

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.

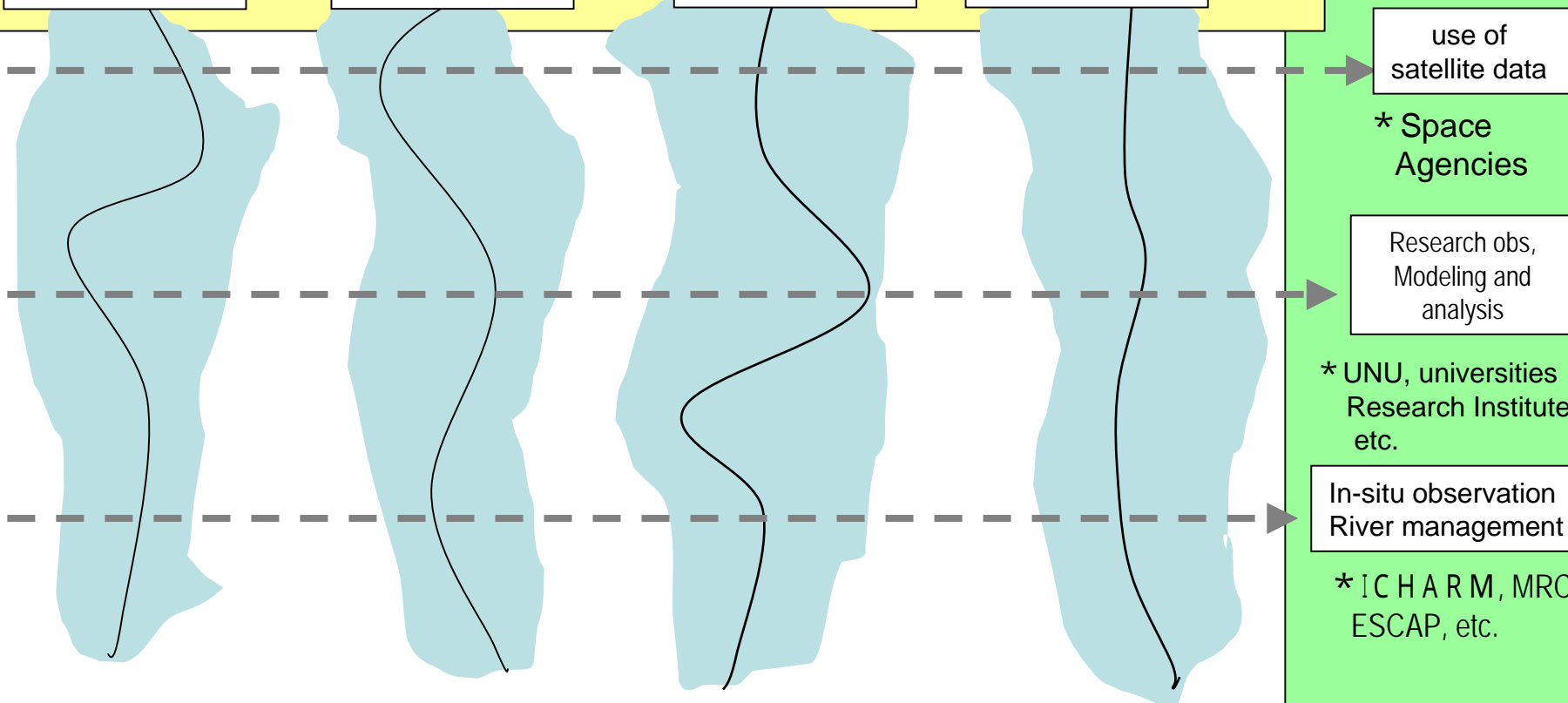
Common items

Basin 1

Basin 2

Basin 3

Basin 4



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.

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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	VI	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	NI	Ma	CA	Hu	Th	Tr	29	
Basin Description																														
Basin Maps	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	25
Basin Pictures	0	1					1	1	1	1	1	0	1	0		1	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	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	0	1	1	0	0	0	1	1	1	1		1	1	0	1	19		
River Constructions	0	1					1	1	1	1	1	0	0					1	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	0	0	0	24	
Reservoir	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	0	0	1	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	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	0	1	1	1	1	1	1	24	
Humidity	1	1					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	24	
Wind	1	1					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	24	
Pressure	1	1					1	1	1	1	1	1		1	1	1	1	1	1	1	1	0	1	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	26	
Snow	0	0					1	1	1	1	1	0	1		1	1	1	0	1	0	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	0	1	0	0	0	3		
Upward Shortwave	0	1					0	0	0	0	0	0	1			1	1	1	0	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	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	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	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	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	0		
Net Radiation	1	0					0	0	0	0	0	0	0	1		0	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	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	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	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	0	0	
CO2 Flux	0	0					0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	1	0	0	0	0	1	
Evaporation	1	0	1				1	0	1	1	1	1	1	0		1	1	1	0	1	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	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	0	0	
Radiosonde	1	0					0	0	0	0	0	0	0	1		0	0	0	0	0	0	0	0	0	1	1	1	1	5	
Radar	1	1	1				1	0	0	0	0	0	0	1		0	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	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	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	0	0	



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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

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4. User Interface

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

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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

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6. Timeline

2007 Pre-phase: survey of capabilities

- Completion of Implementation Plan

- Input to the Task Sheets

- Test Archive: Metadata, Observed Data during CEOP Phase 1

- A Basin in Each Country?

2008-2011

- Data Archive 2007-2010

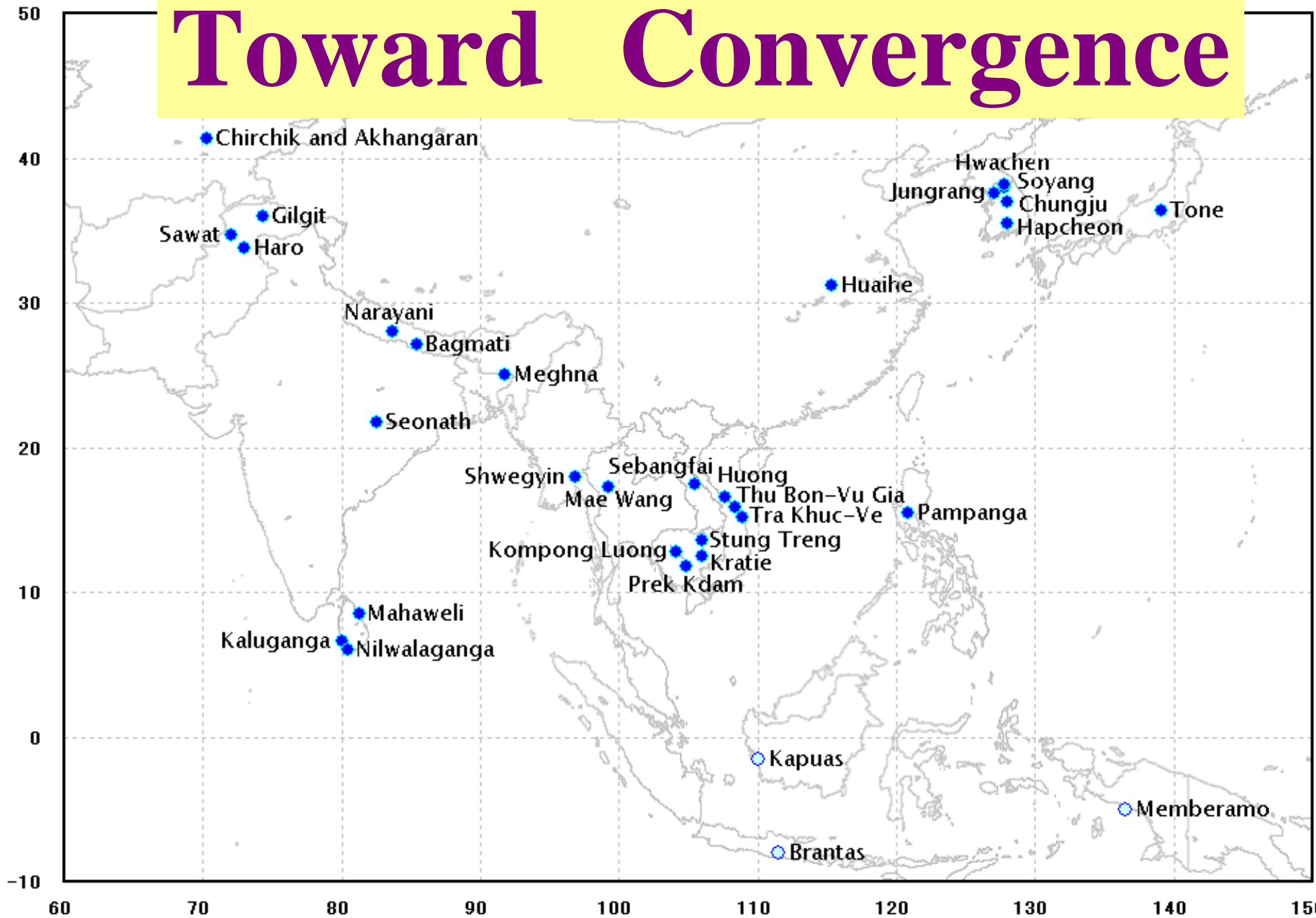
- Demonstration Implementation

2009 -2010

- Preparation for shifting

- from more-research to more-operational phase

Toward Convergence





Dr. Jose Achache (GEO)



Dr. Andrew Matthews (APN)

MEXT



Dr. Sakamoto



Dr. Itatani

OCCCO



Dr. Fujitani



Dr. Miyazaki

JAXA



JAMSTEC



Dr. Matsumoto



Dr. Yamanaka



Dr. Ohata

UT



Ms Koyama Ms Petra K Ms Goda

Prime International



Ms Sekiguchi, Tomuro,



Ms Katoh, Shimizu



Mr Masuyama, Toyoshima, Nishiura



Toward Convergence



29 Countries and 176 participant