

Capacity Building Program in Korea

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The Goals of Capacity Building Program(CBP) on AWCI

- To facilitate the use of earth observations systems for the Asia Pacific countries
 - Data fusion of remote sensing, numerical forecasts and local observation
 - Development of downscaling algorithm for basin-scale hydrologic application

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Questions

- What can I contribute for CBP ?
- What is the benefits from CBP ?

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Review of capacity building program

• Goals

- To facilitate the use of earth observations systems for the Asia Pacific countries

• Target Groups

- Researchers / Scientists
- Professional / Practitioner
- Administrative / Local government officials

• Methodology

- Short and long-term training
- Online training

• Strategic Implementation

- Demonstration approach : 17 river basins
- Working group approach : 3 working groups
 - Observation convergence, data integration, information sharing

Korean Demonstration Project

- Use of Satellite and Numerical Forecast Data for Flood Management
- Development of Radar Rainfall & Flood Forecasting System
- Climatic Change Impact & Vulnerability Assessments on Water Resources in Korean Peninsula

Working Group Approach - Flood WG

- Goal : build up a scientific basis for suitable flood risk management for each country through the full utilization of global, regional and in-situ data
 - Objective 1 : to improve real-time flood forecasting system for short-term crisis management
 - Objective 2 : to assess flood risk and vulnerability and to make flood scenarios for long-term integrated flood risk management

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What is the contribution from Korean Side

- Data sharing for the demonstration basin
- Educate young graduate students / Invite international research collaborators

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AREAS OF RESEARCH INTEREST	RESEARCH EXPERIENCE
• Coupled Atmosphere and Surface Runoff Model Development	• Station Precipitation Model
• Precipitation Prediction Model Development	• Surface Runoff and Channel Routing Model Development
• Real-Time Flood and Flash Flood Forecasting Model Development	• Stochastic Processes for Flood Prediction
• Land Surface Processes and Climate Variability Study	• Field Experiment for Evapotranspiration
• GIS-Based Water Resources Engineering	• Utilization of Weather Forecast Information for Water Resources Application
	• Climate Change Study
	• Flash Flood Forecasting Model Development
	• Radar Rainfall Estimation and Its Hydrologic Application
	• Operation of Urban Experimental Watershed

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What is the benefits for Korean Side

- International research collaborations with all countries representatives
- Data sharing for technology development
- Technology transfer
 - Interesting technology ? ▶
 - Need to train Korean target groups ?
(e.g., Administrative / Government officials)
 - Need to make a new funding for researches and trainings ?

Legend :
3 : being applied
2 : applicable
1 : potentially applicable
0 : not applicable

		Bangladesh			Bhutan	Cambodia	China	Indonesia	Lao PDR	Mongolia	Myanmar	Philippines			Sri Lanka	Thailand			Vietnam						
		RS data	On-site monitoring	Software	Training	Information dissemination sys	Flood forecasting and EMS	Flood forecasting and warning	Flood and drought forecasting	Flood and drought risk map	Flood	Drought	Flash flood forecast	radar and sat data use training	Access to GCM output	in-situ and sat data integration	Flood hazard map	Climate change scenario	Capacity building	Data assimilation	Climate model for long range forecast	Radar interpretation	Meteorological EMS	Flood forecasting	Water quality
CEOP	data integration service	2	2	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1
	QC service	2	2	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1
GWSP	Global DB(Digital Atlas, Dam) training & research workshop	1	0	0	0	0	1	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0
	University curricula	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Web-based teaching package	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNU	flood inundation modelling	0	0	1	1	0	2	2	2	2	1	2	0	0	2	0	1	0	0	0	0	0	2	0	1
	loss estimation	0	0	0	1	0	1	1	1	1	1	1	0	0	1	0	1	0	0	0	0	0	1	0	1
	rainfall downscaling and forecast	0	0	0	1	0	2	2	2	2	2	2	0	0	2	0	1	0	0	0	0	0	2	0	1
ICHARM	Global Flood Alert System	2	0	0	0	0	2	2	2	2	0	2	0	0	2	0	0	0	0	0	0	0	2	0	0
	flood hazard map training	0	0	0	2	0	1	1	1	1	1	0	0	0	1	0	2	0	0	0	0	0	1	0	0
	river and dam engineering training	0	0	0	2	0	1	1	1	1	0	1	0	0	1	0	2	0	0	0	0	0	1	0	0
	Master course on flood mitigation	0	0	0	2	0	1	1	1	1	0	1	0	0	1	0	2	0	0	0	0	0	1	0	0
MRC	river basin management training	0	0	0	2	0	1	1	1	1	0	1	0	0	1	0	2	0	0	0	0	0	1	1	0
	water quality analysis training	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0
	flood hazard mapping training	0	0	0	2	0	2	2	2	2	0	2	0	0	2	0	2	0	0	0	0	0	2	0	0
	flood emergency management training	0	0	0	2	0	2	2	2	2	0	2	0	0	2	0	2	0	0	0	0	0	2	0	0
	mathematical modelling training	0	0	0	2	0	1	1	1	1	0	1	0	0	1	0	2	0	0	0	0	0	1	0	1
	satellite rain estimation training	0	0	0	2	0	1	1	1	1	0	1	0	0	1	0	2	0	0	0	0	0	1	0	1
China	flood and drought management system training	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	2	0	0	0	0	0	1	0	1
	data&product access	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
		1	1	0	2	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
PUB	WGs and projects	0	0	0	1	0	1	1	1	1	1	1	0	0	0	1	0	1	1	1	0	0	1	0	0
JAXA/AIT	Mini-projects	2	2	1	2	0	2	2	2	2	1	2	0	2	2	0	2	0	0	0	0	0	2	0	0
	Sentinel Asia	1	0	0	2	2	2	2	2	2	0	2	0	2	2	0	2	0	0	0	0	0	2	0	0
MAIRS	Enhanced observation	1	1	0	1	1	1	1	1	1	1	1	0	0	1	1	0	1	0	0	0	0	1	0	0
	regional model development	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1



Thank you for your attention

Needs and Proposals for Capacity Building in Korea

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Needs-Interaction technology between atmospheric sciences and hydrology

● Numerical weather predictions at KMA/MOST

- GDAPS for 110×110 and 220×220km
- RDAPS for 30×30km (5-km res. Test)
- GTS network for global observations of on-site and RS data
- Short-term(48 hrs), weekly(48hr-7days), long-term (monthly, seasonal, bi-annual) weather forecast information are provided

● Real-time flood forecasts at FCCs/MOCT

- Operate event-oriented FF model
- Collect real-time prec. and stage data by telemeters

● Uncertainties of flood forecasts

- inaccurate information of weather forecasts and runoff simulations
- non-existence of interaction technology between these two fields



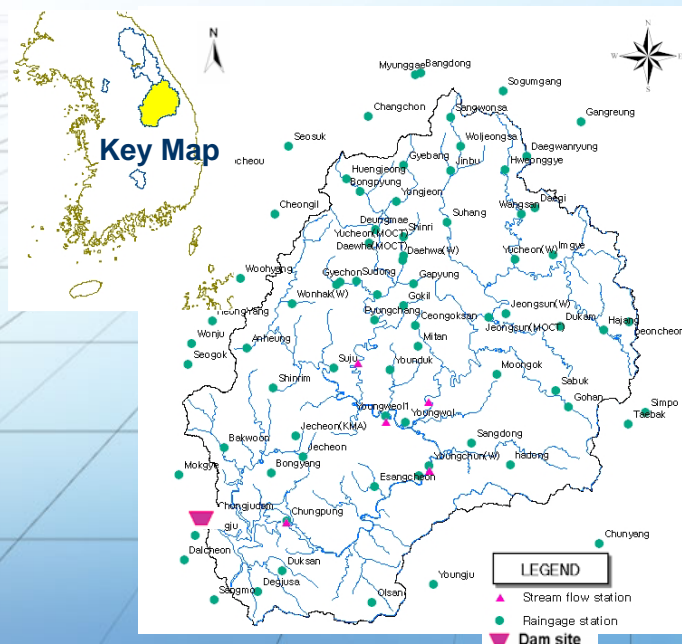
Needs-Interaction technology between atmospheric sciences and hydrology

- Evaluation of these interaction
 - Weather forecasts system
 - Flow simulations system
 - Met. and hydro. observation systems
- Regional requirement under existing infrastructure
 - Development of technology for weather forecast improvement
 - Distributed-type hydrologic modeling with RS data
 - Interaction technology between these two fields
- Need 1- Real-time flood forecasting technology by using short-term weather forecast
- Need 2- Development of flash flood guidance system
- Need 3- Wise use of satellite data and weather forecast information for water resource management



Proposals-data collection and technology development on demonstration basin for capacity building

- Demonstration basin – data collection



Characteristics of Choong-Ju basin

Location	App. 128°E, 37°N
Basin Areas	6662 km ²
Catchment Lengths	321.9 km
Elevation	70-1570 EL.m
Land Use	Mountain
Annual MAP	1149 mm

Available data

Raingauge St.	46 (weather radar data)
Stage St.	5
Evaporation	Pan data
GIS	DEM, Landuse, Soil map



Proposals-data collection and technology development on demonstration basin for capacity building

- **Technology development – Interactions between atmosphere and hydrology**
 - Understanding numerical weather forecasts according to forecast lead time (for both KMA and AWCI outputs)
 - Use of satellite data for enhancement of water resources management and also for flood management
 - Application of various runoff models (conceptual, distributed models)
 - Developing interaction technologies between these two fields for both flood forecasting and water resources management

- **Regional requirement under existing infrastructure**

