

MAHASRI and other international research projects related with Asian monsoon

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1.MAHASRI

The objective of MAHASRI (Monsoon Asian Hydro- Atmosphere Scientific Research and Prediction Initiative) is to establish hydro-meteorological prediction system, particularly up to seasonal time-scale, through better scientific understanding of Asian monsoon variability. This is a ten-year project starting from 2006 officially approved as one of the international hydro-climate research projects under the CEOP/GEWEX/WCRP. The targeting region covers most of the Asian monsoon region including Tropics, Tibet/Himalaya, East Asia and Northeast Asia. It targets not only summer monsoon but also winter monsoon. The major scientific topics include: What kind of interactions among land, ocean and atmosphere are essential for the development and variations of seasonally varying monsoon circulation? How do interactions between diurnal cycles mainly excited over land region and intraseasonal or interannual variations mainly affected by oceanic conditions generate the interannual variations of monsoon? What effects have occurred on hydro-meteorological variations in Asian monsoon regions by human influences? What kind of differences and interactions are existent among regional subsystems of vast Asian monsoon region? It aims to deeper understanding of the development and variation mechanisms of Asian monsoon.

2.AMY

In WCRP-JSC in March 2007, and series of subsequent international workshops, it has been proposed to organize Asian Monsoon Years (AMY) 2007-2012 including MAHASRI. The long-term goal of AMY 2007-2012 is to improve our understanding of the Asian monsoon variability and predictability and to improve monsoon prediction for societal benefits. It will target better understanding of the ocean-land-atmosphere-biosphere interaction, the multi-scale interaction on time scales from diurnal to intraseasonal, and the aerosol-monsoon water cycle interaction in the Asian monsoon system. The coordinated intensive observations are organized in 2008-2009 participating over 20 national and international projects in China, India, Japan, USA and some other countries. It will provide high quality atmospheric data set which will contribute to the deeper understanding and better model predictions. In particular, effects of aerosols on Asian monsoon by both observations and modeling are one of the major targets.

3.MAIRS

Another related international research project is MAIRS (Monsoon Asia Integrated Regional Study). This the Integrated Regional Study under the Earth System Science Partnership (ESSP) which is a joint initiative among four international research programs: WCRP, IGBP, IHDP, DIVERSTAS. It aims to advance understanding of the interactions between the human-natural components of the overall environment in the monsoon Asian region and implication of global earth system, in order to support the strategies for sustainable development. Four major research topics are: Rapid transformation of land and marine resources in Coastal Zones. Multiple stresses on ecosystems and biophysical resources in high Mountain Zones. Vulnerability of ecosystems in Semi-arid Zones due to changing climate and land use. Changes in resource use and emissions due to rapid urbanization in Urban Zones. Joint session with iLEAPS was organized in the EGU meeting in April 2008.

4. Collaboration with iLEAPS

The effect of biomass burning and/or atmospheric pollutant emissions on Asian monsoon, and the effect of land cover changes by human activities on Asian monsoon will be major key collaboration issues of iLEAPS with both MAHASRI and MAIRS.