

CAPACITY BUILDING IN ASIA

"EARTH OBSERVATIONS IN THE SERVICE OF WATER MANAGEMENT"

Report of Activities on Asian Water Cycle Symposium

1. Background
2. The 1st Asian Water Cycle Symposium
3. International Task Team (ITT) Working Session
4. Step Forward

Toshio Koike
The University of Tokyo
September 26, 2006
Rama Gardens Hotel, Bangkok,
Thailand





Earth Observation Summit I

DECLARATION

Affirmed need for:

- **Comprehensive, coordinated, sustained** Global Earth Observations for **sound decision making**
- **Capacity-building** related to Earth observations
- Exchange of observations in a **full and open** manner
- A **10-year Implementation Plan**

The ad hoc Group on Earth Observations (**ad-hoc GEO**)

U.S. Department of State, Washington DC

July 31, 2003



Earth Observation Summit II

Earth Observation Summit II

April 25, 2004, Tokyo, JAPAN

Framework Document

- **Nine specific areas of socio-economic benefit;**
Disasters, Health, Energy, Climate, **Water**, Weather, Ecosystems, Agriculture and Desertification, Biodiversity
- The Global Earth Observation System of Systems (**GEOSS**)
- A **10-Year Implementation Plan;**

The Implementation Planning Task Team (**IPTT**)

Hotel Okura, Tokyo, Japan

April 25, 2004

GROUP ON EARTH OBSERVATIONS



Earth Observation Summit III

Summit Resolution

- Endorsed the **GEOSS 10-Year Implementation Plan**
- Noted with appreciation the extensive supporting material in its companion **Reference Document**
- Established formally the **Group on Earth Observations (GEO)**
- Issued special communiqué relating to support for tsunami and multi-hazard warning systems with the context of the Global Earth Observations System of Systems (GEOSS)

Palais d'Egmont, Brussels, Belgium

February 16, 2005



Vision for GEOSS

The vision for GEOSS is to realize a future wherein decisions and actions for the benefit of humankind are informed by coordinated, comprehensive and sustained Earth observations and information.



- Algeria
- Argentina
- Australia
- Bahrain
- **Bangladesh**
- Belgium
- Belize
- Brazil
- Cameroon
- Canada
- Central African Republic
- Chile
- **China**
- Croatia
- Cyprus
- Denmark
- Egypt
- European Commission
- Finland
- France
- Germany
- Greece
- Guinea-Bissau
- Honduras
- Hungary
- Iceland
- **India**
- **Indonesia**
- Iran
- Ireland
- Israel
- Italy
- **Japan**
- **Kazakhstan**
- Latvia
- Luxembourg
- **Malaysia**
- Mali
- Mauritius
- Mexico
- Morocco
- **Nepal**
- Netherlands
- New Zealand
- Niger
- Nigeria
- Norway
- Paraguay
- **Philippines**
- Portugal
- **Republic of Korea**
- Republic of the Congo
- Russian Federation
- Slovak Republic
- Slovenia
- South Africa
- Spain
- Sudan
- Sweden
- Switzerland
- **Thailand**
- Tunisia
- Uganda
- Ukraine
- United Kingdom
- United States
- **Uzbekistan**



Water

Improving water resource management through better understanding of the water cycle

Water-related issues addressed by GEOSS will include: precipitation; soil moisture; streamflow; lake and reservoir levels; snow cover; glaciers and ice; evaporation and transpiration; groundwater; and water quality and water use. GEOSS implementation will improve integrated water resource management by bringing together observations, prediction, and decision support systems and by creating better linkages to climate and other data. In situ networks and the automation of data collection will be consolidated, and the capacity to collect and use hydrological observations will be built where it is lacking.



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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**”¹⁵

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.

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

Rama Gardens Hotel, Bangkok, Thailand
September 25, 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

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 below your idea on possible demonstration plan under the framework of AWCI.

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).
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5. Please **introduce your idea** on possible demonstration plan under the framework of AWCI.

Proposals

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

Discussion Points

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 Discussion

Demonstration Project (DP) and related inventories (1/2)

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 and local information (observation).
- To recognize common issues in Asia and share idea of natural and anthropogenic effects
- To shift from research activities and achievements to operational use
 - Demonstration Need

2. Timeline

2007 - Pre-phase: survey of capabilities, test cases using CEOP Phase 1 data (October 2002 - December 2004)

2008 - Start of archiving activities of the DP basins data for the period 2007 - 2010; continue preparations for joint projects.

2009 -2010 - Shift from more-research to more-operational phase

Demonstration Project (DP) and related inventories (1/2)

3. Criteria

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

(ii) Data availability - minimum requirement:

Data type: rainfall, streamflow, weather station data (air temp., wind speed, pressure, humidity...), upper air observation is highly recommended

Raingauge density: according to the WMO standard but local specifics will be considered;

Near-real time data availability is highly recommended;

(iii) Watershed characteristics information availability (land use, soil characteristics, dams and other regulation works made to river channels,...)

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

4. Which data we need for DP?

Global scale NWP outputs

Satellite products (especiall, basin-scale satellite products)

Other global data sets

5. Inventory

Reference Basin Characteristics Table

Location of Model Output Location Time Series (MOLTS) site(s)

Data Policy

Discussion based on the CEOP Reference Site Data Release Guideline

- 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 CEOP Reference Site 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) - will be discussed at Pan-GEWEX meeting (October 2006).*
- 5. Acknowledgement and Citation**
- 6. Co-operation between CEOP Data Users and CEOP Reference Site Principal Investigators (PIs)**
- 7. Co-Authorship for CEOP Reference Site Principal Investigators (PIs)**
- 8. CEOP Publication Library**

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Great Success! Sincere Thanks to the ITT members!

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Further Cooperation and Efforts of the ITT members are expected!

The 2nd Asian Water Cycle Symposium

9 – 10 January 9-10 2007

The University of Tokyo, Tokyo

Objectives:

The symposium aims to launch the Asian Water Cycle Initiative Demonstration Projects through discussions of the ITT report.

GEOSS Symposium on Integrated Observation for Sustainable Development in the Asia-Pacific Region (GEOSS AP Symposium)

January 11-12, 2007

Tokyo

Objectives:

The symposium aims to:

1. present GEO activities based on GEOSS 10-Year Implementation Plan to Governments, Experts, Scientists, Public and Press in Asian-Oceanic countries widely
2. summarize the current situation of in-situ networks, satellite capability, model predictability, and data integration, and discuss future observing plans for filling the observational gaps, avoiding overlaps and contributing to the socio-economic benefits: *Climate Change and Water cycle, Ecosystems and Biodiversities, Disaster*
3. converge existing observational networks in Asian-Oceanic countries to the GEOSS