroncon under the Qing Dynasty and an Aspect of *Butha* Society, *The Tōyōshi-Kenkyū* (The Journal of Oriental Researches) Vol. LX, No. 3. pp. 1-38. [in Japanese]

## HYODO, Fujio

Research Fellow

Born in 1974.

### Curriculum Vitae

#### Academic Career

Graduate School of Science, Kyoto University, D. Course (2002)

Graduate School of Science, Kyoto University, M. Course (1999)

Faculty of Agriculture, Kyoto University (1997)

#### Professional Career

Technical Assistant, Research Institute for Humanity and Nature (2002)

JSPS Postdoctoral Research Fellow, Research Institute for Humanity and Nature (2003, 2004, 2005)

#### Higher Degrees

D. Sc. (Kyoto University, 2002)

M. Sc. (Kyoto University, 1999)

#### Fields of Specialization / Background

Animal Ecology, Soil Ecology

#### Academic Society Memberships

The Ecological Society of Japan, The Japanese Society of Soil Zoology

### Major Publications

#### Articles

Nakano, T., Tayasu, I., Wada, E., Igeta, A., Hyodo, F. and Miura, Y.

2005 Sulfur and strontium isotope geochemistry of tributary rivers of Lake Biwa: implications for human impact on the decadal change of lake water quality. *Science of the Total Environment*. 345: 1-12.

Ushimaru, A. and Hyodo, F.

2005 Why do bilaterally symmetrical flowers orient vertically? Flower orientation influences pollinator landing behavior. *Evolutionary Ecology Research* 7: 151-160.

**Activities in Academic Societies**

- March, 2006 Hyodo, F., Shimizu, Y., Sugawara, M., Minamoto, T., Ushimaru, A., Igeta, A., Wada, E. and Shimizu, I. What do bees tell about the environment- based on stable nitrogen isotope analysis. The 53rd annual meeting of the Ecological Society of Japan. Niigata, Japan.

**Research Activities****Field Research in Japan**

- May, 2005 Kamigamo Experimental Forest Station of Kyoto University (Ecological studies on soil invertebrates)

**Field Research in Foreign Countries**

- June, 2005 Malaysia (Ecological studies on soil invertebrates)  
September, 2004 Malaysia (Ecological studies on soil invertebrates)

**KUROKAWA, Hiroko**

JSPS Research Fellow

Born in 1976.

**Curriculum Vitae****Academic Career**

- Department of Botany, Faculty of Science, Kyoto University, D. Sc. (2004)  
Department of Botany, Faculty of Science, Kyoto University, M. Sc. (2001)  
Department of Environmental Science, Faculty of Science, Yokohama City University (1999)

**Professional Career**

- Research Fellow of the Japan Society for the Promotion of Science (DC2) (2003)  
Research Fellow of the Japan Society for the Promotion of Science (PD) (2004)  
Research Fellow of the Japan Society for the Promotion of Science (PD) (2005~)

**Higher Degrees**

- D. Sc. (Kyoto University, 2004)  
M. Sc. (Kyoto University, 2001)

**Fields of Specialization / Background**

Plant Ecology

**Academic Society Memberships**

Japanese Society of Ecology, the Ecological Society of America

**Major Publications****Articles**

- Kurokawa, H., Yoshida, T., Namamura, T., Lai, J. & Nakashizuka, T.  
2003 The age of tropical rain forest canopy species, Borneo Ironwood (*Eusideroxylon zwageri*), determined by  $^{14}\text{C}$  dating. *Journal of Tropical Ecology* 19: 1-7.  
Kurokawa, H., Kitahashi, Y., Koike, T. & Nakashizuka, T.  
2004 Allocation to defense or growth in dipterocarp forest seedlings in Borneo. *Oecologia* 140: 261-270.

**Activities in Academic Societies****Poster Presentation**

The Association for Tropical Biology and Conservation annual meeting, 24-28 July 2005, Uberlândia, Brazil

The Ecological Society of America annual meeting, 7-12 August 2005, Montreal, Canada

### Research Activities

#### Field Research in Foreign Countries

May 2005 Lambir Hills National Park, Malaysia (survey of leaf turn over rate of tree species)

October 2005 ~ March 2006 Landcare Research, New Zealand (survey of soil microbial community)

## NAGANO, Takanori

JSPS Research Fellow

Born in 1970.

### Curriculum Vitae

#### Academic Career

Division of Science and Technology on Regional Environment, Graduate School of Agriculture, Kyoto University, D. Ag. (2002)

Division of Science and Technology on Regional Environment, Graduate School of Agriculture, Kyoto University, M. Ag. (1997)

Department of Agricultural Engineering, Faculty of Agriculture, Kyoto University (1995)

#### Professional Career

Research Fellow, Research Institute for Humanity and Nature (2001)

#### Higher Degrees

Dr. Ag. (Kyoto University, 2002)

M. Ag. (Kyoto University, 1997)

#### Fields of Specialization / Background

Irrigation and Drainage, Soil Hydrology

#### Academic Society Memberships

The Japanese Society of Irrigation, Drainage and Reclamation Engineering, The Japanese Association for Arid Land Studies, Japan Association for African Studies

### Major Publications

Fujinawa, K., Masuoka, K., Nagano, T., Watanabe, T.

2005 Kaiyojoshō ga zerome-torutitaini oyobosu eikyō wo yosoku surutameno ensuinnyuukaisekimoderu (Numerical simulation modeling for salt-water intrusion in predicting impacts of sea-level rise on areas below sea-level. *Journals of Japan Society of Civil Engineers* 790: 7-35, 35-48.)

### Activities in Academic Societies

Nagano, T., Hoshikawa, K., Donma, S., Kume, T. and Watanabe, T.

2005 Assessment of adaptation capacity of a large irrigation district towards social and climatic changes: A case study of Lower Seyhan Basin in southern Turkey. Proceedings of World Water and Environmental Resources Congress 2005, Environment and Water Resources Institute of American Society of Civil Engineers, May 13-19.

Hoshikawa, K., Kume, T., Watanabe, T. and Nagano, T.

2005 A model for assessing the performance of irrigation management systems and studying regional water balances in arid zones. Proc. of 19th congress of International Commission on Irrigation and Drainage, Beijing, China.

Kume, T., Nagano, T., Watanabe, T., Mitsuno, T. and Chaolunbagen

2005 Effect of leaching irrigation on the spatial distribution of soil salinity in the Hetao Irrigation district in China.  
Proc. of 19th congress of International Commission on Irrigation and Drainage, Beijing, China.

Umetsu, C., Donma, S., Nagano, T. and Coskun, Z.

2005 The Efficient Management of Water User Associations: A Case of Lower Seyhan Irrigation Project in Turkey, presented at the 6th Open Meeting of the Human Dimensions of Global Environmental Change Research Community, 9-13 October 2005, University of Bonn, Bonn, Germany. Theme 1. Adaptive Management and Resilience; Session 1.4 Local Responses to Environmental Stress and Risks.

Nagano, T., Donma, S., Hoshikawa, K., Kume, T. and Watanabe, T.

2005 Water Use Efficiency of the Selected Tertiary Canals in the Lower Seyhan Irrigation Project Area, Turkey  
Annual meeting of The Japanese Society of Irrigation, Drainage and Reclamation Engineering.

### **Awards**

Scientific Paper Encouragement Award, The Japanese Society of Irrigation, Drainage and Reclamation Engineering (2004)

### **Research Activities**

#### **Field Research in Foreign Countries**

June, 2005 Turkey (Impact of Climate Changes on Agricultural Production System in the Arid Areas)

Feb., 2006 Turkey (Impact of Climate Changes on Agricultural Production System in the Arid Areas)

## **SATAKE, Shinsuke**

———— JSPS Research Fellow

Born in 1976.

### **Curriculum Vitae**

#### **Academic Career**

Department of Earth System Science and Technology, Interdisciplinary Graduate School of Engineering Sciences, Kyusyu University, D. Course (2005)

Department of Earth System Science and Technology, Interdisciplinary Graduate School of Engineering Sciences, Kyusyu University, M. Course (2002)

Department of Physics, Faculty of Sciences and Technology, Tokyo University of Science (2000)

#### **Professional Career**

Postdoctoral Research Fellow of the Japan Society for the Promotion of Science (2005)

#### **Higher Degrees**

D. Sc. (Kyusyu University, 2005)

M. Sc. (Kyusyu University, 2002)

#### **Fields of Specialization / Background**

Meteorology, Atmospheric physics

#### **Academic Society Memberships**

Meteorological Society of Japan

### **Major Publications**

#### **Articles**

Uno, I., Z. Wang, M. Chiba, Y. S. Chun, S. L. Gong, Y. Hara, E. Jung, S. S. Lee, M. Liu, M. Mikami, S. Music, S.

- Nickovic, S. Satake, Y. Shao, Z. Song, N. Sugimoto, T. Tanaka and D. Westphal  
 2005 DUST MODEL INTERCOMPARISON (DMIP) STUDY OVER ASIA – Overview, *J. Geophys. Res.*, Vol. 111, No. D12, D12213, 10.1029/2005JD006575, 2005.
- Y. Hara, S. Satake, I. Uno and T. Takemura  
 2004 Inter-annual variation of 'Kosa' Simulated by a Regional-Scale Dust Transport Model, *Tenki*, Vol(7), No. 2, pp. 719-728, 2004 (In Japanese).
- S. Satake and I. Uno  
 2004 Numerical Analysis of Asian Aerosol Transport during the ACE-Asia Observation Simulated with a Regional Chemical Transport Model, *J. Aerosol. Res.*, Vol. 19, No. 2, pp. 134-139, 2004 (in Japanese).
- S. Satake and I. Uno  
 2004 Numerical analysis of dust layers over Japan: their origins and 3-dimensional transport structures, *Kyusyu University Engineering Science Reports*, Vol. 26, No. 1, pp. 27-34, 2004 (in Japanese).
- S. Satake, I. Uno and T. Takemura  
 2004 Numerical Study for the Radiative Impacts of Asian Tropospheric Aerosols, *Kyusyu University Engineering Science Reports*, Vol. 26, No. 3, pp. 341-349, 2004 (in Japanese).
- Y. Hara, S. Satake and I. Uno  
 2003 Inter-annual variation of 'Kosa' Simulated by a Regional-Scale Dust Transport Model, *Global Environmental Research*, Vol(7), No. 2, pp. 215-224, 2003 (in Japanese).
- Uno, I., G. R. Carmichael, D. G. Streets, Y. Tang, J. J. Yienger, S. Satake, Z. Wang, Jung-Hun Woo, S. Guttikunda, M. Uematsu, K. Matsumoto, H. Tanimoto, K. Yoshioka and T. Iida  
 2003 Regional Chemical Weather Forecasting System CFORS, Model Descriptions and Analysis of Surface Observations at Japanese Island Stations During the ACE-Asia Experiment, *J. Geophys. Res.*, 108(D23), 8668, doi:10.1029/2002JD002845, 2003.
- Uno, I., Gregory R. Carmichael, David Streets, Shinsuke Satake, Toshihiko Takemura, Jung-Hun Woo, Mitsuo Uematsu and Sachio Ohta  
 2003 Analysis of Surface Black Carbon Distributions during ACE Asia using a Regional Scale Aerosol Model, *J. Geophys. Res.*, 108(D23), 8636, doi:10.1029/2002JD003252, 2003.
- Satake, S., I. Uno, T. Takemura, G. R. Carmichael, D. Streets, N. Sugimoto, A. Shimizu and M. Uematsu  
 2003 Characteristics of Asian aerosols transport simulated with the regional scale chemical transport modeling during the ACE-Asia period, *J. Geophys. Res.*, doi:10.1029/2003JD003997, 2004.
- Uno, I., S. Satake, G. R. Carmichael, Y. Tang, Z. Wang, T. Takemura, N. Sugimoto, A. Shimizu, T. Murayama, T. Cahill, S. Cliff, M. Uematsu, S. Ohta, P. Quinn and T. Bates  
 2003 Numerical Study of Asian Dust Transport during the Springtime of 2001 simulated with the CFORS model, *J. Geophys. Res.*, 2003.

#### Activities in Academic Societies

- S. Satake, I. Uno and T. Hayasaka  
 2005 Numerical analysis of dust layers over Japan; their origins and 3-dimensional transport structures., 1st ABC-EAREX2005 Data Analysis Workshop, Coop-inn Kyoto, Kyoto, Japan, 30, June, 2005
- S. Satake, I. Uno and T. Hayasaka  
 2005 Numerical analysis for three-dimensional transport structures of dust layer over Japan, American Geophysical Union 2005 fall meeting, Moscone Convention Center, San Francisco, California, USA, 5 December, 2005
- S. Satake, I. Uno, T. Takemura and S. Emori  
 2004 Numerical study for the radiative impacts of Asian dust and anthropogenic aerosols on the downwind countries, International Symposium on Sand and Dust Storm, China Meteorological Administration, Beijing,

China, 14 September, 2004

S. Satake, I. Uno, T. Takemura

2003 Numerical analysis of the 3-dimensional transport structure for Asian dust during the ACE-Asia intensive observation period, The second International Workshop on Sandstorms and Associated Dustfall, Nagoya Port Building, Minato-ku, Nagoya, Japan, 14 November, 2003

S. Satake, I. Uno, T. Takemura, G. R. Carmichael, D. Streets, N. Sugimoto, A. Shimizu and M. Uematsu

2002 Asian aerosol transport simulated with regional scale chemical transport model CFORS during ACE-Asia period, American Geophysical Union 2002 fall meeting, Moscone Convention Center, San Francisco, California, USA, 9 December, 2002

## **YAMASHITA, Satoshi**

Research Fellow

Born in 1977.

### **Curriculum Vitae**

#### **Academic Career**

Graduate School of Bioagriculture, Nagoya University, D. Course (2004)

Graduate School of Bioagriculture, Nagoya University, M. Course (2001)

Faculty of Agriculture, Nagoya University (1999)

#### **Professional Career**

Research Fellow, RIHN (2005)

JSPS Research Fellow PD (2004)

JSPS Research Fellow DC2 (2003)

#### **Higher Degrees**

D. Agr. (Nagoya University, 2004)

M. Agr. (Nagoya University, 2001)

#### **Fields of Specialization / Background**

Forest protection, Community ecology

#### **Academic Society Memberships**

Japanese Forest Society, Ecological Society of Japan, Mycological Society of Japan, Entomological Society of Japan

### **Major Publications**

#### **Articles**

Satoshi Yamashita, Takuya Inoue, Sim Mee Hang and Tohru Nakashizuka 2005 Community structure of macrofungi in Lambir Hills National Park, Sarawak. *Proceedings of International Symposium on Forest Ecology, Hydrometeorology and Forest Ecosystem Rehabilitation in Sarawak*: 174-178.

Satoshi Yamashita and Naoki Hijii 2004 Relationships between seasonal appearance and longevity of fruitbodies of Agaricales and meteorological factors in a Japanese red pine forest. *Journal of Forest Research* 9: 165-171.

Satoshi Yamashita and Naoki Hijii 2003 Effects of mushroom size on the structure of a mycophagous arthropod community: comparison between infracommunities with different types of resource utilization. *Ecological Research* 18: 131-143.

#### **Presentations**

Yamashita, S., Momose, K., Nakagawa, M., Nakashizuka, T.

2006, March Effect of forest managements on diversity of conks in Sarawak, Malaysia. 57th Meeting of

Ecological Society of Japan, Niigata.

Yamashita, S., Inoue, T., Sim, M. H. and Nakashizuka, T.

2005, November Community structure of macrofungi in Lambir Hills National Park, Sarawak. International Symposium on Forest Ecology, Hydrometeorology and Forest Ecosystem Rehabilitation in Sarawak. Kuching, Sarawak, Malaysia

Yamashita, S. and Hijii, N.

2005, July Loss of lamellae does not significantly reduce *Collybia* sp. spore count. MSA/MSJ joint Meeting. Hilo, Hawaii, U.S.A.

Yamashita, S. and Hijii, N.

2004, August Resource partitioning in a mycophagous insect community. -seasonal niche and food types-. 51th Meeting of Ecological Society of Japan, Kushiro.

### Research Activities

2005 Community structure of Aphyllophorales in Sarawak, Malaysia



Budget 2005

Expenditures (Fiscal Year 2005)

Category	Amount (Yen in thousands)
Personnel Expenses	591,523
Non-Personnel Expenses	2,185,770
Total	2,777,393

External Sources of Funding (Fiscal Year 2005)

Category	Amount (Yen in thousands)
Fund for Promotion of Academic and Industrial Collaboration	85,018
Grants-in-Aid for Scientific Research	96,430
Donation for Research	6,598

## Research Fields of Project Members

Project	The number of project members		
	Natural Science	Humanities and Social Science	Multidisciplinary
1-1FR Impacts of climate changes on agricultural production system in arid areas	82	18	3
1-2FR Recent rapid change of water circulation in the Yellow River and its effects on environment	25	3	18
1-3FS Vulnerability and resilience of social-ecological systems	5	2	1
2-1FR Emissions of greenhouse gases and aerosols, and human activities in Eastern Asia	40	3	9
2-2FR Sustainability and biodiversity assessment on forest utilization options	108	20	7
2-3FR Human activities in Northeastern Asia and their impact to the biological productivity in North Pacific Ocean	34	8	7
2-4PR Human activities on urban subsurface environments	25	12	15
2-5PR Erosion of genetic diversity as a social, ecological and environmental problem	32	20	7
2-6FS Diagnosis of chain interactions between humans and nature using environmental traceability method	39	0	0
3-1FR Multi-disciplinary research for understanding interactions between humans and nature in the Lake Biwa-Yodo River watershed	31	12	5
3-2FR Interactions between natural environment and human social systems in subtropical islands	45	11	10
3-3FS Environmental change and the Indus civilization	5	24	2
4-1FR Historical evolution of adaptability in an oasis region to water resource changes	52	39	18
4-2FR A trans-disciplinary study on the regional eco-history in tropical monsoon Asia: 1945-2005	37	29	54
4-4FS Neolithisation and modernisation: landscape history on East Asian inland seas	3	11	3
4-5FS Historical interactions between the hybrid societies of ethnic groups and the natural environment in a semi-arid region in central Eurasia	11	12	3
5-1FR Global water cycle variation and the current world water resources issues and their perspectives	66	10	27
5-2FR Interactions between the environmental quality of a watershed and the environmental consciousness: with reference to environmental changes caused by the human use of land and water resources	20	6	4
5-3PR A new cultural and historical exploration into human-nature relationships in the Japanese Archipelago	44	24	11
5-4FS Effects of environmental change on interactions between pathogens and humans	20	4	5
Total	725	267	209

(P5-4FS: As of October, 2005) As of May 18, 2005

## Research background of project members

(Natural Sciences) Micro climatology, Marine ecology, Meteorology, Soil hydrology, Biology, Climatology, Soil Science, Forest biology, Regional Planning, etc.
(Humanities and Social Sciences) Developmental economics, Social anthropology, Agricultural economics, Farm sociology
(Multidisciplinary) Climatology, Irrigation and drainage engineering
(Natural Sciences) Satellite climatology, Marine science, Marine biology, Marine physics, Environmental geology, Climatology, Water circulation, Hydrology, Hydrological Climatology, Hydrological geology, Geology
(Humanities and Social Sciences) Material flow analysis, Developmental economics, Water resources, etc.
(Multidisciplinary) Marine biology, Water quality environment, Irrigation, Biological Hydrology, Regional Planning, Ground water use, Geology, Agricultural Hydrology, Agricultural biology, etc.
(Natural Sciences) Agronomy, Mathematical ecology, Atmosphere physics, Soil science, Remote sensing
(Humanities and Social Sciences) Development economics, Environmental and resource economics
(Multidisciplinary) Environmental geography
(Natural Sciences) Satellite meteorology, Meteorology, Atmospheric chemistry, Atmosphere sciences, Atmospheric environment, Atmospheric physics
(Humanities and Social Sciences) Economics, Population
(Multidisciplinary) Remote Sensing, Image information Science, Social engineering, Electrical engineering
(Natural Sciences) Fungi ecology, Entomological ecology, Systematic entomology, Population genetics, Phylogenetic botany, Plant ecology, Plant physiology, Plant taxonomy, Forest management, Forest hydrology, Forest ecology, Forest biology, Mathematical biology, Animal ecology
(Humanities and Social Sciences) Environmental economics, Environmental sociology, Anthropology, Regional studies, Forest economics
(Multidisciplinary) Environmental and information studies, Forest policy
(Natural Sciences) Chemical oceanography, Physical oceanography, Climate change, Forest ecology, Hydrology, Biogeochemistry, Glaciology, Glacier biology, Glacier physics, Geochemical, Soil & Water Conservation, Aerosol, marine biology, Remote sensing
(Humanities and Social Sciences) Economics in far eastern Russia, Politics, Social sciences
(Multidisciplinary) Forest environment science, Geography, Land use changes
(Natural Sciences) Satellite geodesy, Volcanology, Meteorology, Hydrology, Geodesic engineering, Groundwater hydrology, Fundamental system analyses of the earth, Geochemical earth system and global change, Earthquake
(Humanities and Social Sciences) Environmental sociology, Environmental ecology, Economics of development, Historical geography
(Multidisciplinary) Environmental dynamics, Environment conservation, Regional environmental studies, Geography
(Natural Sciences) Genecology, Breeding science, Archaeobotany, Plant genetics, Plant breeding, Botany, Cytogenetics, Anthropology, Ecology, Glacial biology, Glaciology
(Humanities and Social Sciences) Environmental policy, Linguistics, Archaeology, Social science, Prehistoric anthropology
(Multidisciplinary) Environmental Archaeology, Archaeo-anthropology, Plant genetic resources, Ethnobotany
(Natural Sciences) Cosmochemistry, Marine Biology, Environmental Education, Petrology, Acid-rain Studies, Resource Archaeology, Resource Geology, Forest Hydrology, Hydrology, Biology, Atmospheric Physics, Soil Chemistry, Soil Biology, Organic Geochemistry
(Humanities and Social Sciences)
(Multidisciplinary)
(Natural Sciences) Coast oceanic physics, Applied ecology, Environmental engineering, Environmental physiology, Fish ecology, Plant ecology, Aquatic microbial ecology, Mathematical biology, Ecology, Biology, Animal ecology, Isotope ecology, Isotope biogeochemistry, Limnology, Inland water ecology, Watershed ecology, Watershed conservation ecology, Watershed diagnosis study
(Humanities and Social Sciences) Environmental economics, Environmental sociology, Environmental psychology, Sociology, Social psychology, Cultural anthropology
(Multidisciplinary) Environmental system, Information geography, Mathematical ecology, Watershed diagnosis study
(Natural Sciences) Hydrology, Ecology in forests and coral reef area, Entomology, Ornithology, Ethology, Pollination ecology
(Humanities and Social Sciences) Environmental sociology, Island economics, History
(Multidisciplinary) Hydrology, Ecology, Sociology, Forest resources
(Natural Sciences) Ecology, Glacier biology, Agriculture
(Humanities and Social Sciences) Indian studies, Linguistics, Archaeology, History of Chinese philosophy, Cultural anthropology
(Multidisciplinary) Plant genetics
(Natural Sciences) Aerosols, Remote sensing, Satellite meteorology, Meteorology, Climatology, Forest ecology, Water circulation, Hydrological modeling, Hydrology, Ecology, Glaciology, Glaciology, Glacioclimatology, Glacial-biology, Hydrospheric-atmospheric science, Geochemistry, Geochemistry, 土壤水文, Isotope chemistry, Dendrochronology, Irrigation drainage, Organic chemistry, etc.
(Humanities and Social Sciences) History of Mongolian empire, Archaeology, Philosophical history, Sociology, Social history, Political science, Xixia history, Chinese history, Chinese philosophy, East Asian History, Chinese legal history, Cultural anthropology, Manchurian history, Ethnology
(Multidisciplinary) Environmental archaeology, Environmental resourcesm Social environment, Forest biology, History of global environmenta
(Natural Sciences) Genetics, Marine plants ecology, Ecological science, Physical anthropology, Plant nutrition, Forest ecology, Human ecology, Ecology, Phycology, Biological diversity and resources, Geography, Tropical medicine, Tropical hydrology, Tropical soil science, Tropical agriculture, Tropical health, Agricultural material syce system, Ethno-soil science, Geriatrics
(Humanities and Social Sciences) Medical anthropology, Sociology, Cultural anthropology, Anthropology, Archaeology, Geography, Folklore, 民族学, Ethnology, History, Historical anthropology, Historical geology
(Multidisciplinary) Nutritional epidemiology, Developmental economics, School health, Environmental sociology, Fish ecology, Conservative ecology, Architectural anthropology, International school health, Natural resources, Information culture, Plant genetics, Forest policy, Forest sociology, Forest ecology, Forest ecology use, Human ecology, Fisheries economics, Population, Geology, Tropical medicine, Tropical public health, Tropical resources, Agriculture, Natural resources management
(Natural Sciences) Ichthyology, Resource geology, Isotope geology, Environmental engineering, Landscape engineering, Physical geography, Urban planning
(Humanities and Social Sciences) Environmental archaeology, Environmental history, History of trade, Sociolinguistics, Prehistoric anthropology, Human geography, Chinese archaeology, Chinese history, Korean archaeology, Cultural anthropology, Folklore, Ethnology, Art history, Literature
(Multidisciplinary) Linguistic informatics, Theory of information culture, Zooarchaeology
(Natural Sciences) Climate Change, Sedimentology, Remote sensing, Dendrochronology, Forest ecology, Hydrology, Glacial biology, Synthesis of natural proxies and historical documents, Glaciology, Isotope hydrology, Water circulation
(Humanities and Social Sciences) Politics, Ethnology, Nomadism, Cultural Anthropology, Chinese history, Archaeology, International relations on water resources, Oriental studies, Persian documents, Manchurian documents
(Multidisciplinary) Cultural Anthropology, Environmental Archaeology, Geography
(Natural Sciences) Remote sensing, Environmental remote sensing, Environmental conservation, Climatology, Meteorology, Image information science, International relation, Informatics, Forest hydrology, Water resource engineering, Hydrological remote sensing, Hydrology, Hydrological meteorology, Hydrological informatics, Hydrological ecology, Geochemistry, Geophysics, Urban engineering, Agricultural engineering
(Humanities and Social Sciences) Environmental policy, International education, Human geology, Cultural anthropology, Law
(Multidisciplinary) River environment, River conservation, International environment, International information, International agricultural economics, Social infrastructure, Forest management, Forest hydrology, Water resources, Hydrology, etc.
(Natural Sciences) Plant ecology, Forest hydrology, Forest soil science, Bio-geochemistry, Limnology
(Humanities and Social Sciences) Environmental economics, Environmental sociology, Social psychology
(Multidisciplinary) Ecology, Social statistics, Infomatics
(Natural Sciences) Animal ecology, Animal systematics, Historical entomology, Historical botany, Isotope ecology, Forest ecology, Molecular ecology, Molecular systematics, Natural History, Physical anthropology, Plant ecology, Plant systematics, Population genetics, Reproductive botany, Theoretical ecology
(Humanities and Social Sciences) Archeology, Cultural anthropology, Ethnology, Folklore, Historical geography, Japanese history, Linguistic ethnology, Philology, Philosophy
(Multidisciplinary) Conservation ecology, Crop Science, Human geography, Prehistoric anthropology, Palaeo environment
(Natural Sciences) Microbial Ecology, Aquatic Ecosystem Ecology, Microbiology, Molecular Biology, Informatics, Conservation Ecology, Stable Isotopic Analysis, Stable Isotope Ecology, Genetical Engineering, Fish Ecology, Lake Management, Environmental Conservation, Nano-Technological Measurements, Population Health Analysis, GIS Analysis, Mathematical Ecology, Environmental Toxicology
(Humanities and Social Sciences) Economics, Creation Food Culture, Food Resource Analysis
(Multidisciplinary) Environmental Economics, Health Informatics, Epidemics, Ecology

## Number of Project Members

○ Analysis Sheet by organizations

(P5-4FS: As of October, 2005) As of May 18, 2005

Title of the project	Sub total	RIHN	University / College			Inter-University Research Institute	Public Institution	Private Institution	Post doctoral /Graduate student	Others	Overseas institution
			National	Public	Private						
1-1FR Impacts of climate changes on agricultural production system in arid areas	103	7	20	3	1	1	1	0	8	1	61
1-2FR Recent rapid change of water circulation in the Yellow River and its effects on environment	46	9	18	0	0	0	2	0	5	0	12
1-3FS Vulnerability and resilience of social-ecological systems	8	4	3	0	0	0	1	0	0	0	0
2-1FR Emissions of greenhouse gases and aerosols, and human activities in Eastern Asia	52	6	20	1	4	4	12	2	1	1	1
2-2FR Sustainability and biodiversity assessment on forest utilization options	135	8	23	1	9	0	31	1	54	3	5
2-3FR Human activities in Northeastern Asia and their impact to the biological productivity in North Pacific Ocean	49	6	30	3	3	1	2	2	0	2	0
2-4PR Human activities on urban subsurface environments	52	4	17	1	3	1	4	0	11	2	9
2-5PR Erosion of genetic diversity as a social, ecological and environmental problem	59	8	13	3	4	5	13	3	1	2	7
2-6FS Diagnosis of chain interactions between humans and nature using environmental traceability method	39	3	30	0	2	0	4	0	0	0	0
3-1FR Multi-disciplinary research for understanding interactions between humans and nature in the Lake Biwa-Yodo River watershed	48	9	15	3	7	0	5	2	5	2	0
3-2FR Interactions between natural environment and human social systems in subtropical islands	66	5	32	3	10	0	3	0	9	2	2
3-3FS Environmental change and the Indus civilization	31	6	16	1	0	2	0	0	0	4	2
4-1FR Historical evolution of adaptability in an oasis region to water resource changes	109	10	24	2	14	4	3	0	19	2	31
4-2FR A trans-disciplinary study on the regional eco-history in tropical monsoon Asia: 1945-2005	120	9	35	5	12	5	10	1	35	6	2
4-4FS Neolithisation and modernisation: landscape history on East Asian inland seas	17	4	1	1	3	1	1	0	2	1	3
4-5FS Historical interactions between the hybrid societies of ethnic groups and the natural environment in a semi-arid region in central Eurasia	26	7	9	2	3	1	1	0	3	0	0
5-1FR Global water cycle variation and the current world water resources issues and their perspectives	103	3	38	0	6	0	10	0	15	1	30
5-2FR Interactions between the environmental quality of a watershed and the environmental consciousness: with reference to environmental changes caused by the human use of land and water resources	30	4	14	2	2	0	5	3	0	0	0
5-3PR A new cultural and historical exploration into human-nature relationships in the Japanese Archipelago	79	5	25	10	9	5	7	2	10	2	4
5-4FS Effects of environmental change on interactions between pathogens and humans	29	5	15	0	3	0	2	0	0	1	3
Total	1201	122	398	41	95	30	117	16	178	32	172

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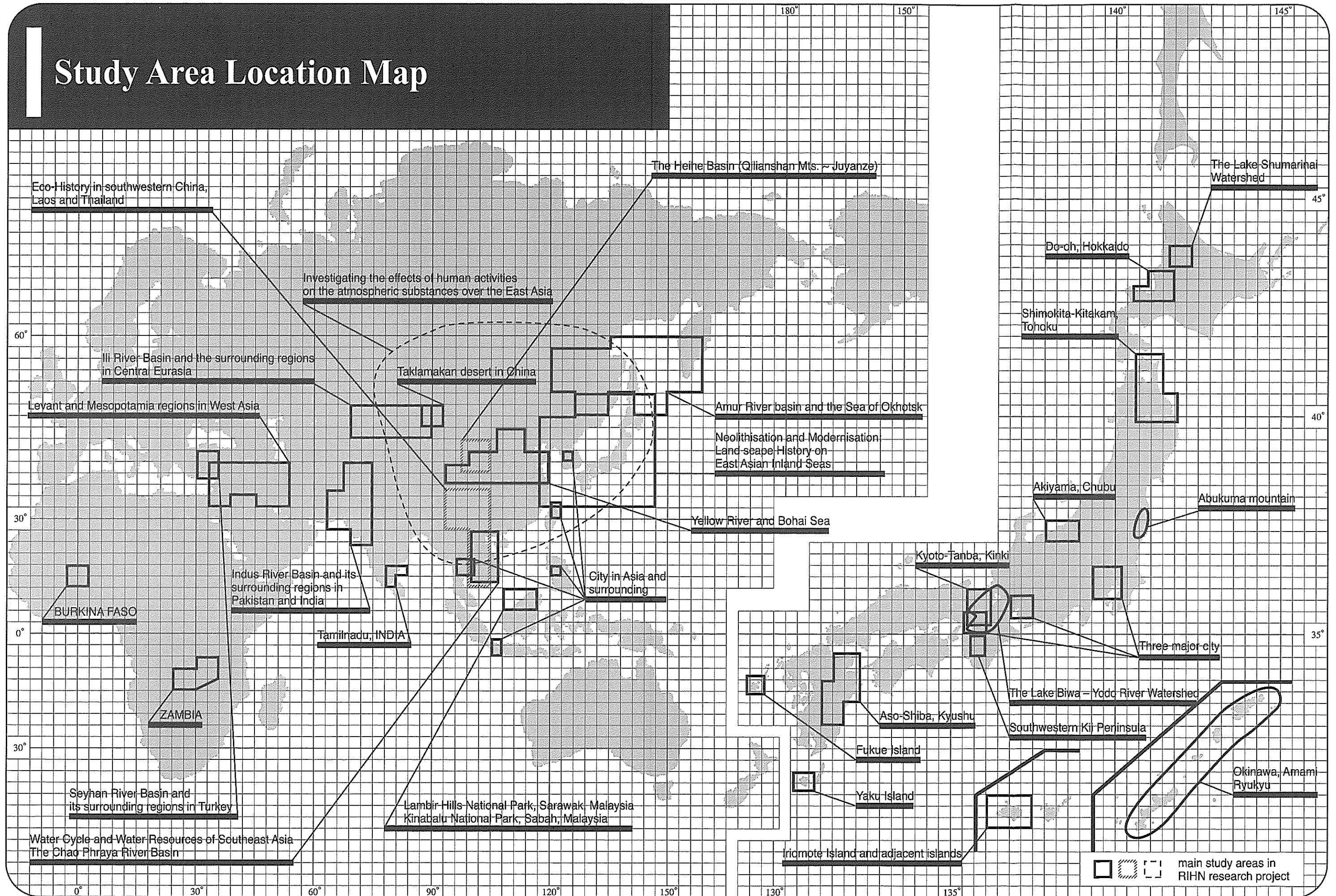
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# Study Area Location Map









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