

The 1st Asian Water Cycle Symposium

*The University of Tokyo, Tokyo
Japan, 2-4 November 2005*



GEO Secretary
UNESCO
UNEP
WMO
IGOS
Mekong Committee

Bangladesh
China
Indonesia
India
Japan
Korea
Laos

Malaysia
Mongolia
Pakistan
Philippine
Sri Lanka
Thailand
Vietnam

Guiding Goal

To better understand the mechanism of Asian water cycle variability and to improve its predictability, and furthermore to interpret the information applicable to various water environments in different countries, then to help to mitigate water-related disasters and promote the efficient use of water resources.

Objectives

- (1) Introduce planned and on-going demonstration projects and to discuss how to move toward observation convergence in Asia.
- (2) Design a roadmap that will lead toward a GEOSS water data exchange and sharing policy as a first step for establishing an 'Asian GEOSS Water Initiative' and forging agreements on observation convergence, interoperability, and data management within the overall architecture of GEOSS.
- (3) Identify ways in which these activities and related international activities can contribute to the goals of critical targets in the Water Cycle Societal Benefit Area of GEO.

Discussion Summary

Water-related Issues and Socio-economic Needs

Disaster: Flood & Storm, Draught, Landslide

Water Scarcity

River and Water Environment

Effects of Climate Change

Background

Natural Variations

Impacts of Human Activities

Scientific Challenges

GAME, CEOP, PUB, MAHASRI,,,,

Observation Network

GTN-H, IGOS, CEOP, GEOSS,,,,

Interoperability and Data Management

CEOP, GEOSS,,,,

Capacity Building

IGOS, GEOSS,,,,

The participants recognized **the common water-related issues and socio-economic needs** on disasters including floods, droughts and landslides, water scarcity, river and water environment, and effects of climate change in Asia.

The participants shared ideas on **the large natural variation and the big impacts of the human activities** in Asia as their backgrounds.

The participants consider that **well coordinated scientific challenges and combination of global earth observation and physical, chemical, biological and socio-economic information** in a local scale are essential as well as long term and mainly localized operational efforts.

The participants considered **convergence and harmonization** of observation activities, **interoperability** arrangements, and effective and comprehensive **data management** as the most functional elements.

The participants stepped forward for establishment a basic plan for “**Asian Water Initiative contributing to GEOSS**” 4

Toward the Next Step

A task team was organized for preparing for

- to make **an inventory**;
- to review **the data policies** of governments and scientific communities;
- to make **a draft implementation plan**, including a design of a preliminary step.

The task team consists of a representative of each country and scientific project in voluntary basis.

Actual tasks will be done by email and conference call basis.

Questionnaire for the Asia Water Cycle Initiative (AWCI) International Task Team (ITT) members

1. Please **nominate a candidate river basin(s)** in your country that could be involved in the demonstration project of the AWCI, i.e. the integrated data sets and special tools, which will be available through CEOP Phase 2 implemented by WCRP under the GEO framework from 2007 to 2010, will be used to address the issues related to the water resources management in this river basin.
2. Please **identify major issues** (up to three) and needs related to the water cycle and water resources management in the candidate river basin(s):
3. Please **list the available observations and existing data sets** in the candidate river basin(s). Please include type of observation (e.g. precipitation), the number of stations (estimate) and since when the observation is available (estimate).
4. Please **comment on the Coordinated Enhanced Observing Period (CEOP) Data policy** (the document is available in the attachment below on Pg 3-4 and through the CEOP Web pages at: http://www.eol.ucar.edu/projects/ceop/dm/documents/ceop_policy.html).
5. Please **introduce your idea** on possible demonstration plan under the framework of AWCI.

Proposals

Candidate River Basins for GEOSS Applications

Bangladesh 1(3)

Cambodia 2

India 2

Indonesia 3

Lao PDR 3

Mongolia 3

Myanmar 1

Nepal 2

Pakistan 3

Philippines 1

South Korea 3

Sri Lanka 3

Uzbekistan 2

Vietnam 3

32 River Basins in 14 Countries in Asia!

The Asian Water Cycle Initiative (AWCI) International Task Team (ITT) Working Session

September 2006

Bangladesh 3
Cambodia 1
Indonesia 1
Japan 2

Lao PDR 1
Myanmar 1
Nepal 1
Pakistan 1

Philippines 1
Sri Lanka 2
Uzbekistan 1
Vietnam 2

Rama Gardens Hotel, Bangkok, Thailand
September 26, 2006

Discussions at the 1st ITT meeting in Bangkok

Demonstration Project (DP) and related inventories

1. Objectives of DP
2. Timeline of DP
3. Criteria of candidate river basins for DP
 - which includes research and operational aspects
4. Which data we need for DP
5. Inventory

Data Policy

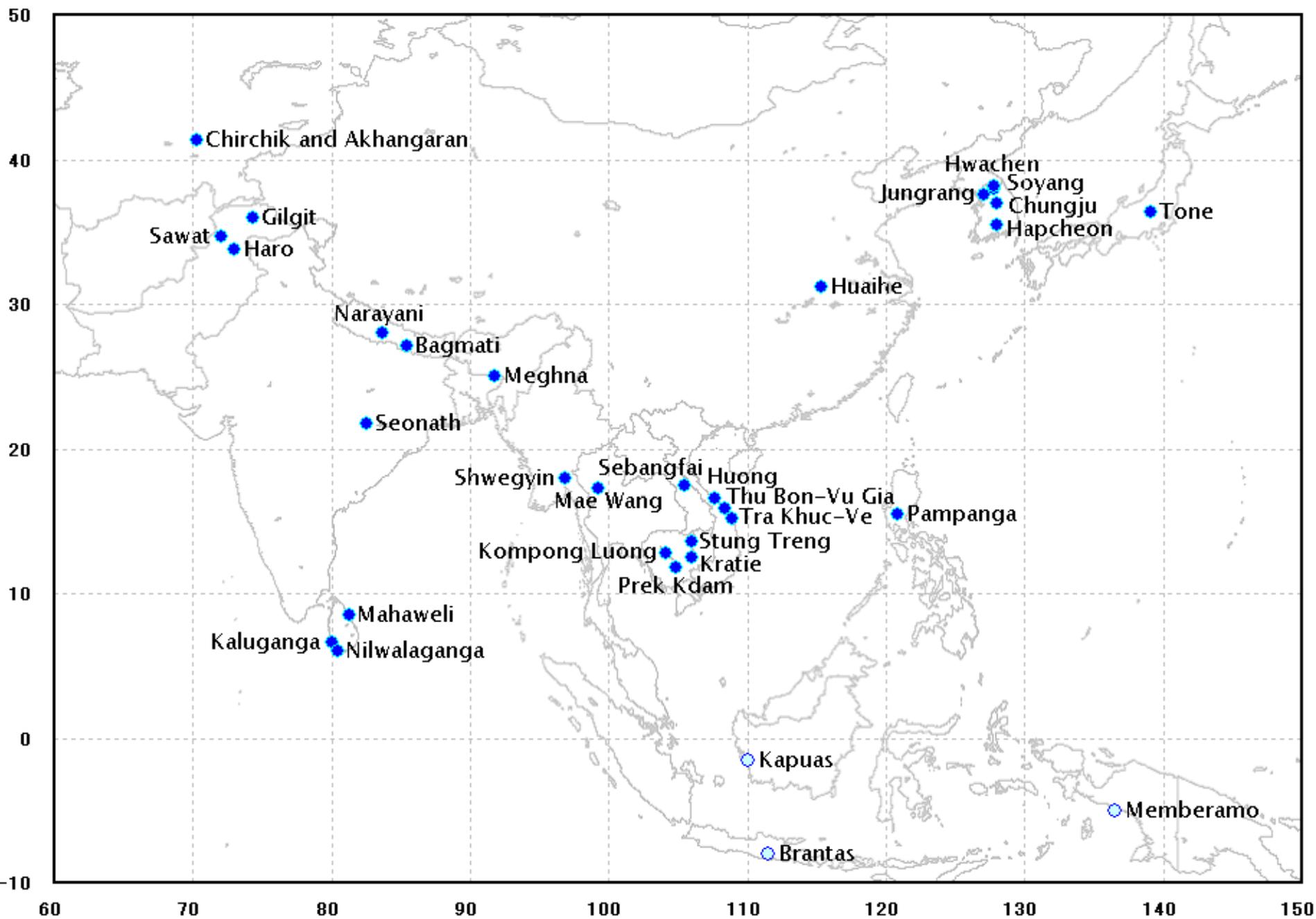
Reference basin	Meghna Basin	
METADATA (River Basin Description)		
Location (longitude and latitude extent)	24deg - 26deg N; 90deg30' - 93deg E	
Catchment outlet longitude and latitude		
Catchment area	cca 25o km x 200 km (50,000 km sq)	
Number of MOLTS points in the basin	Three (3)	Station name
MOLTS point1 longitude and latitude	24deg54' N; 91deg11' E	Sylhet
MOLTS point1 elevation		
MOLTS point2 longitude and latitude	24deg18' N; 91deg44' E	Srimangal
MOLTS point2 elevation		
MOLTS point3 longitude and latitude	23deg26' N; 91deg11' E	Comilla
MOLTS point3 elevation		
Basin Contacts (Name, office address, phone, fax, email)	Director, Bangladesh Meteorological Department, Dhaka (Dr Akram Hossain)	
Basin Maps	available	
Basin Pictures	unavailable	
River Network Maps	available	
Soil Maps and Soil Characteristics	unavailable	
Land Use Maps and Vegetation Characteristics	unavailable	
River Constructions (dams, weirs, etc.) - type, location (longitude, latitude)	unavailable	
OBSERVATION DATA - HYDROLOGICAL		
Streamflow	available	
Reservoir (Water level, Outflow)	available	
Groundwater Table	available	
Others - please specify (each data type on a single line)		
OBSERVATION DATA - SUB-SURFACE		
Soil Temperature	available	
Soil Moisture	unavailable	

OBSERVATION DATA - SURFACE

Air Temperature	available
Humidity	available
Wind	available
Pressure	available
Precipitation	available
Snow	unavailable
Skin Temperature	unavailable
Upward Shortwave Radiation	unavailable
Downward Shortwave Radiation	unavailable
Upward Longwave Radiation	unavailable
Downward Longwave Radiation	unavailable
Upward Photosynthetically Active Radiation	unavailable
Downward Photosynthetically Active Radiation	unavailable
Net Radiation	available
Sensible Heat Flux	unavailable
Latent Heat Flux	unavailable
Ground Heat Flux	unavailable
Momentum Flux	unavailable
CO2 Flux	unavailable
Evaporation	available
Vegetation	unavailable

OBSERVATION DATA - Atmosphere

Planetary Boundary Layer Tower	unavailable
Radiosonde	available
Radar	available
Lidar	unavailable
Profiler	unavailable
RASS	unavailable





MAHASRI



GEWEX
CSES



MODEL OUTPUT

Global
Regional
Local

REFERENCE SITES
REFERENCE BASINS

SATELLITES

Diurnal
Intra-seasonal
Seasonal

DATA INTEGRATION & DISSEMINATION

WATER & ENERGY
SIMULATION & PREDICTION (WESP)

Water and Energy Budget Studies

Global Land Data
Assimilation Systems

Regional Climate Models

Semi-arid Region Study

Cold Region Study

Stable Water Isotope Intercomparison

CEOP
INTER-MONSOON STUDY
(CIMS)

Coordinated Model Integration
Process

Monsoon System Inter
Comparison

Aerosol - Monsoon Water
Cycle Interaction

CEOP Analyses
Intercomparison
Project

Extreme Events
Impact Analysis
Project

H A P

Watershed Hydrology Study

COORDINATED ENERGY & WATER CYCLE
OBSERVATION PROJECT (CEOP)



Improving water-resource management through better understanding of the water cycle

WA-07-02: Satellite Water Quantity Measurements and Integration with In-situ Data

Initial support has been expressed by IAG, GCOS, WCRP, CEOS and IGWCO.

Develop an operational mechanism to provide water level observations in rivers, lakes/reservoirs and estuaries from satellite observations to support the upgrade of deficient run-off water gauge networks. Combine different types of satellite data that are relevant for water quantity measurements (snow water equivalent, streamflow) with in-situ observations for better accuracy and global coverage. Produce an implementation plan for a broad and operational global water cycle data integration system that combines in-situ, satellite data and model outputs. An international symposium is proposed to be held to assess techniques and their maturity for transitions to operations. A workshop is planned in 2007.



Improving water-resource management through better understanding of the water cycle

WA-07-01: Global Water Quality Monitoring

Initial support has been expressed by IGWCO, NASA, JAXA, ESA, CSIRO, ICSU, CEOS and POGO.

Many aspects of water quality monitoring and assessment, both in-situ and remotely sensed are severely deficient. Many countries lack the technical, institutional, and financial resources to conduct proper assessments using in-situ water quality monitoring methods for terrestrial sources and in the coastal ocean. Remote-sensed operational systems of global-scale freshwater quality are non-existent. Operational observation systems need to be developed, and the resulting information systems should be made compatible and interoperable as part of the system of systems. This Task is built on the outcomes of the water quality workshop in 2006 (1st Inland and Coastal Water Quality workshop) and first pilot projects are being planned to begin in Asia as a result of the Asia Water Resource Management Capacity Building Workshop. This Task has relevant synergies with HE-07-02.

Improving water-resource management through better understanding of the water cycle

WA-06-07: Capacity Building Program for Water Resource Management

This Task is led by IGOS-P.

Initiate capacity building programs to develop tools for using remote sensing data in support of water management, and to show the value of Earth observations generally in water resource management. The program will be initiated in Latin America and will then be extended to Asia and Africa. Linkages with existing efforts of GEO Members and Participating Organizations will be made.

GEOSS/Asian Water Cycle Initiative

[integration of earth observation data] + [capacity development] programme

* GEOSS Implementing Agencies
(observations, predictions, data integration)

Integration and use of earth observation data

Satellite data, global network data, numerical forecasting model, assimilation of data

Area data / information

In-situ data

In-situ data

In-situ data

In-situ data

Capacity Building

use of satellite data

* Space Agencies

Research obs, Modeling and analysis

* UNU, universities Research Institute, etc.

In-situ observation River management

* ICHARM, MRC ESCAP, etc.

Common items

Basin 1

Basin 2

Basin 3

Basin 4

