



**- Making a Difference -**

Scientific Capacity Building & Enhancement for Sustainable Development in Developing Countries

**The Global Earth Observation  
System of Systems Asian  
Water Cycle Initiative  
Observation Convergence and  
Data Integration  
(GEOSS/AWCI/OCDI)**

**Progress Report for Year 1  
of APN CAPaBLE Project:  
CBA2008-12NMY-Ishida**

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Progress Report Submitted to APN for Year 1 Activities**

## **Part One: Overview of project work and outcomes**

### **1. Introduction and background:**

Water comprises the most basic and critical component of all aspects of human life and is an indispensable component of the global life support system. On the whole, the water environment is characterized by the hydrological cycle, including floods and droughts. The widespread scarcity, gradual destruction and aggravated pollution of water resources in many world regions have triggered a range of water crises. Nowadays, many water related problems, particularly drinking water pollution, are being reported in various Asian countries. Health damage due to arsenic polluted drinking water is one of such problems. There is an urgent need for international cooperation to overcome the problems and secure the safe and sustainable groundwater utilization. Additionally, global climate change and atmospheric pollution could also have an impact on water resources and their availability.

About 60 % of the World population lives in Asia, and their various social activities including agriculture depend on the bountiful Monsoon rain. At the same time, the vast water cycle variation in Asia can be the cause of droughts and floods, and consequently, may be responsible for an enormous amount of human and economic damage.

To establish a comprehensive, coordinated and sustained earth observation scheme, an agreement for a 10-Year Implementation Plan for a Global Earth Observation System of Systems, known as GEOSS, was reached at the Third Earth Observation Summit held in Brussels, in February 2005; on that occasion the Group on Earth Observation (GEO) was also formally established. "Improving water resource management through better understanding of the water cycle" has been agreed to as one of the targeted societal benefit areas of GEOSS.

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

### **2. Participating countries:**

The GEOSS/AWCI/OCDI involves many Asian countries including but not limited to: Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Japan, Korea, Lao, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Uzbekistan, Vietnam.

### **3. Objectives:**

The aim is to develop an information system of systems for promoting the implementation of integrated water resources management (IWRM) through data integration and sharing and improvement of understanding and prediction of the water cycle variation as a basis for sound decision making of national water policies and management strategies.

The project contributes to the AWCI objectives that include:

1. To develop Integrated Water Resources Management (IWRM) approaches;
2. To share timely, quality, long-term information on water quantity and quality, and their variation as a basis for sound national and regional decision making;
3. To construct a comprehensive, coordinated and sustained observational system of systems, such as prediction systems and decision support capabilities, under the GEOSS;
4. To develop capacity building for making maximum use of globally integrated data and information for local purposes as well as for observation and collecting data.

#### **4. Funding received for 2008/2009:**

USD 60,000?30,000?37,500? **Should be amount received for the first year only!**

#### **5. Outcomes and products against original proposal objectives:**

A kick-off plenary meeting, that included AWCI International Coordination Group (ICG) members, was held at the occasion of the 4<sup>th</sup> Conference of the Asia Pacific Association of Hydrology and Water Resources (APHW), in Beijing, China, 3-5 November, 2008. A full day special session on AWCI was held on 5 November and the 3<sup>rd</sup> meeting of the AWCI followed at the same venue on 6 November.

The AWCI special session included the following four topics that are the AWCI major focus areas: (1) Floods and Landslides, (2) Drought and Water Scarcity, (3) Water Pollution and Ecosystem Degradation, and (4) Climate Change Impacts on Water Cycle. It was mutually beneficial and useful for the AWCI ICG members to contribute to the APHW special session by introducing their scientific activities to science communities in Asia and exchange and share their ideas and experiences.

The 3<sup>rd</sup> AWCI/ICG meeting reviewed the progress since the AWCI Implementation Plan was developed and accepted at the 3<sup>rd</sup> Asian Water Cycle Symposium, Beppu, Japan, December 2-4, 2007. The participants updated the status of AWCI Demonstration Projects for 18 river basins in the participating countries including the status of metadata and data archiving and data quality check. The participants agreed to reinforce data collection and quality check for the AWCI Demonstration Projects (DPs). Ten out of the 18 river basins are now ready to upload raw observation data. The activities of the three AWCI Working Groups (WGs), namely Flood and Landslides, Drought and Water Scarcity, and Water Quality, were also reviewed and it was proposed and agreed to establish the fourth WG on Climate Change Impacts and Adaptation. WGs identified priority activities and agreed to develop their implementation plan at next ICG meeting that is scheduled to take place in Kyoto, Japan, 6 – 7 February 2009 in conjunction with the 3<sup>rd</sup> GEOSS Asia-Pacific Symposium.

In addition, two related capacity building workshops were held in Indonesia (July) and Bangladesh (August) in the form of training programs that addressed rainfall downscaling, hydrological modeling, flood risk management, etc. Conclusions of the capacity building workshops and initial outcomes of the demonstration projects were reported at the 3<sup>rd</sup> AWCI/ICG meeting in Beijing. Development of further training modules and their integration for the DPs are being implemented.

Also, detailed hydrological models were developed for the DPs of four river basins (the Tone River (Japan), Meghna River (Bangladesh), Pampanga River (Philippines), and Huong River (Vietnam)). The usage of distributed hydrological model showed significant advantage of such modeling technique for water resource management and disaster risk reduction.

#### **6. Self evaluation of work performed to date:**

The first year of the project has been successful in transferring from planning to implementation. Since the beginning of 2008, meta-data and data archiving and data quality check for the 18 demonstration river basins has started. Development of training modules and their integration for the demonstration projects are being implemented. Applications of newly developed distributed hydrological models to the four demonstration river basins showed significant advantage of such modeling technique for water resource management and disaster risk reduction. These GEOSS/AWCI/OCDI project activities have significantly contributed to the AWCI Demonstration Projects and Capacity Building plan implementation (<http://monsoon.t.u-tokyo.ac.jp/AWCI/>).