



AWCI

Capacity Development Framework

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Outline

- **Objectives**
- **Approach**
- **Methodology**
- **Implementation**
 - **Resources**
 - **Needs**
- **Workshop objectives**
 - **Agenda for coming years**



Goal

- The goal of the capacity development program of the AWCI is to **facilitate and develop sustainable mechanisms** for the countries in Asia Pacific to **use advanced earth observations systems, associated data and tools** for **water cycle research and water resources management** under GEOSS framework.



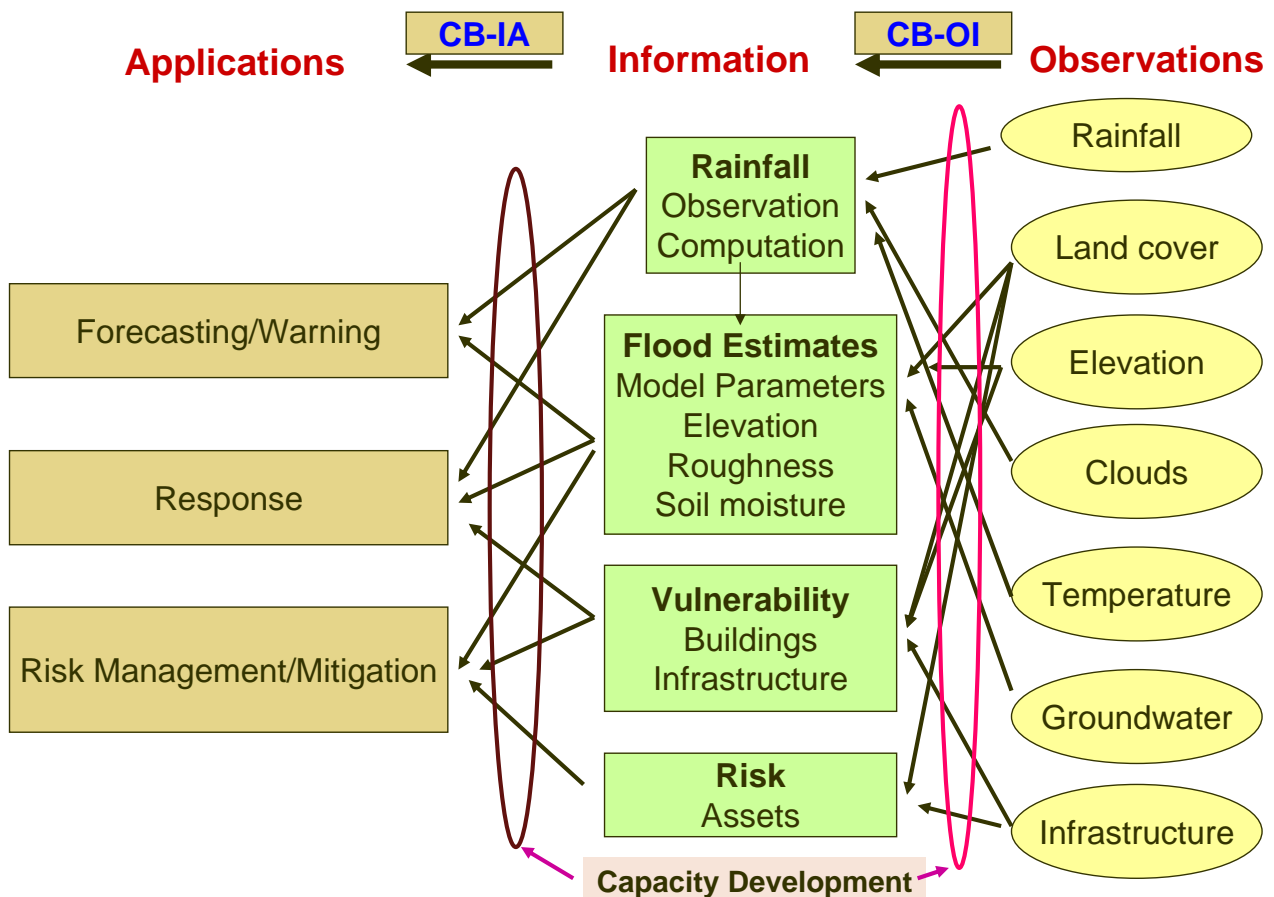
Specific Objectives

- **Downscaling regional and global** information to **basin scale** and to **improve accuracy** required by operational water management applications through a **combination of numerical forecasting and fusion of local observations**.
- Identify reliable and efficient tools to **convert the available observations and data** to **useful information** for flood management through data transformations, interpolation, classification and estimation algorithms.
- **Conversion of information** to **water resources management applications**, both for **operational use** and scenario based assessments for **planning purposes**.

Target groups

- Researchers / Scientists
 - Customizing existing knowledge to suit local conditions supported by global experiences
- Professional / Practitioners
 - Introducing new methods, tools, standards
- Administrative / Local government officers
 - Over view of technology and science

Use of observations/forecasts in Flood Risk Management



Guidelines - requirements

- Capacity Development on **data acquisition and information extraction**, including fundamental & advanced technologies for observations and analyses, and on **end-user product generation** for **IWRM and Water Cycle Resesarch** is urgently required in almost all of the developing countries in Asia.
- Considering the **disparity in existing capabilities** among different countries as well as their varied needs, it is recommended to work out **capacity development programs** based on **prior need assessment**.
- Incorporating the above mentioned requirements, it is proposed to **develop some demonstration projects** in conjunction with the framework of AWCI for the evaluation of **applicability of earth observations for IWRM**.

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Methodology

- The capacity development activities will be designed and carried out concurrently in support of **applications** in **17 Asian Basins** proposed to be studied within the **Asian Water Cycle Initiative** for **clarification of basin water cycle** and the development of appropriate **water management practices**.



Focus areas

- **Three focus areas have been identified by the AWCI participants.**
 - Flood
 - Drought
 - Water quality
- **By designing a generic template for each problem area, we can plan required capacity development activities.**



Structure of Demonstration Projects : Flood Example

- Use of satellite information in two broad areas related to flood risk management
 - **Real time flood forecasting**
 - This includes estimating/forecasting rainfall, estimating and forecasting flood flow, inundation forecasting, operational aspects of food control such as reservoir operations
 - **Flood scenario development**
 - For planning and mitigation purposes. This includes flood risk for different return periods, vulnerability assessment, damage estimation, flood insurance, evacuation guidance, evaluation of mitigation measures, etc



Setting up Models - Tools

- **Selection of model type**
 - Physically based distributed, Physically based lumped, Conceptual
- **Data**
 - Model setup, Initial conditions, Inputs for simulations (rainfall, temperature), values for verification (inundation)
 - Boundary conditions, Discharge estimations
- **Validation**



Flood scenarios

- **Inundation for different return period rainfall as well as a worst case scenario**
- **Flood risk based on inundation (hazard) and vulnerability (population distribution, loss functions for different property distribution)**



Active Areas of Research

- **Improving quantitative rainfall estimation**
 - From numerical simulation + in situ observations and remotely sensed data
- **Use of space based observation/ information for real time flood forecasts**
 - Incorporating dynamic information on water flow, state of infrastructure, etc., for correction or improvement of predictions



Way forward

- **Survey existing programs and Identify gaps and missing links**
 - Recognition of expertise available within the group
 - Making use of available programs within resource organizations
- **Use of this expertise for AWCI applications**
- **Identify gaps and develop programs based on needs**

Resource availability survey

- Details on **Data Services**
- Details on **Training** on specific topics
- Details on **Tools**, mathematical models, manuals, methodologies
- Providing **Forecasts**, alerts on hydrological variables or extreme events
- Providing **Research** opportunities or training on specialized topics

Guiding principles of capacity development

- **The capacity development program is based on the needs of the Asia Pacific countries**
- **Increase the number of technically competent persons who can use advanced space based observations and global climate/weather forecasts.**
- **Facilitate customizing knowledge to meet local conditions and constraints.**

Increasing technically competent staff (1)

● Roving Seminars

- **Base component:** training basic skills to use tools and use of information extracted from space based observations and numerical models.
- **Application examples** and customization through local problem solving.
- Duration, coverage and thematic area will be decided depending on each country need.

Increasing technically competent staff (2)

● Case studies/manual

- Develop **stand alone teaching manuals** on case studies with step-by-step instructions.
- Will use public domain as well as models and software that will be made available to the AWCI group
- The applications will include generic examples as well as specific local case studies supporting AWCI

Increasing technically competent staff (3)

- **Web based systems**

- Web technology now provides many facilities for distance learning and collaborative activities.
- Experiences from (1) and (2) will be used to develop web based training modules with the support from regional institutes.
- **Constraint: WWW ACCESS SPEEDS**



Customizing global knowledge

- **How to incorporate advanced technologies in national programs?.**
 - Example, improving quantitative precipitation forecasts.
- **Joint Graduate programs: proposal**
 - 1st year local university
 - 0.5 years at a resource institute.
 - Final year 1.5 - 2.0 years at a post-graduate degree program in a participating university



Teams

- **The program will target to develop country teams consisting of university/educational institutes and a national agencies. They will be invited to participate in the development and execution of capacity development programs in each country.**



Training Characteristics

- **Each training module will have a clear societal benefit target. They will also identify the target group.**
- **The following linkages will be emphasized**
 - **Science and Society**
 - **Macro and Micro scale linkages.**



Workshop Objectives

- **Summary of resources**
- **Summary of needs**
- **Presentations of resource programs**

- **Discuss, agree and plan essential capacity development programs to be implemented in next 2 years.**



Outcomes

- **Discuss, modify and agree on the “Capacity Development Framework”**
- **Develop the long term plan for the capacity development program**
- **Plan a few concrete activities for next two years**



**Thank you
for your kind attention**



Student Research

- Post graduate student program
 - Support/sponsor Master and Ph. D. programs, supervised jointly with partner institutions. – promote sandwich type programs.
 - Develop appropriate technology, analysis approaches



Training opportunities for professionals and practitioners

- **Short duration training projects**
 - The mini projects focusing on field problems involving a group of professionals (JAXA/AIT)
- **Diploma programs**
 - Residential / at work combined curriculum (UN Virtual Academy)
- **Open Source Tools / Systems**



Over view for Administrators and Policy makers

- **Administrators, especially local government officers need targeted programs to grasp (Bkk WS topic)**
 - Online learning
 - Short term courses

Why local government

- Local government is involved in implementing development programs as well as reconstruction after disasters
- A knowledge of disaster risk management would be very useful in getting required guide lines, especially when disaster management authority is weak

