



THE ASIAN MONSOON YEARS (AMY 2007-2012)

The Asian Monsoon Years (AMY 2007-2012) is a cross-cutting initiative as part of the International Monsoon Study (IMS), a coordinated observation and modeling effort under the leadership of the **World Climate Research Programme (WCRP)**. The AMY stems from grass-root scientific and societal imperatives. It integrates 24 national and multi-national research projects in the Asian monsoon regions. It has been endorsed by the Joint Scientific Committee (JSC) of the WCRP as well as the WCRP Climate Variability and Predictability (CLIVAR) Project and the Global Energy and Water Cycle Experiment (GEWEX). It has been identified as a cross-cutting weather and climate activity by WMO World Weather Research Programme (WWRP) Monsoon Panel in the WWRP Strategic Plan.

Background

About 60% of the world population inhabits the region of the Asian monsoon. Agriculture and, more widely, economy and society across Asia are critically influenced by the variability of the monsoon. Future change in the Asian monsoon climate is also of the greatest concern to the world economy and sustainable development.

The Asian monsoon exemplifies the most complex interactions between the Earth's land surface, ocean, atmosphere, hydrosphere, cryosphere and biosphere including human activities. The giant Asian monsoon system dominates the entire global tropics and subtropics and interacts with the El Niño-Southern Oscillation (ENSO) and extratropical circulations, exerting far-reaching impacts on global climate and environment. The scientific importance of the Asian monsoon cannot be overemphasized.

Monsoon science has advanced enormously in the last two decades due to a wealth of new data from satellite observations and field experiments, and due to advances in computing power and mathematical representations of coupled climate systems. Driven by the needs to better understand and predict monsoons on all time scales from daily weather to climate change, monsoon research has received much attention in Asian monsoon regions. The AMY is a timely endeavor to integrate and coordinate these activities.

Many major monsoon research activities and field projects are being planned in the time frame of 2008-2010 in China, Japan, India, Korea and many other Asian countries. All funding supporting these projects comes from the individual nations. The mission of AMY is to coordinate and integrate these grass-root national efforts.

Goals and objectives

The long-term goal of AMY is to improve Asian monsoon prediction for societal benefits through coordinated efforts to improve our understanding of Asian monsoon variability and predictability. It is believed that coordination and

cooperation of individual participating and partner projects will greatly facilitate the efforts to reach this goal.

The specific objectives of AMY are:

- To better understand the ocean-atmosphere-land-biosphere interactions, the multi-scale interactions among time scales ranging from diurnal, intraseasonal to interannual, and the aerosol-cloud-water cycle interactions in the Asian monsoon system;
- To improve the physical representations of these interactions in coupled climate models, and to develop data assimilation of the ocean-atmosphere-land system in the Asian monsoon region;
- To determine predictability of the Asian monsoon on intraseasonal and seasonal time scales, and the roles of land initialization in continental seasonal rainfall prediction;
- And to better understand how human activities in the monsoon Asia region interact with monsoon and its related environment.

These objectives will be fulfilled through coordination of the ongoing and planned field experiments and modeling projects in the Asian monsoon region which form contributions to AMY.

Activity and Expectation

AMY seeks to take a balanced approach that integrates observations, modeling, and understanding. The planned activity consists of field observations, data management, and modeling components.

A Science Steering Committee, International Program Office, and three Working Groups have been set up as an outcome of the first AMY workshop at Beijing on April 23-25, 2007 hosted by State Key Laboratory of Numerical Modeling for Atmospheric Sciences and Geophysical Fluid Dynamics (LASG), Institute of Atmospheric Physics (IAP). The SSC is a coordination body, with representatives from different panels or groups, to provide guidance for the program.

The **AMY Science Plan** was discussed at the Second AMY'08 workshop jointly hosted by CLIVAR and GEWEX and BPPT, Indonesia at Bali, Indonesia on September 3-4, 2007. The AMY Implementation Plan has been discussed at the third AMY workshop at Yokohama, January 26-27 2008, hosted by JAMSTEC/Frontier Research Center for Global Change. AMY has established three working groups focusing on, respectively, the field experiments and observation coordination, central data archiving and management, and coordination of monsoon modelling and prediction.

The AMY will coordinate with various other international programs and activities, including WCRP/WWRP-YOTC, WCRP CLIVAR AAMP, IOP and POP, WCRP GEWEX CEOP/MAHASRI, THORPEX/ T-PARC, IGBP /START/MAIRS, APCC, and JAMEX (Joint Aerosol-Monsoon Experiment), and the IGBP/ iLEAPS (Integrated Land Ecosystem-Atmosphere System Studies)/ ACPC (Aerosol-Cloud-Precipitation-Climate).

It is expected that AMY will have a significant impact on monsoon research and prediction. Unprecedented amounts of high quality new data will help understand monsoon phenomena whilst advances in cloud resolving models, computer power, and communication technology will be used to help provide needed breakthroughs in monsoon prediction.

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<http://www.wcrp-amy.org>

Links:

WCRP <http://wcrp.wmo.int>

AMY Science Plan

http://www.clivar.org/organization/aamp/documents/AMY_SP_v6_08Feb.doc