

A possible collaboration/coordination between WCRP and GWSP in Asia - suggestions from GAME (GEWEX Asian Monsoon Experiment) -

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1. Role of World Climate Research Programme (WCRP)

WCRP was established in 1980, under the joint sponsorship of the International Council for Science (ICSU), the World Meteorological Organization (WMO), and the Intergovernmental Oceanographic Commission (IOC) of UNESCO (since 1993). The objectives of the programme are to develop the fundamental scientific understanding of the physical climate system and climate processes needed to determine to what extent climate can be predicted and the extent of human influence on climate.

Important tasks of WCRP are, to promote new research observation projects, to promote development of new climate/earth system models, to produce and release new data sets for climate studies with free & unrestricted exchange bases (for scientific communities), and to contribute to international societies through prediction & application projects. Further information on WCRP is obtained from <http://www.wmo.ch/web/wcrp/wcrp-home.html>

2. Global Energy and Water Cycle Experiment (GEWEX)

GEWEX is one of the major sub-programs of WCRP. is a program to observe, understand and model the hydrological cycle and energy fluxes in the atmosphere, at land surface and in the upper oceans. GEWEX is an integrated program of research, observations, and science activities ultimately leading to the prediction of global and regional climate change. The goal of the GEWEX is to reproduce and predict, by means of suitable models, the variations of the global hydrological regime, its impact on atmospheric and surface dynamics, and variations in regional hydrological processes and water resources and their response to changes in the environment, such as the increase in greenhouse gases. Further information on GEWEX is obtained from <http://www.gewex.org/>

3. GEWEX Asian Monsoon Experiment (GAME)

GAME was implemented as part of GEWEX (Hydrometeorology Panel) for about 10 years from 1996 to 2005. The objectives of GAME are, understanding role of Asian monsoon and its hydrological cycle in the global climate system with full energy and hydrological feedback processes (as an up-scaling issue), and improvement of regional/basin scale hydrological cycle and water resources in monsoon Asia (as a down-scaling issue).

A major foci for GAME are, what are fundamental land surface processes for the maintenance and variability of the Asian monsoon system. Through intensive and extensive observations, data analyses and modeling, new scientific results have been obtained, e.g., 1) important Role of complex topography system in development of convective systems, 2) fundamental role of diurnal cycle in energy and water cycling processes, and 3) important role of vegetation in controlling energy and water fluxes and related monsoon circulation systems. Huge data sets for understanding energy and hydrological processes of the Asian monsoon system have also been obtained, including the objectively-analyses GAME reanalysis data and satellite-based land surface and hydro-meteorological data over Eurasia and surrounding oceans. More information on GAME is available from <http://www.hyarc.nagoya-u.ac.jp/game/>

4. Future and new collaboration between WCRP and GWSP in Asia

WCRP has started a new strategic framework for Prediction and observation of the Earth Climate System called COPES (Cooperative Observation and Prediction of Earth System). One of the main targets for the COPES is to assess and predict changes of the Asian monsoon system and its hydrological cycle, including those by the "global warming" and other anthropogenic changes. GWSP tasks, on the other hand, may be to assess impacts of these changes in water cycle, and to provide data & information of water-related land surface condition and changes.

Currently, a new initiative for promoting these studies in Asia are being planned under WCRP-related communities in Japan and other countries in Asia. This new initiative is tentatively called **Monsoon Asian Hydro-Atmosphere Scientific Research and prediction Initiative (MAHASRI)**. On the other hand, This Post-GAME program and the forthcoming GWSP-Asia should work and collaborate together to establish sustainable nature and society in monsoon Asia.