

IMPLEMENTATION PROJECTS OF TURKISH SIDE INVOLVED IN ICCAP SUPPORTED BY *TURKISH SCIENTIFIC AND TECHNICAL RESEARCH COUNCIL (TUBITAK)*

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Introduction

Climate through its major quantities (temperature, precipitation, wind, evaporation, etc.), influences all physical and biological expression of the earth. It affects the type of soils being formed at the earth's surface, determines the geographical distribution of vegetation and all human activities as well agriculture, tourism, transportation (Kapur, 2002).

Weather and climate are different terms. Often, these terms are used in improper way. Generally, human being has a perception of some of the climatic variables such as temperature, precipitation, wind, and etc. derived by the every day experience of meteorological environment. Weather is the description of the meteorological environment of a given place at the fixed or short time. Consequently, meteorology is the science studying the formation and characterization of the aerial events such as cloudiness, heat, precipitations, fog, dew, humidity, tornados, thunderstorms, hot waves, fluxes of mass, energy and momentum. It is also called the science of weather. Climate is also the description of the meteorological environment of a given place. Implicitly, the time scale is sufficiently long so that climate assumes a character of "steadiness". Generally, 30 years is the minimum period of time to consider. From this, climatology is the science studying the formation and characterization of the mean and variability of the meteorological environment of a given place.

The recent concern about climate change focuses its attention on the man kind's enhancement of the "change" induced by the atmospheric pollution (mainly greenhouse gases), that "changes" its composition, which in turns "changes" the energy balance of the earth and the consequent resulting climate toward an expected "global warming".

In the last 100 years or so, the Earth' s surface and lowest part of the atmosphere have warmed up on average by about 0.5 °C (Jones et al., 1999). During this period, the amount of greenhouse gases in the atmosphere has increased, largely as a result of the burning of fossil fuels for energy and transportation, and land use changes. In the last 20 years, awareness has grown that these two phenomena are associated with each other. That is to say, global warming is probably due to the man-made increases in greenhouse-gas emissions (Hansen et al., 1998). The warming trend is expected to continue in the near future (about 2.5 °C within the next 100 years) and there is a strong concern on the impact that such change will have on the earth ecosystems, human life and activities, in the different regions of the planet. Agriculture, industry, human health and settlements, environment, and land and water resources are all undergoing the effect of the expected climate change, and a large amount of studies are being carried out to investigate the possible consequences and measures to counteract the undesired outcomes (IPCC, 2001).

The effect of global climatic change on environment especially on agriculture is very important for Turkey. Agriculture is accepted as the major activity on the social and economic life of Turkish people. Furthermore, a big part of Anatolia is defined as arid zone where most of the limited precipitation occurs during the winter season when a lot of crop is not grown.

TUBITAK Activities for ICCAP

Since a long time, Turkish Science and Technical Research Council (TÜBİTAK as Turkish acronym) supports scientific works on the environmental problems such as soil, water and atmospheric pollutions, global warming, climatic change, and etc. As specific objective, some research projects were supported by TÜBİTAK to investigate the impacts of climatic change and adaptation of agricultural production systems on arid region of Anatolia such as Seyhan and Ceyhan River basins. In these projects, land and water management as a special reference, and relationship between natural system and social life were considered. These projects are placed in ICCAP and will be carried out with Japan scientists.

For this purpose, TUBITAK has constituted a network for scientists from different universities to be worked at this project (Table 1). The network has been divided into five major topics namely climate prediction; hydrology and water resources, plant productivity, irrigation and drainage, and agro-economics. Some major topics such

as plant productivity and agro-economics consist two minor divisions, for instance, on-farm dynamics, micrometeorology, salinisation, vegetation-classification in the first; and plant productivity, farm economy and ag-sector modeling in the second, respectively. In this formation, 7 universities in different regions of Turkey namely Çukurova (Adana), Mustafa Kemal (Hatay), Selçuk (Konya), Ankara, Hacettepe and Middle East Technical University (Ankara), Ege (İzmir) and 29 scientists along with research assistants and workers are employed.

Table 1. The Network of Turkish Implementation Projects

INST.	ADVIS.	COORDINAT.	MAJOR TOPICS	MINOR DIVISION
TUBITAK	Prof. Dr. Cemal SAYDAM (TUBITAK- Univ. of	Pro. Dr. Riza KANBER (Univ. of Çukurova)	Climate Prediction (Saydam; Haktanır, Kapur)	
			Hydrol. & W. Resour. (Tülücü, Çetin, Topaloğlu)	
			Plant Productivity (Aydın, Koç, Anaç, Kılıç)	On-Farm Dynamics (Aydın, Evrendilek)
				Micrometeorology (Kanber, Aydın, Koç, Unlu)
				Salinization (Anaç, Ağca)
				Vegetation (Altan, Yılmaz, Aktoklu)
			Irri. & Drainage (Özekici, Kanber, Önder,)	
Agro-economics (Erkan, Çakmak)	Farm Economy (Erkan, et al.,)			

Additionally, in these projects, some researchers from different national institutions such as State Hydraulics Works (DSİ as Turkish acronym), General Directorate of Meteorological Organization (MGM), General Directorate of Village Affair (KHGM), and etc. are working. Scientists and their universities/institutions are shown in Table 2.

The implementation projects on major topics mentioned before were prepared by scientists and presented to TUBITAK. These projects, their name and others specifications, is shown in Table 3. TUBITAK support these projects with 432 660 USD for almost two years. Maximum supporting was assigned with 155 710 USD for hydrology project. The analysis of budgets for projects was given in Table 4.

Table 2. Scientists and Their Institutions to be worked in Turkish Implementation Projects

Name of Scientists	University/Institute	Major Topics
Cemal Saydam	Hacettepe	Climate Prediction
Koray Haktanır	Ankara	Climate Prediction
Burçak Kapur	Çukurova	Climate Prediction
Kazım Tülüçü	Çukurova	Hydrology and Water Resources
Mahmut Çetin	Çukurova	Hydrology and Water Resources
Fatih Topaloğlu	Çukurova	Hydrology and Water Resources
Rıza Kanber	Çukurova	Plant Prod., Micrometeorology
Müjde Koç	Çukurova	Plant Prod., Micrometeorology
Mustafa Unlu	Çukurova	Plant Prod., Micrometeorology
İsmail Çelik	Çukurova	Plant Prod., Micrometeorology
Celalettin Barutcular	Çukurova	Plant Prod., Micrometeorology
Türker Altan	Çukurova	Plant Prod., Vegetation
Tulhan Yılmaz	Çukurova	Plant Prod., Vegetation
Süha Berberoğlu	Çukurova	Plant Prod., Vegetation
Bülent Özekici	Çukurova	Irrigation and Drainage
Selim Kapur	Çukurova	Irrigation and Drainage
Onur Erkan	Çukurova	Agro-economics
Mehmet Aydın	Mustafa Kemal	Plant Prod., On-farm Dynamics
Şeref Kılıç	Mustafa Kemal	Plant Prod., On-farm Dynamics
Fatih Evrendilek	Mustafa Kemal	Plant Prod., On-farm Dynamics
Ekrem Aktoklu	Mustafa Kemal	Plant Prod., Vegetation
Kayhan Kaplan	Mustafa Kemal	Plant Prod., Vegetation
Sermet Önder	Mustafa Kemal	Irrigation and Drainage
Nejat Ağca	Mustafa Kemal	Salinization
Erol Çakmak	METU	Agro-economics
Cennet Oğuz	Selçuk	Agro-economics
Süer Anaç	Ege	Salinization
Ferit Dorsan	Ege	Salinization
Yasemin Kukul	Ege	Salinization
Kamil Meriç	Ege	Salinization
Tuncay Arca	DSİ	Hydrol., Irr., and., Drainage
Nurettin Pelen	DSİ	Hydrol., Irr., and., Drainage
Sevgi Donma	DSİ	Hydrol., Irr., and., Drainage

The budget allowed to these projects will be spent for different items during studies. To buy equipments for projects, the large amount of money will be given (43%). Purchases of equipments have to be completed in the first year of projects periods. The second is the buying of consumables with 24 percent of the total budget.

As a rule, after acceptance of projects, we have response to give results obtained from studies to TUBITAK-TOGTAG (Agriculture, Forest and Food Technologies Research Group). Every project lider (coordinator) has to make a report on results for 6

months to TOGTAG. At the end of the projects period, final reports of implementation projects included all evaluations and results obtained will be given.

Table 3. Turkish Implementation Projects for ICCAP Supported by TUBITAK

Project Name	Researchers*	Budget** USD
1) Climate Change, climatic Water Balance and Crop Water Requirements: Investigation on the Next 100 Years For The Seyhan and Ceyhan Basins.	C. Saydam, K.Haktanır, B. Kapur.	25 200
2) Investigating Likely Impact Of Climatic Change On Quality And Quantity Of Surface And Ground Water Resources In The Seyhan River Basin	K.Tülücü, M.Çetin, F.Topaloğlu	155 710
3) Simulation of Soil-Water-Climature and Plant Relationships In Seyhan Plain Under Changing Global Climate	R. Kanber, M.Aydın, M.Unlu, M.Koç	59 500
4) Quantification of C and N Dynamics in Ecosystems of Seyhan Watershed in Changing Global Climate and Land Uses	F. Evrendilek; M.Koç, M.Aydın	51 500
5) Salinisation–Determination of Soil Salt Dynamics Under Cotton Growing Areas in Menemen	S. Anaç,	16 213
6) Research of the Vegetation Cover of the Seyhan River Basin in the point of view of Floristic and Vegetation	T.Altan,	60 938
7) The Possible Effects of Climatic Changes on The Irrigated Agriculture of Seyhan Basin	B.Özekici, R.Kanber, M.Unlu,	35 689
8) Economic Analysis of Climate Changes on Agricultural Production Systems and Identification of Policy and Institutional Measures in Cukurova and Central Anatolia Regions	O.Erkan, E.çakmak	27 910
TOTAL		432 660

* Main researchers, the name of assistant researchers are not shown;

** It will be supported by TUBITAK for almost two years.

Table 4. Budget Analysis for Turkish Projects

Budget Items	Total USD	%
Equipments	185 828	0 . 43
Consumables	79 975	0 . 18
Services	62 515	0 . 24
Travel	104 342	0 . 15
Total	432 660	1.00

References

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