Working Group 1
GEOSS Asian Water Cycle Initiative (AWCI)

Co-Chairs:
Richard Lawford (GEO Water: IGWCO)
Syahril Badri Kusuma (Institute of Technology Bandung (ITB))
Toshio Koike (The University of Tokyo)

The Fifth GEOSS Asia-Pacific Symposium:
2 - 4 April 2012, Tokyo, Japan
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<th>Year</th>
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<td>Integrated Global Observing Strategy (IGOS) Water Theme Proposal</td>
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**7 Year History of GEOSS/AWCI**

**2001 – Water Theme Approved**

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WG1 Session Objectives

• To introduce each draft implementation plan

• To establish make an integrated cooperative framework among the member countries, the Earth observation communities, science communities and the related international activities.
WG1 Session Agenda

09:30-09:40 Opening GEOSS/AWCI Breakout Session
  Opening Remarks                     D. Cripe, GEO Secretariat

09:40-10:30 GEOSS/AWCI Activity
  Working Group Reports by Chair(s):
  Flood WG K.                     Fukami, ICHARM
  Droughts WG                      I. Kaihotsu, HU
  Water Quality WG                 P. Koudelova, UT
  Climate Change WG                M. Rahman, BUET
  Capacity Building Activities by Lead(s):  S. Herath, UN Univ.
WG1 Session Agenda

10:30-12:45  Brief introduction to Draft Implementation Plans:

1. Bangladesh: M.A. Islam
2. Bhutan: K. Chophel
3. India: R. Kumar/S. Kaur
4. Indonesia: S.B. Kusuma
5. Japan: T. Koike
6. Laos: S. Pathoummady
7. Malaysia: M.Z.M. Amin
8. Mongolia: G. Davaa
9. Myanmar: S. Lin
11. Pakistan: G. Rasul
12. Philippines: F. Hilario
14. Thailand: T. Sukhapunapaphan
15. Uzbekistan: I. Dergacheva
WG1 Session Agenda

13:45-15:30 Inputs from Agencies
1. Asia-Pacific Network for Global Change Research (APN)  A. Takemoto
2. United Nations Educational, Scientific and Cultural Organization (UNESCO)  T. Sonoda
3. Network of Asian River Basin Organizations (NARBO)  T. Kawasaki
4. Japan International Agency (JICA)  Y. Amano
5. Japan Aerospace Exploration Agency (JAXA)  R. Oki
6. Japan Meteorological Agency (JMA)  K. Onogi
7. International Centre for Water Hazard and Risk Management (ICHARM)  K. Fukami

15:30-16:00 Discussion towards an Integrated Cooperative Framework
1. Issues and Needs
• Issues related climate system - water cycle - water use
• Issues related to Water Nexus: agriculture, energy, health – water quality, biodiversity, and ecosystem
• Needs for functions and/or tools of WCI to address the identified issues
• Needs for collaboration framework at the national level: inter-agency, interdisciplinary

2. Implementation proposal
• Steps and Strategy following the three approaches:
  ✓ Framework development approach Strategic approach
  ✓ Technical approach
• Additional resources – suggestion of potential collaborators
• Specific request to GEOSS and to international community (data/tools accessibility)
• Coordination between water cycle integration and capacity development strategy
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NEED FOR RESOURCES

Available Resources/Capabilities:

- Discharge measuring stations
- Water level measuring stations
- Groundwater level measuring stations
- Satellite images by SPARRSO
- Weather forecast by BMD
- Flood forecasting system by FFWC
- Well trained personnel of BUET & MoD
- Linkages with national & international organizations
- In-house training facilities

Lack of Capability:

- Improvement of climate & flood models
- Tools for impact modeling and assessment
- Vulnerability and risk assessment tools to various sectors
- Analytical tools to describe weather extremes and variability
specific issues

• Challenges in Quantitative Precipitation Forecast for Flood Forecast
  1. The forecast should be time and space specific.
  2. It should not be an underestimate otherwise there will be an avoidable loss of life and property.
  3. It should not be also an over estimate as same may result in unnecessary displacement of population resulting in diminishing confidence in forecasts and warnings.

• Inadequate network in Himalayan region
• Integration of Radar and Satellite data in NWP models.
• Sea level rise
Specific request to GEOSS/AWCI

- Inventory: Water Resources Inventory and glaciers inventory
- Future scenarios of GCM/RCM output for Nepal river basin
- Distributed Hydrological Modeling techniques
- Access to Satellite and radar data
- Establishment of Regional data centre
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Frame work Approach

Framework development based on simple approach
Template for Country Input to the AWCI Phase 2 Implementation Plan

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1 CLIMATIC (CHANGE & VARIABILITY) & NON-CLIMATIC FORCING

SYSTEM [MEDIUM]

FUTURE LOW FLOW

2 OUTPUT – RIVER FLOW

EXPECTED SYSTEM IMPACTS

3 ADAPTATION PRODUCTS, ACTIONS & OPTIONS

reduce vulnerability of system

1 CLIMATE VARIABILITY

2 NON-CLIMATIC FACTOR

EARTH OBSERVATION

1 GCM
DYNAMIC - STATISTICAL DOWNSCALING

2 BIAS CORR.

3 CC ‘LOAD’ FACTOR

4 DISAGGREGATE 1-DAY RAIN

CLIMATIC (CHANGE & VARIABILITY) & NON-CLIMATIC FORCING

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Sharing Data and Information
Exchanging Knowledge, Experiences and Ideas
Working Together

River Manager
NPO
Policy Maker
Farmers
Public

Hydrology
Climatology
Engineering

RS
GIS
IT

Climate Change
Flood, Drought
Water Quality
Food Security
Biodiversity
Energy

Agriculture
Ecology