

Research Plan of Atmospheric Boundary Layer

Observations Over Loess Plateau

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The purpose of this research plan is re-evaluation of water cycle system in the Yellow River Basin by means of atmospheric boundary layer (ABL) measurements in “Loess Plateau”, numerical climate models, and satellite remote sensing analyses. The improvements of parameterizations schemes in the processes of ABL, cloud physics, and precipitation systems will be also studied.

The ABL measurements are employed in the meteorological field of the “Changwu Agro-Ecological Experiment Station on Loess Plateau, Chinese Academy of Science”.

The measurements include surface flux observations of momentum, sensible heat, latent heat, and carbon dioxide. Also included are the profile measurements of 3-dimensional wind speed, air temperature, and absolute humidity in and around 30 minutes intervals. These will be measured by a Wind Profiler and a Microwave Water Vapor Radiometer. The obtained data sets will be used for the re-evaluation of parameters of ABL turbulence, entrainment process, and cloud physics in cloud-layers, using cloud resolving models (CRMs). New parameterization schemes will be added to regional climate models (RCMs) and re-evaluation of water cycles system in the Yellow River Basin will be achieved.

New devices will be prepared during fiscal years in 2003 and 2004. After transportation and establishments of the devices, continuous measurements will be done until fiscal year of 2006. Parameterizations using CRMs and applications of RCMs will be done until 2007. These new parameterizations are possible to apply for the re-evaluation of water cycle system in the Yellow River Basin.