The Third Asian Water Cycle Symposium

Beppu, Japan, 2-4 December 2007

GEOSS/AWCI Capacity Building Programme in Bangladesh

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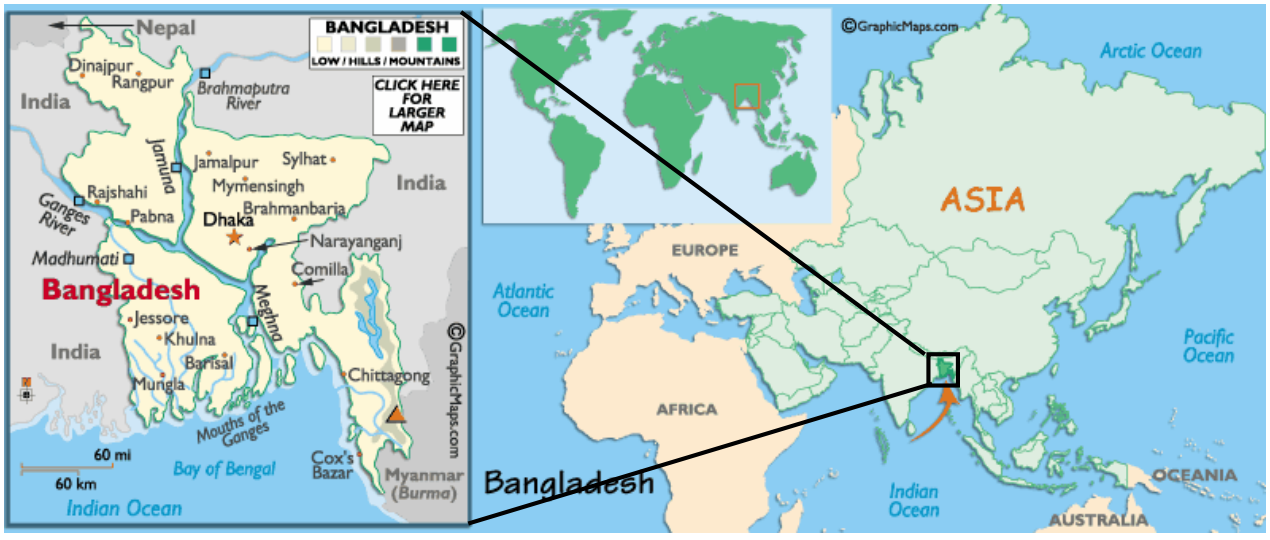
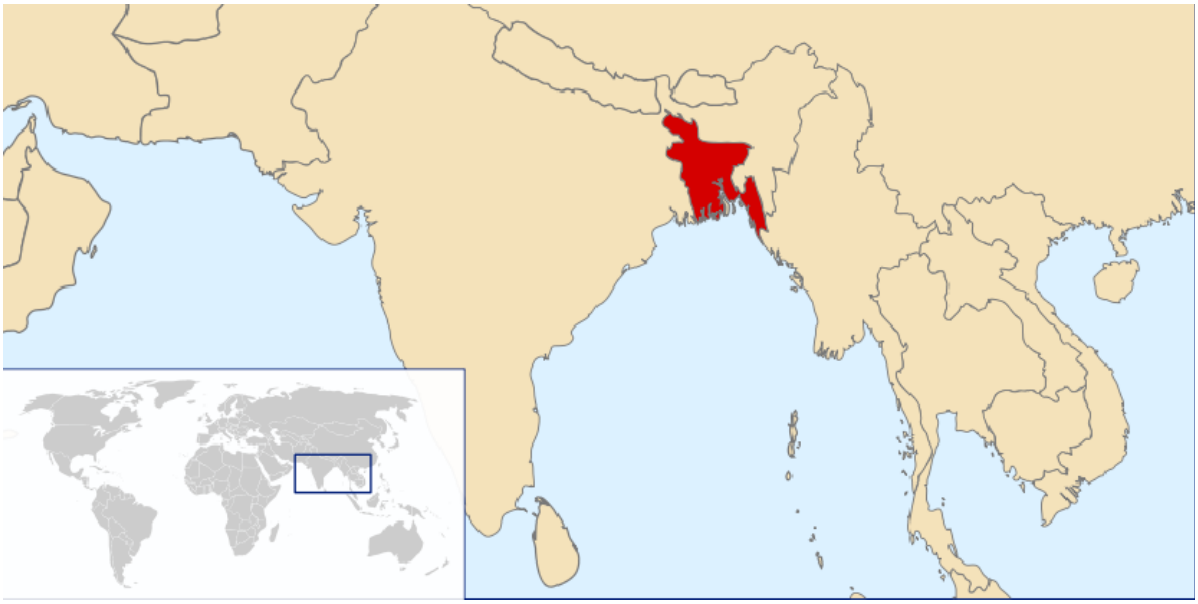
Dhaka, Bangladesh

Maps of Bangladesh, world and Asia



Position of Bangladesh is shown in this world MAP and ASIA map.

Location of Bangladesh

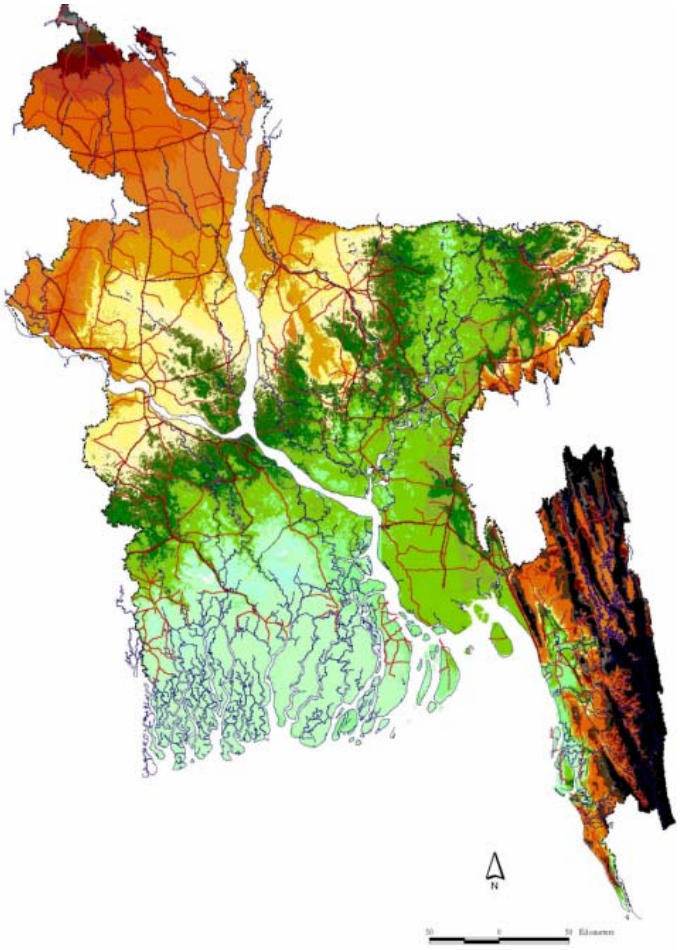


GEOGRAPHY OF BANGLADESH

Bangladesh is a Southeast Asian country of area

- **about 148,875 sq. Km.**
- **Lat: 20^0 45' to 26^0 40'N**
- **Long: 88^0 05' to 92^0 40**
- **Most part of it is a plain low land, with the hills in the SE and NE parts.**
- **The vast Bay of Bengal lies to the south and**
- **great Himalayas in the north of the country.**

- **Land of about 230 rivers**
- **But 57 rivers originate from outside.**
- **The major rivers- Meghna, Padma and Brahmaputra.**
- **Trans boundary rivers affects the Climatic conditions.**
- **Among the natural disasters-**
  - **Drought**
  - **Flood**
  - **Cyclones & Storm Surges**
  - **Nor'westers/Tornadoes**
  - **River-erosion**
  - **Heavy Rainfall**
  - **Salinity**
  - **Arsenic Contamination**
  - **Water Scarcity & Pollution**



Topography of Bangladesh

- Land elevation of 50% of the country is within 5 m of MSL
- About 68% of the country is vulnerable to flood
- 20-25% of the area is inundated during normal flood

CAPACITY BUILDING

Introduction

- Building capacity is essential to the nation, which includes ensuring full utilization of the datasets for end users.
- The importance of capacity building is critical for all nations, especially for developing nations like Bangladesh.
- In the coming years, growing country population with expanding economies will require access to Earth observations for a wide range of societal, scientific, and economic needs.
- International contributions are essential for completing the data sets needed to address important national issues.

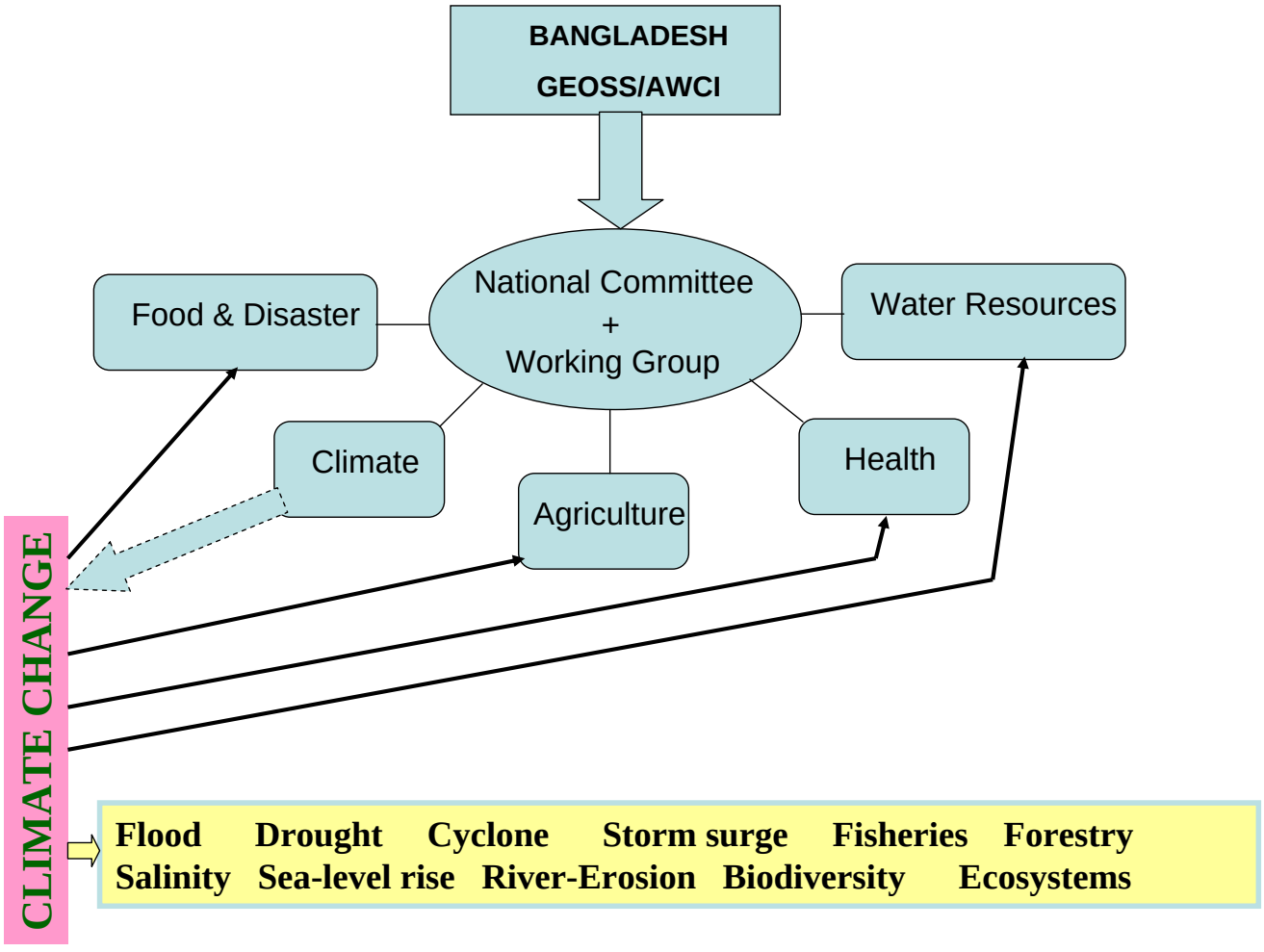
1.1 The national committee for GEOSS/AWCI in Bangladesh

1	Mr. Kamrul Hasan, Secretary, Ministry of Defence (MOD), Government of the People's Republic of Bangladesh, Dhaka	Chairman
2	Brigadier General Shah Md. Sultan Uddin Iqbal, BIRPROTIK, Joint Secretary, Ministry of Defence, Government of the People's Republic of Bangladesh, Dhaka (Md. Abdul Quadir, Representative)	Co-Chairman
3	Mr. Md. Nazmul Huda Khan, ndc., Chairman, SPARRSO, Government of the People's Republic of Bangladesh, Dhaka	Member
4	Dr. Md. Shahjahan Biswas, Director General, Health Services, Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh, Dhaka	Member
5	Dr. Samarendra Karmakar, Director (Current Charge), Bangladesh Meteorological Department, Government of the People's Republic of Bangladesh, Dhaka	Member-Secretary
6	Dr. Md. Nazrul Islam, Associate Professor, Department of Physics, Bangladesh University of Engineering and Technology (BUET)	Member

7	Dr. Md. Mafizur Rahman, Professor, Department of Civil Engineering, Bangladesh University of Engineering and Technology (BUET)	Member
8	Dr. Bilqis Amin Hoque, Executive Director & Head of Research, Environment & Population Research Centre (EPRC)	Member
9	Dr. Wais Kabir, Director, SAARC Agricultural Centre (SAC), Bangladesh, Dhaka	Member
10	Mr. Md. Sazedul Karim Chowdhury, Superintendent Engineer/Director, Processing and Flood Forecasting Circle, Bangladesh Water Development Board (BWDB), Ministry of Water Resources, Government of the People's Republic of Bangladesh, Dhaka	Member
11	Mr. Md. Abu Sadeque, PEg., Director (Admin), Bangladesh Disaster Management Bureau (DMB), Ministry of Food and Disaster Management, Government of the People's Republic of Bangladesh, Dhaka	Member
12	Mr. Sardar M. Shah-Newaz, Principal Specialist, Irrigation Management Division, Institute of Water Modeling (IWM), New DOHS, Mohakhali, Dhaka.	Member

National data management group

1.	Dr. Md. Mafizur Rahman, Professor, Department of Civil Engineering, Bangladesh University of Engineering and Technology (BUET)	Team leader
2.	Dr. A. K. M. Saiful Islam, Assistant Professor, IWFM, Bangladesh University of Engineering and Technology (BUET)	Member
3.	Md. Abdul Mannan, Meteorologist, Bangladesh Meteorological Department (BMD)	Member
4.	Mr. Zakir Hossain, Institute of Water Management (IWM), New DOHS, Mohakhali, Dhaka	Member



GEOSS/AWCI Capacity Development Framework

- Goal and Objectives
- Target groups
- Methodology
- Institutions
- Conceptual Diagram

Goal and Objects:

➢ to facilitate and develop sustainable mechanisms of Bangladesh

➢ Use advanced earth observations systems, associated data and tools for water cycle research.

To do these we need to do..

- Downscaling the regional and global information to Meghna Basin Scale
- Identify reliable and efficient tools

Target Groups for capacity building of Bangladesh

- **Researchers**
- **Professionals**
- **Administrative and Local governments**

Methodology: GEOSS/AWCI Capacity Building Program

a. **Observation instruments and networking:** ***At present***
   - ***Rain-gauges** are used to measure rainfall at different points in the targeted basin.*
   - ***The weather radar** is operated to monitor the flood situation.*

b. **Data management:**
   - ***Rainfall (Rain gauge)***
   - ***Temperature,***
   - ***Wind** and*
   - ***Radar data** are archived in Bangladesh Meteorological Department (BMD).*
   - *Archived data can be used following the WMO and Local Government policy.*

c. **Capacity building:** *Capacity building is very essential for the decision makers, researchers and end users. Capacity building through*
   - ***Training** and*
   - ***Workshop** is expected through this project.*

d. **Development of Early-warning system:** *Program is ongoing with other Government organization such as*
   - *BMD,*
   - *BWDB, EPRC, IWM*
   - *BUET*

GANGES BRAHMAPUTRA MEGHNA BASINS

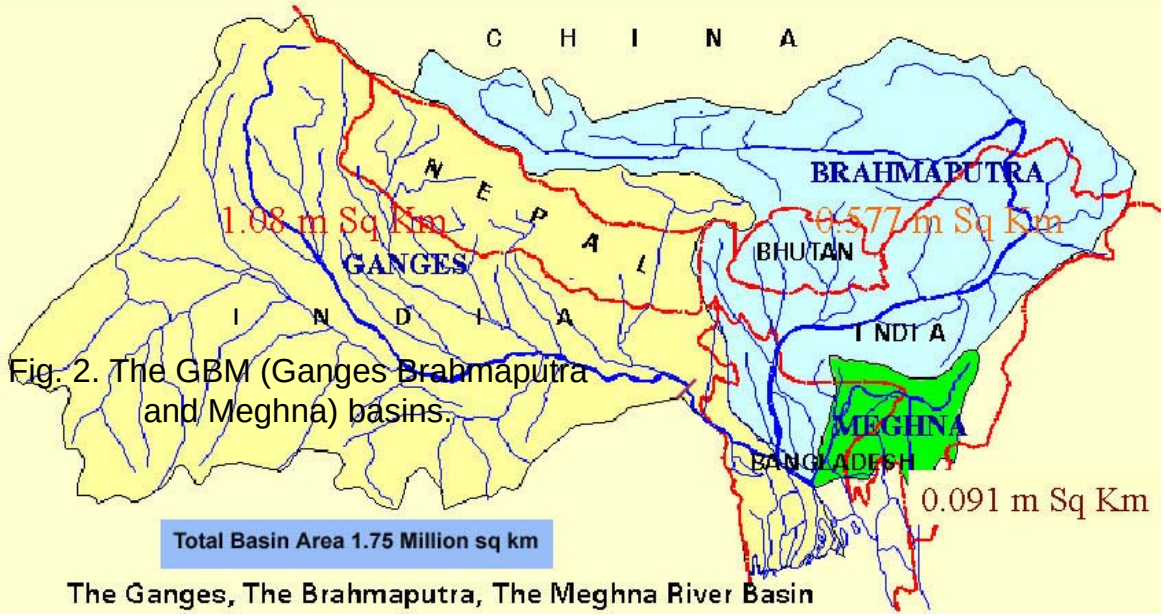


Fig. 2. The GBM (Ganges Brahmaputra and Meghna) basins.

General Information of Meghna Basin

A. Boundary Extent

Extent, Total (India + Bangladesh) ,

Min Longitude: 90^0 30', Latitude : 23^0 10'

Max Longitude: 94^0 25', Latitude : 25^0 40'

Extent, Bangladesh Part

Min Longitude: 90^0 30', Latitude : 23^0 15'

Max Longitude: 92^0 32', Latitude : 25^0 15'

Basin Outlet Chandpur (close to District town)

Longitude: 90^0 40', Latitude : 23^0 10'

B. Basin Area

Total (India + Bangladesh) : 61,021 Km^2

Bangladesh Part : 20,530 Km^2

6. Schedule

2008:

- Collection of GMS data
- Modification of CST for new datasets
- Collection of DEM (data)
- Collection of Digital soil map
- Collection of digital land use data
- Field inspection
- Collection of rainfall data
- Rain gauge data

6. Schedule (Continue)

2009:

- Calibration of the model parameters

2010:

- Run Hydrological model
- Data analysis and preparation of inundation map

2008, 2009 & 2010:

- Capacity building

7. Data requirement for Meta data

Surface

- Air Temperature
- Humidity
- Wind
- Pressure
- Precipitation
- Snow Depth
- Skin Temperature – RCM data
- Upward Short wave Radiation – RCM data
- Downward Short wave Radiation – RCM data
- Upward Long wave Radiation – RCM data
- Downward Long wave Radiation – RCM data
- Net Radiation – RCM data
- Sensible Heat Flux – RCM data
- Latent Heat Flux – RCM data
- Ground Heat Flux – RCM data
- CO2 Flux- RCM data

Hydrological

- Stream flow
- Reservoir (Water level, Outflow)
- Groundwater Table
- Evaporation
- Soil Temperature
- Soil Moisture

Atmosphere

- Planetary Boundary Layer Tower
- Pilot Balloon
- Radiosonde
- Radar

Water Quality

- Groundwater quality indicators
- Surface water quality indicators

Others

- Ground Water Well

Resource Organization

1. Name of Organizations:
   a. Bangladesh Meteorological Department (BMD)
   b. Bangladesh University of Engineering & Technology (BUET)

2. Contact Persons:

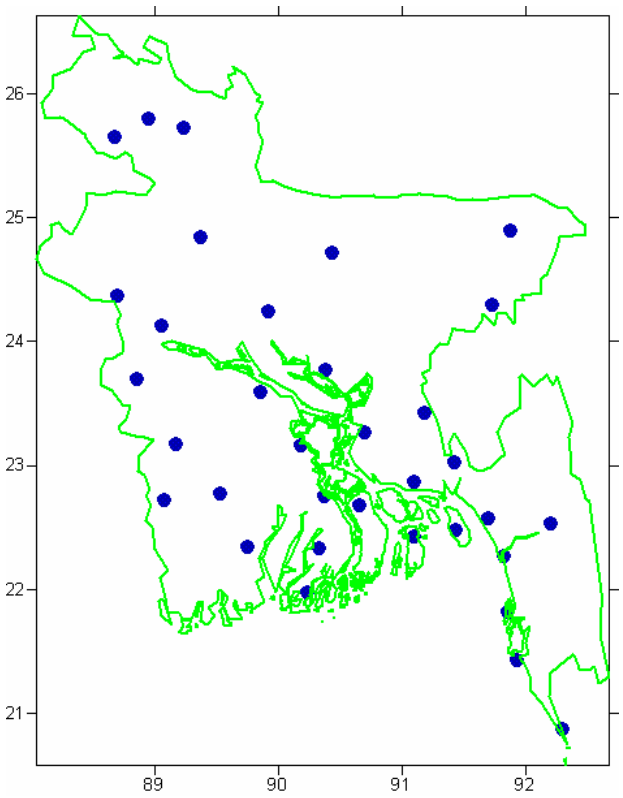
   a. Dr. Samarendra Karmaker, Director, BMD, Dhaka, Bangladesh,
   E-mail: directorbmd2005@yahoo.com
   Phone: + 88-01556362723

   b. Dr. Md. Nazrul Islam, Associate Professor, BUET, Dhaka, Bangladesh,
   E-mail: mnislam@phy.buet.ac.bd,
   Phone: 88-01715573040

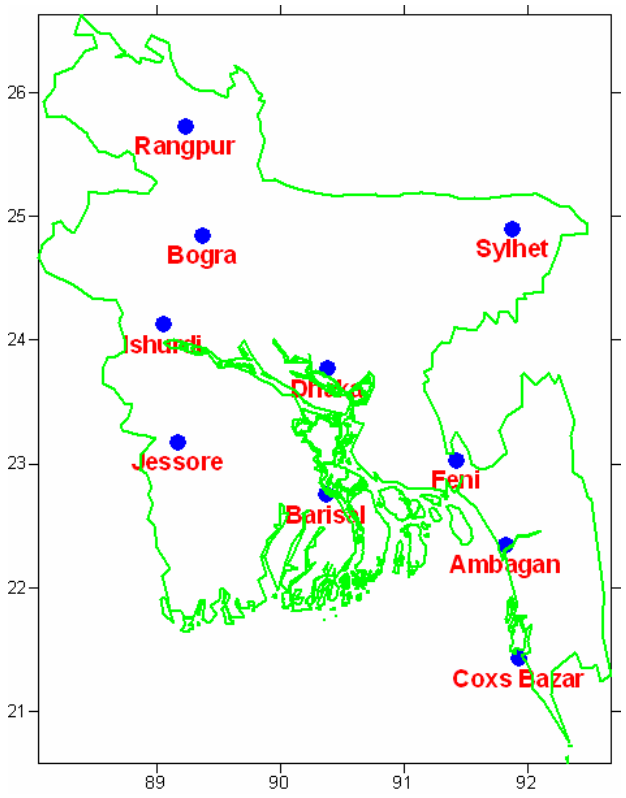
Temporal Data

a. Data Type:

- **Raingauge-34 stations of Bangladesh, 1950 to present date, According to WMO and Local Government policy, CD**
- **Weather Radar: Bangladesh and its surroundings, From 2000 to present date, According to Local Government policy, CD**



Location of operational 35 First Class Observatories of BMD



Location of operational 10 Pilot Balloon Observatories of BMD

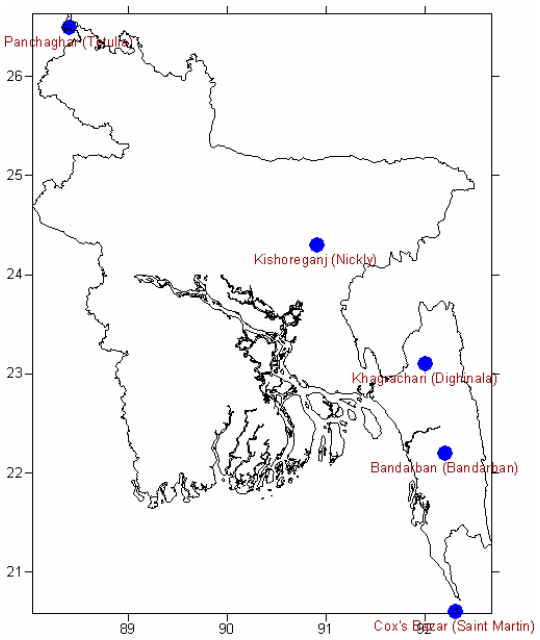


Figure: Proposed First Class Observatories of BMD

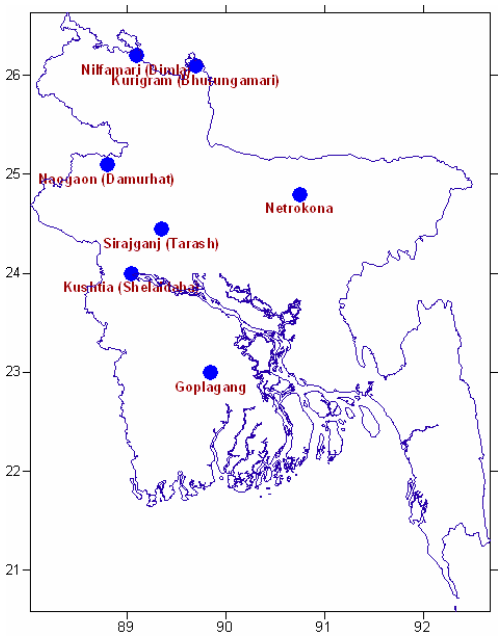


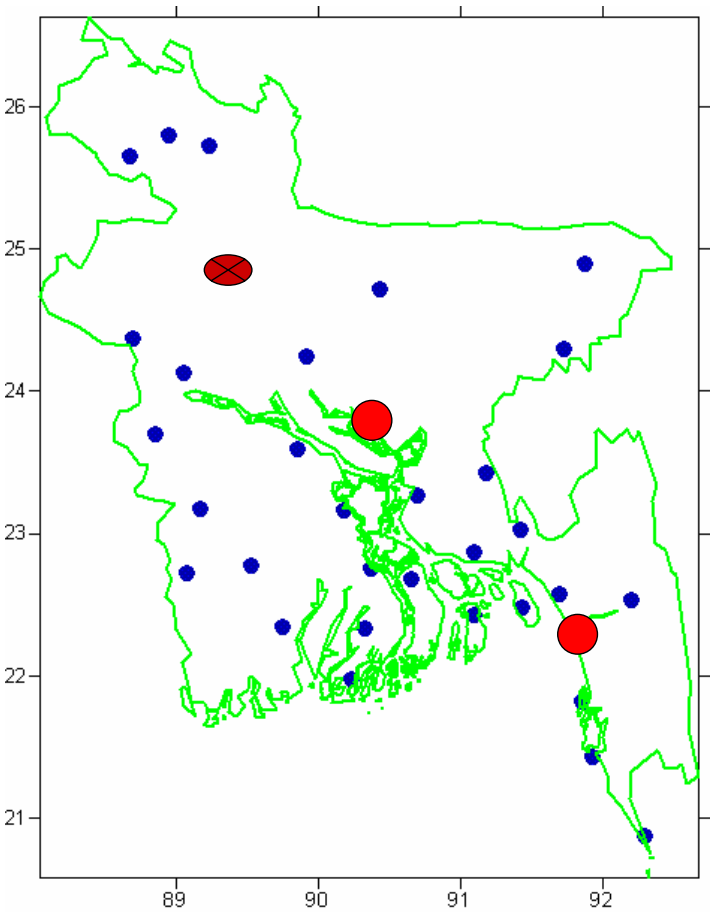
Fig: Proposed Agro-meteorological Observatories of BMD

Location of Rawin Sonde (Upper air) Observatories of BMD

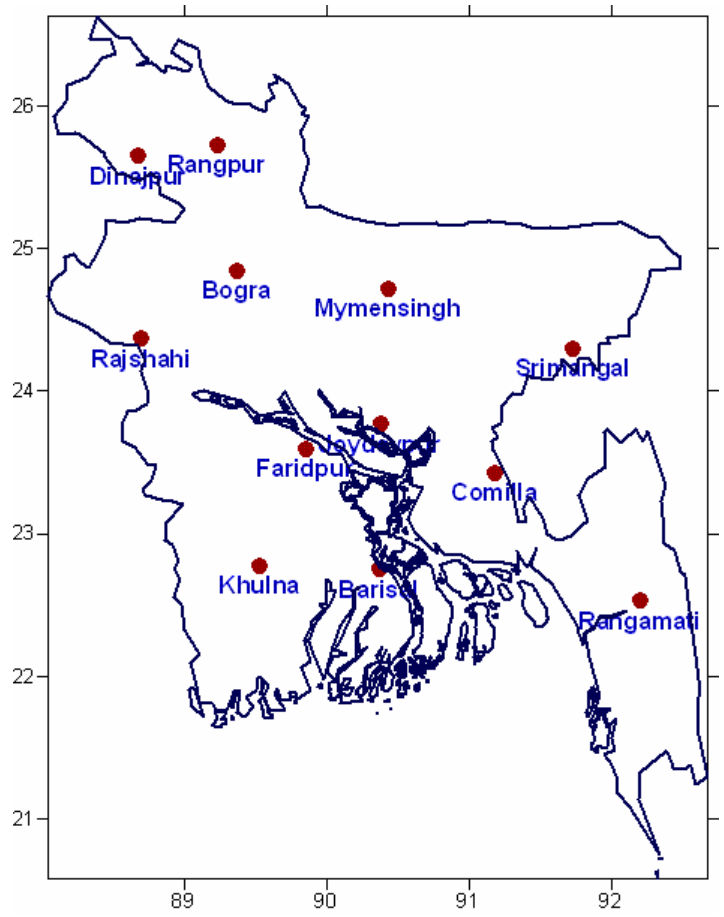
Legend

Operational

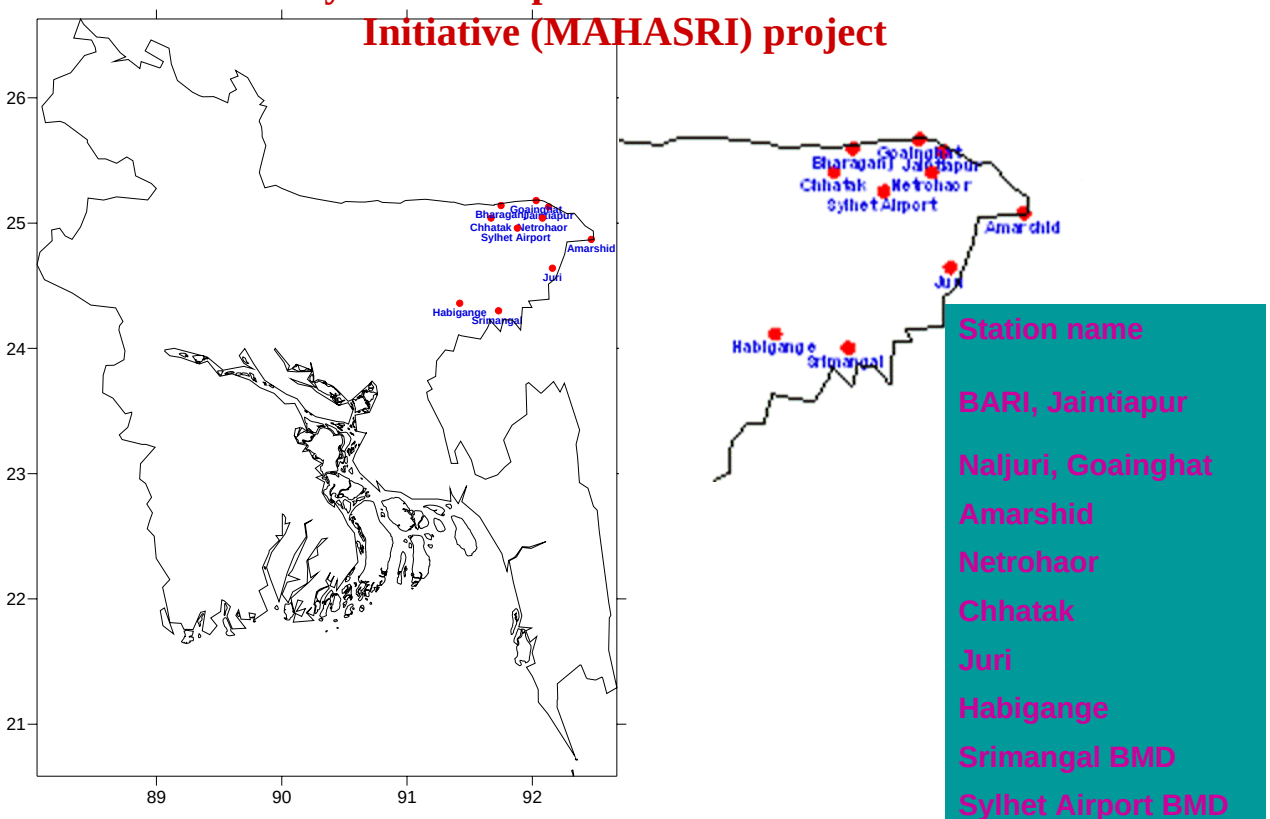
Non-Operational
(To be operational this year)



Location of 12 Agromet Observatories of BMD



Automatic rain-gauge Stations over Northeastern Bangladesh under Monsoon Asian Hydro-Atmosphere Scientific Research and Prediction Initiative (MAHASRI) project



Station name

BARI, Jaintiapur

Naljuri, Goainghat

Amarshid

Netrohaor

Chhatak

Juri

Habigange

Srimangal BMD

Sylhet Airport BMD

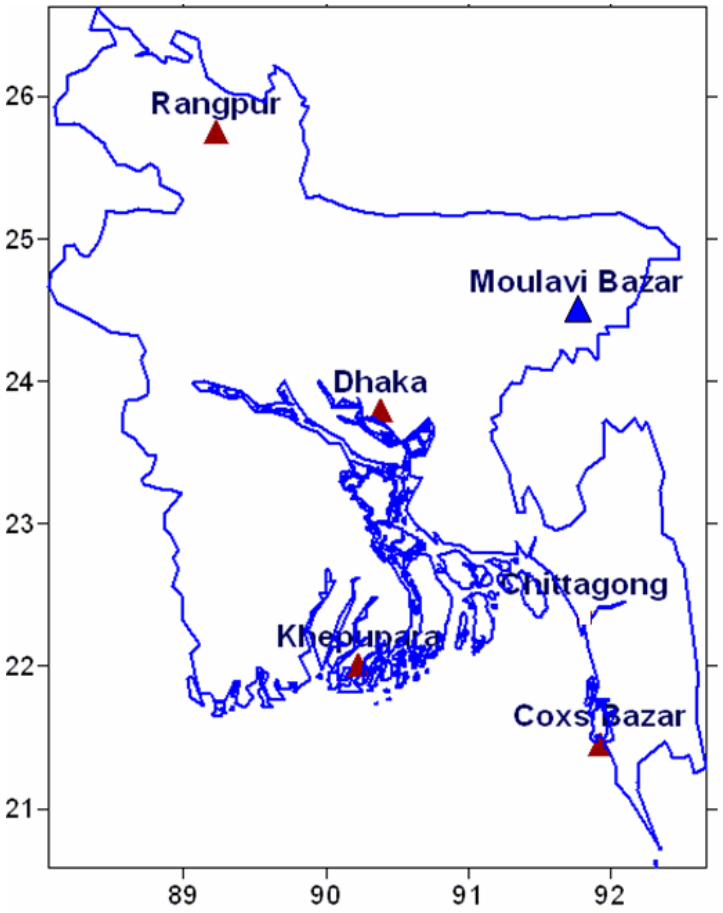
BDR, Bharaganj

Location of RADAR Stations of BMD

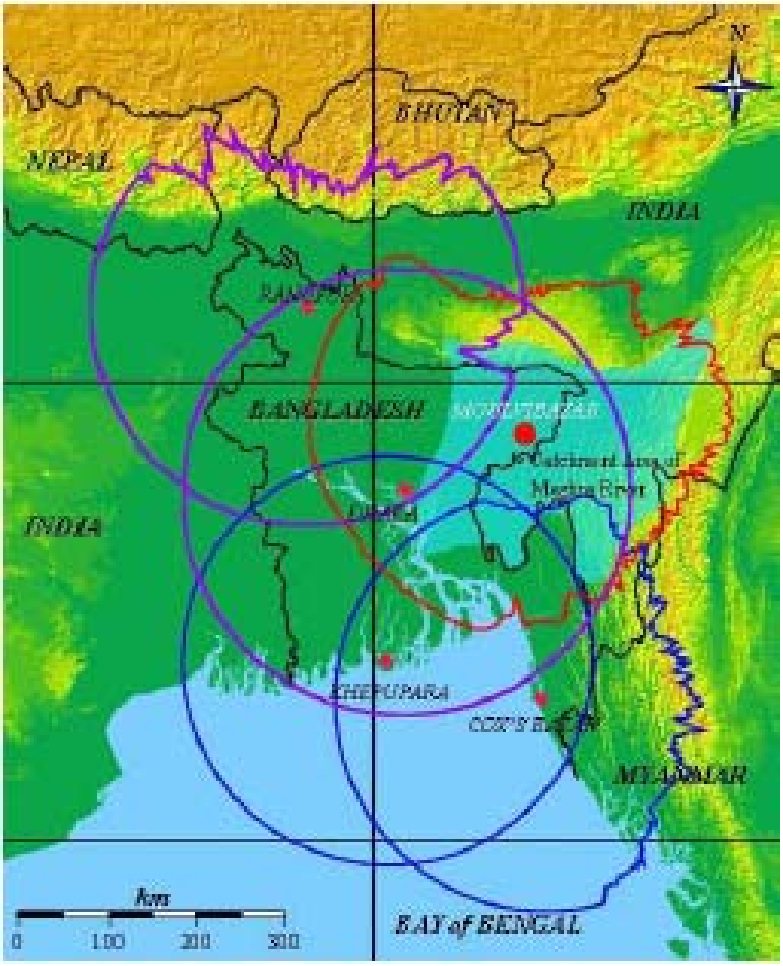
Legend

▲ **Operational**

▲ **Under process of Installation**



Detection Range of the Radar System including the Proposed one



Training Services on specific topics

Flood Related:

a. Short course on Water and Flood Management…..
- Journalists (Occasional) at Press Institute of Bangladesh (PIB) and BUE

b. GIS and Remote sensing for Flood Disaster Management in Bangladesh

Water quality

a. Short course on Remote Sensing and GIS in Water Management at BUET.

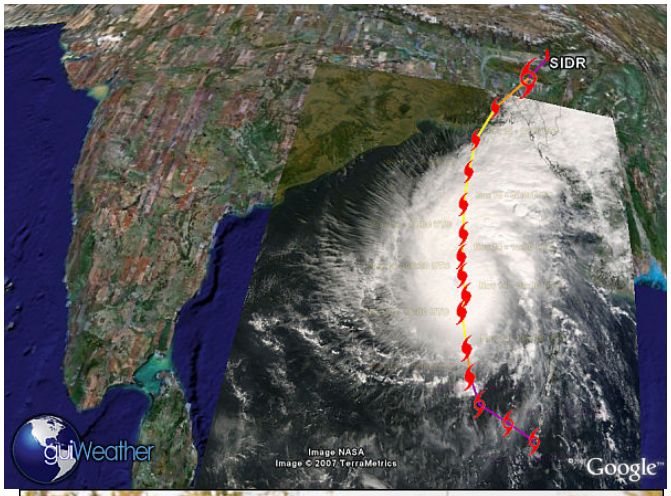
Climate sector

Title: "*To develop a hydro-meteorological prediction system for flood monitoring and forecasting in the Meghna river basin in Bangladesh*".

Component Project: GEOSS/AWCI in Bangladesh (GEOSS/AWCI-BD)

Cyclone SIDR during 10-15 November in Bangladesh

- Cyclcone SIDR has devastating affect on Bangladesh but due to timely and accurate forecast death toll reduced remarkably.
- Details on Cyclone SIDR will be delivered during the country report on "Demonstration Projects" tomorrow.



Conclusion

- For the capacity building we have planned elaborate programme out of which limited success has been achieved as budget from the government is limited.
- It we get external technical and financial support we would be able to contribute to meet the target of AWCI.

Thank You