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

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,,,,

Consensus

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"

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.

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

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

The 2nd Asian Water Cycle Symposium

The University of Tokyo, Tokyo

November 9-10, 2007

29 Countries and 176 participant

Integration of Earth Observation Data for IWRM under GEOSS

1. Objectives

- To develop an information system of systems for promoting the implementation of integrated water resources management (IWRM).
- To make a bridge between global data and local information for sound decision making.
- To shift from research activities and achievements to operational use for contributing to societal benefits.

Integration if Earth Observation Data for IWRM under GEOSS

2. Targeted River Basin Criteria

1) Importance of the basin from the point of view of the socio-economic benefit area and hydrological sciences

2) Minimum requirement of data availability:

- Data type: rainfall, streamflow, weather station data (air temp., wind speed, pressure, humidity)
- Spatial density of observation stations: according to the WMO standard but local specifics to be considered;
- Watershed characteristics information

3) Highly expected data:

- Upper air observation is highly recommended
- Near-real time data availability is highly recommended;
- Ground water and water quality data availability for the river basins where those problems should be addressed.

4)Size of the watershed: 100 km2 - 1,000,000 km2

Country	Ba	Bu	Ca	Ch	In	Is	Ja	Ko					La	Mo	My	Ne		Pa			Ph	Sr			Th	Uz	Vl			18
Reference basin	Me		Se	Sh	Ma	Ma	To	So	Hw	Ch	Ju	Ha	Se	SE	Sh	Na	Ba	Gl	Ha	Sa	Pa	Ma	Ka	Nl	Ma	CA	Hu	Th	Tr	29
Basin Desccription																														
Basin Maps	1		1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	25
Basin Pictures	0		1				1	1	1	1	1	1	0	1	0			1	1	1	1	1	1	1		1	1	1	1	19
River Network Maps	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	28
Soil	0		1				1	1	1	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1		1		1	1	18
Land Use/Vegetation	0		1			1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1		1	1	0	1	19
River Constructions	0		1				1	1	1	1	1	1	0		0						1	1	1	1		1	1	1	1	15
HYDROLOGICAY																														
Streamflow	1		1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	24
Reservoir	1		1				1	1	1	1	1	1	1	1	0			1	1	1	1	1	1	1		1	0	0	0	18
Groundwater Table	1		0	1									0	1	0			0	0	0	0	0	0	0		1	0	0	0	4
water quality																														
SUB-SURFACE																														
Soil Temperature	1		1	1			0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	1	1	0	1	1	1	0	1	12
Soil Moisture	0		1	1			0	0	0	0	0	0	0	1	0			0	0	0	0	0	0	0	1	1	1	1	1	8
SURFACE																														
Air Temperature	1		1				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	24
Humidity	1		1				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	24
Wind	1		1				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	24
Pressure	1		1				1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	23
Precipitation	1		1	1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
Snow	0		0				1	1	1	1	1	1	0	1		1	1	1	0	1	0	0	0	0		1	0	0	0	12
Skin Temperature	0		1				0	0	0	0	0	0		1				0	0	0	0	0	0	0	1	0	0	0	0	3
Upward Shortwave	0		1				0	0	0	0	0	0		1				1	1	1	0	0	0	0	1	0	0	1	0	7
Downward Shortwave	0		1				1	0	0	0	0	0		1				1	1	1	0	0	0	0	1	0	0	1	0	8
Upward Longwave	0		1				0	0	0	0	0	0		1				0	0	0	0	0	0	0	1	0	0	1	0	4
Downward Longwave	0		0				0	0	0	0	0	0	1	1				0	0	0	0	0	0	0	1	0	0	1	0	4
Upward PAR	0		0				0	0	0	0	0	0		1				0	0	0	0	0	0	0		0	0	0	0	1
Downward PAR	0		0				0	0	0	0	0	0		0				0	0	0	0	0	0	0		0	0	0	0	0
Net Radiation	1		0				0	0	0	0	0	0	0	1				0	0	0	0	0	0	0	1	0	0	1	0	4
Sensible Heat Flux	0		0				0	0	0	0	0	0	0	1				0	0	0	0	0	0	0	1	0	0	0	0	2
Latent Heat Flux	0		0				0	0	0	0	0	0	0	1				0	0	0	0	0	0	0	1	0	0	0	0	2
Ground Heat Flux	0		0				0	0	0	0	0	0	0	1				0	0	0	0	0	0	0	1	0	0	0	0	2
Momentum Flux	0		0				0	0	0	0	0	0	0	0				0	0	0	0	0	0	0		0	0	0	0	0
CO2 Flux	0		0				0	0	0	0	0	0		0				0	0	0	0	0	0	0		1	0	0	0	1
Evaporation	1		0	1			1	0	1	1	1	1	1	0		1	1	1	1	1	0	1	1	1		0	1	1	1	19
Vegetation	0		0				0	0	0	0	0	0		1				0	1	0	0	0	0	0		0	1	1	1	5
Atmosphere																														
PB L Tower	0		0				0	0	0	0	0	0	0	0				0	0	0	0	0	0	0		0	0	0	0	0
Radiosonde	1		0				0	0	0	0	0	0	0	1				0	0	0	0	0	0	0		0	1	1	1	5
Radar	1		1	1			1	0	0	0	0	0	0	1				0	0	0	0	0	0	0	1	0	1	1	1	9
Lidar	0		0				0	0	0	0	0	0	0	0				0	0	0	0	0	0	0		0	0	0	0	0
Profiler	0		0				0	0	0	0	0	0	0	0				0	0	0	0	0	0	0		0	0	0	0	0
RASS	0		0				0	0	0	0	0	0	0	0				0	0	0	0	0	0	0		0	0	0	0	0

Country	Ba	Bu	Ca	Ch	In	Is	Ja	Ko						La	Mo	My	Ne		Pa			Ph	Sr			Th	Uz	Vl			18
Reference basin	Me		Se	Sh	Ma	Ma	To	So	Hw	Ch	Ju	Ha	Se	SE	Sh	Na	Ba	Gl	Ha	Sa	Pa	Ma	Ka	Nl	Ma	CA	Hu	Th	Tr		29
Basin Descciption																															
Basin Maps	1		1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1		25
Basin Pictures	0		1				1	1	1	1	1	1	0	1	0			1	1	1	1	1	1	1		1	1	1	1		19
River Network Maps	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		28
Soil	0		1				1	1	1	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1		1		1	1		18
Land Use/Vegetation	0		1			1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1		1	1	0	1		19
River Constructions	0		1				1	1	1	1	1	1	0		0						1	1	1	1		1	1	1	1		15
HYDROLOGICAY																															
Streamflow	1		1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0		24
Reservoir	1		1				1	1	1	1	1	1	1	1	0			1	1	1	1	1	1	1		1	0	0	0		18
Groundwater Table	1		0	1									0	1	0			0	0	0	0	0	0	0		1	0	0	0		4
water quality																															
SUB-SURFACE																															
Soil Temperature	1		1	1			0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	1	1	0	1	1	1	0	1		12
Soil Moisture	0		1	1			0	0	0	0	0	0	0	1	0			0	0	0	0	0	0	0	1	1	1	1	1		8
SURFACE																															
Air Temperature	1		1				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1		24
Humidity	1		1				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1		24
Wind	1		1				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1		24
Pressure	1		1				1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1		23
Precipitation	1		1	1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		26
Snow	0		0				1	1	1	1	1	1	0	1		1	1	1	0	1	0	0	0	0		1	0	0	0		12
Skin Temperature	0		1				0	0	0	0	0	0		1				0	0	0	0	0	0	0	1	0	0	0	0		3
Upward Shortwave	0		1				0	0	0	0	0	0		1				1	1	1	0	0	0	0	1	0	0	1	0		7
Downward Shortwave	0		1				1	0	0	0	0	0		1				1	1	1	0	0	0	0	1	0	0	1	0		8
Upward Longwave	0		1				0	0	0	0	0	0		1				0	0	0	0	0	0	0	1	0	0	1	0		4
Downward Longwave	0		0				0	0	0	0	0	0	1	1				0	0	0	0	0	0	0	1	0	0	1	0		4
Upward PAR	0		0				0	0	0	0	0	0		1				0	0	0	0	0	0	0		0	0	0	0		1
Downward PAR	0		0				0	0	0	0	0	0		0				0	0	0	0	0	0	0		0	0	0	0		0
Net Radiation	1		0				0	0	0	0	0	0	0	1				0	0	0	0	0	0	0	1	0	0	1	0		4
Sensible Heat Flux	0		0				0	0	0	0	0	0	0	1				0	0	0	0	0	0	0	1	0	0	0	0		2
Latent Heat Flux	0		0				0	0	0	0	0	0	0	1				0	0	0	0	0	0	0	1	0	0	0	0		2
Ground Heat Flux	0		0				0	0	0	0	0	0	0	1				0	0	0	0	0	0	0	1	0	0	0	0		2
Momentum Flux	0		0				0	0	0	0	0	0	0	0				0	0	0	0	0	0	0		0	0	0	0		0
CO2 Flux	0		0				0	0	0	0	0	0		0				0	0	0	0	0	0	0		1	0	0	0		1
Evaporation	1		0	1			1	0	1	1	1	1	1	0		1	1	1	1	1	0	1	1	1		0	1	1	1		19
Vegetation	0		0				0	0	0	0	0	0		1				0	1	0	0	0	0	0		0	1	1	1		5
Atmosphere																															
PB L Tower	0		0				0	0	0	0	0	0	0	0				0	0	0	0	0	0	0		0	0	0	0		0
Radiosonde	1		0				0	0	0	0	0	0	0	1				0	0	0	0	0	0	0		0	1	1	1		5
Radar	1		1	1			1	0	0	0	0	0	0	1				0	0	0	0	0	0	0	1	0	1	1	1		9
Lidar	0		0				0	0	0	0	0	0	0	0				0	0	0	0	0	0	0		0	0	0	0		0
Profiler	0		0				0	0	0	0	0	0	0	0				0	0	0	0	0	0	0		0	0	0	0		0
RASS	0		0				0	0	0	0	0	0	0	0				0	0	0	0	0	0	0		0	0	0	0		0

Integration of Earth Observation Data for IWRM under GEOSS

3. Data Interoperability

- Meta-data design
- Meta-data registration
- Data quality check and archive
- Data format unification
- Data integration function
- Distributed- and Centralized- data distribution

Integration of Earth Observation Data for IWRM under GEOSS

4. User Interface

- Data request: global/regional/local, observed/modeled, natural science/socio-economic
- Function request: data integration, information fusion, analysis, prediction, dissemination

Integration of Earth Observation Data for IWRM under GEOSS

5.Data Policy

1) Release of Data in Compliance with WMO Resolution 40 (CG-XII) and WMO Resolution 25 (CG-XIII)

2) No Commercial Use or Exploitation

3) No Data Transfer to Third Parties

4) Timing for Release of AWCI River Basin Data from the CDA Archive

category 1 - standard data - data release after 6 months

category 2 - special data - data release after 15 months

- *Streamflow data - (i) operational - category 1 data; (ii) research site maintained by university, through a project - category 2 data; also remote sites need to be included in category 2 data*
- *Suggestion: to have 3 categories of data - the third category - real time or near-real time data (radiosonde data from operational sites)*

5) Acknowledgement and Citation

6) Co-operation between AWCI Data Users and AWCI River Basin Principal Investigators (PIs)

7) Co-Authorship for AWCI River Basin Principal Investigators (PIs)

8) AWCI Publication Library

Integration of Earth Observation Data for IWRM under GEOSS

6. Timeline

2007 Pre-phase: survey of capabilities
- Completion of Implementation Plan
- Input to theTask Sheets
- Test Archive: Metadata, Observed Data during CEOP Phase 1
- A Basin in Each Countr?

2008-2011
- Data Archive 2007-2010
- Demonstration Implementation

2009 -2010
- Preparation for shifting
- from more-research to more-operational phase

Toward Convergence