COUNTRY PRESENTATION

ON

BANGLADESH

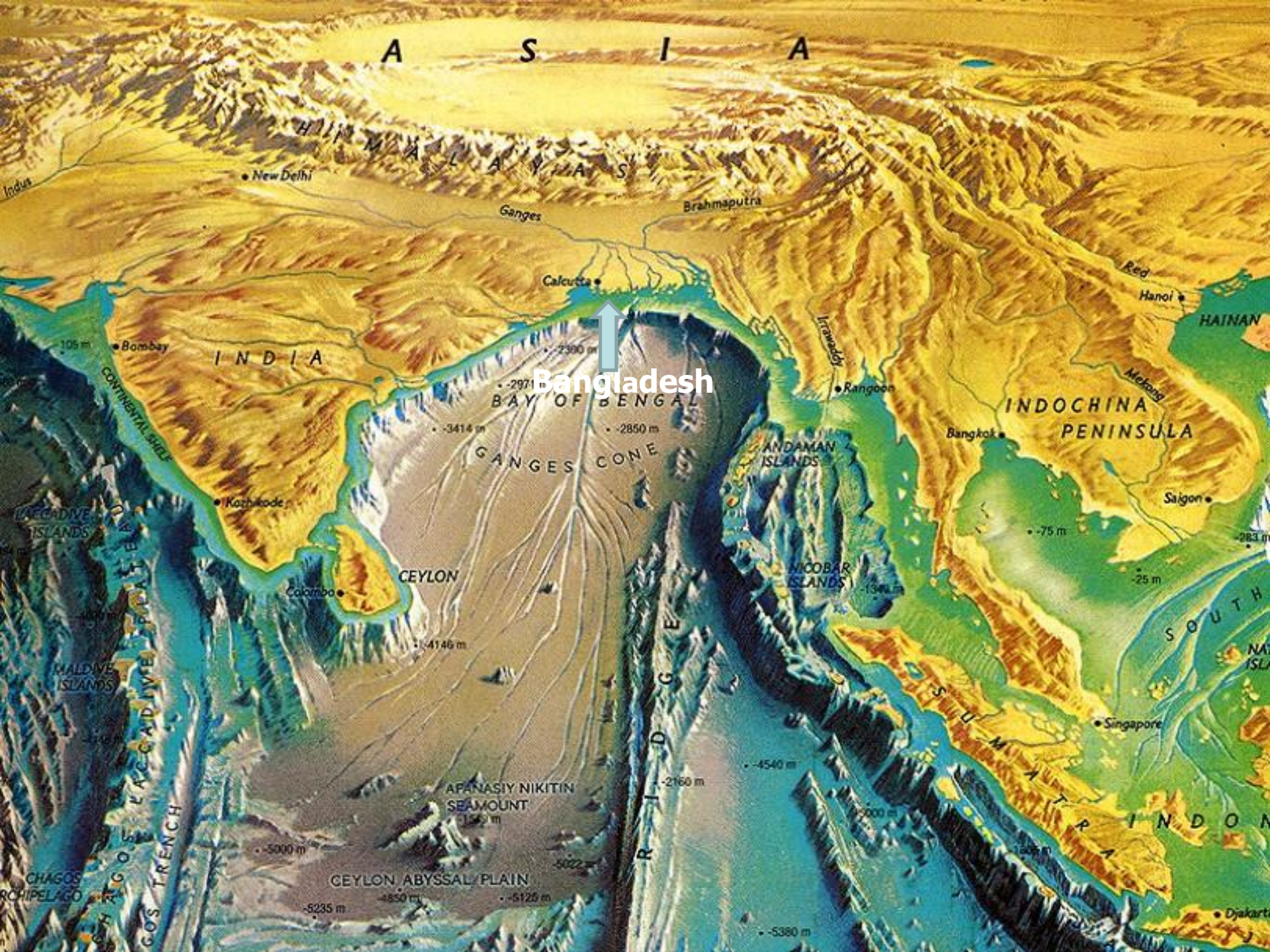
By

MR JAYNAL ABEDIN

JOINT SECRETARY (WORKS & DEVELOPMENT)

MINISTRY OF DEFENCE


Bangladesh
Geographical Location
of Bangladesh


A S I A
HIMALAYAS
Indus
New Delhi
Ganges
Brahmaputra
Calcutta
Red
Hanoi
HAINAN
Irrawaddy
Bombay
INDIA
CONTINENTAL SHELF
Bangladesh
BAY OF BENGAL
Rangoon
Mekong
INDOCHINA PENINSULA
Bangkok
ANDAMAN ISLANDS
GANGES CONE
Kozhikode
Saigon
LACCADIVE ISLANDS
CEYLON
Colombo
NICOBAR ISLANDS
SOUTH
MALDIVE ISLANDS
SUMATRA
Singapore
INDON
APANASIY NIKITIN SEAMOUNT
RIDGE
CHAGOS ARCHIPELAGO
CHAGOS TRENCH
CEYLON ABYSSAL PLAIN
Djakarta

Country at a Glance

Physical Features

TOTAL AREA:

147,570 sq km

LAND:

133,910 sq km (90%)

WATER:

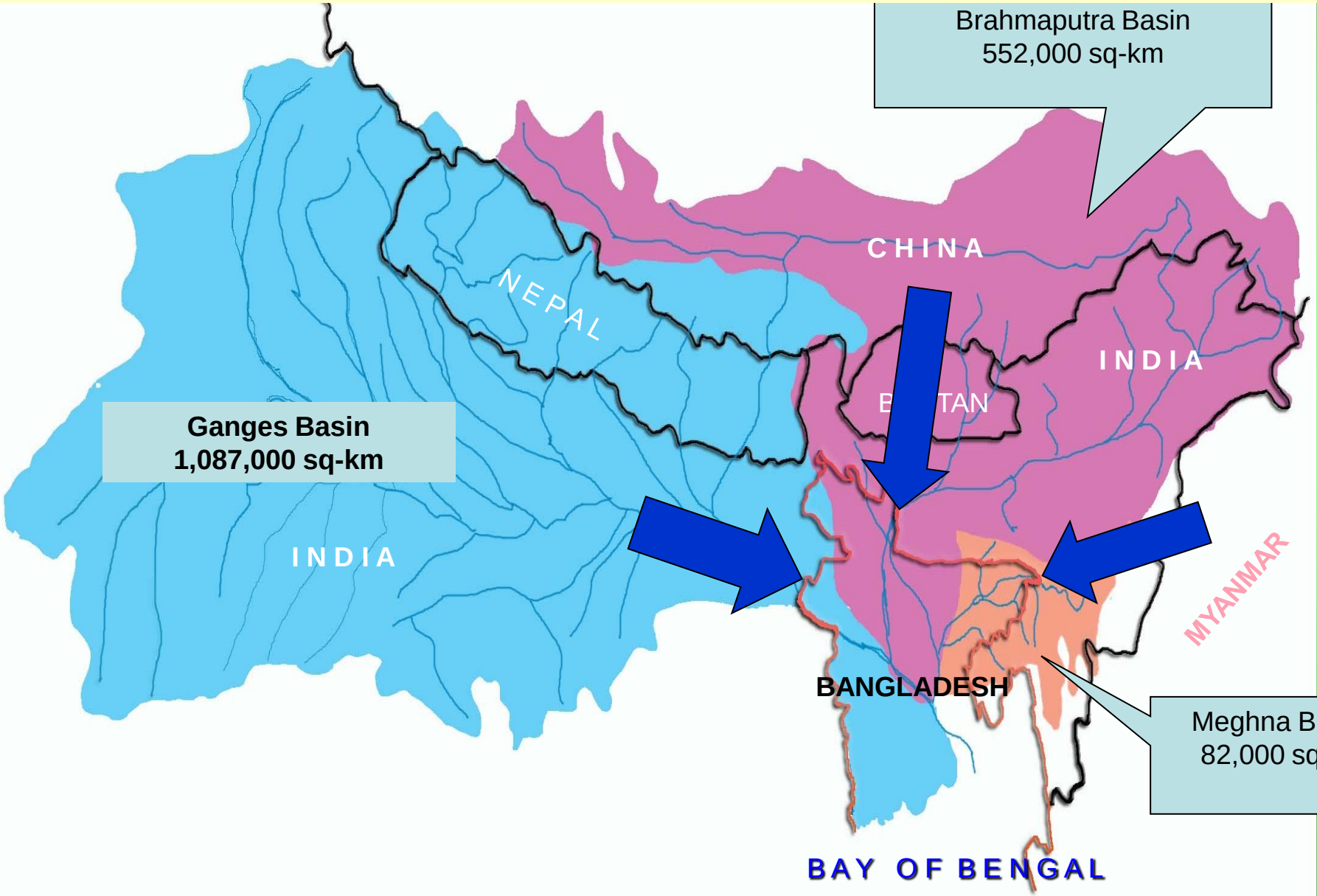
13,660 sq km (10%)

Highlands at south-eastern and north-eastern part

Max Height

1,230 m

Bangladesh receive runoff from a catchment of 1.72 million sq-km, around 12 times of its land area

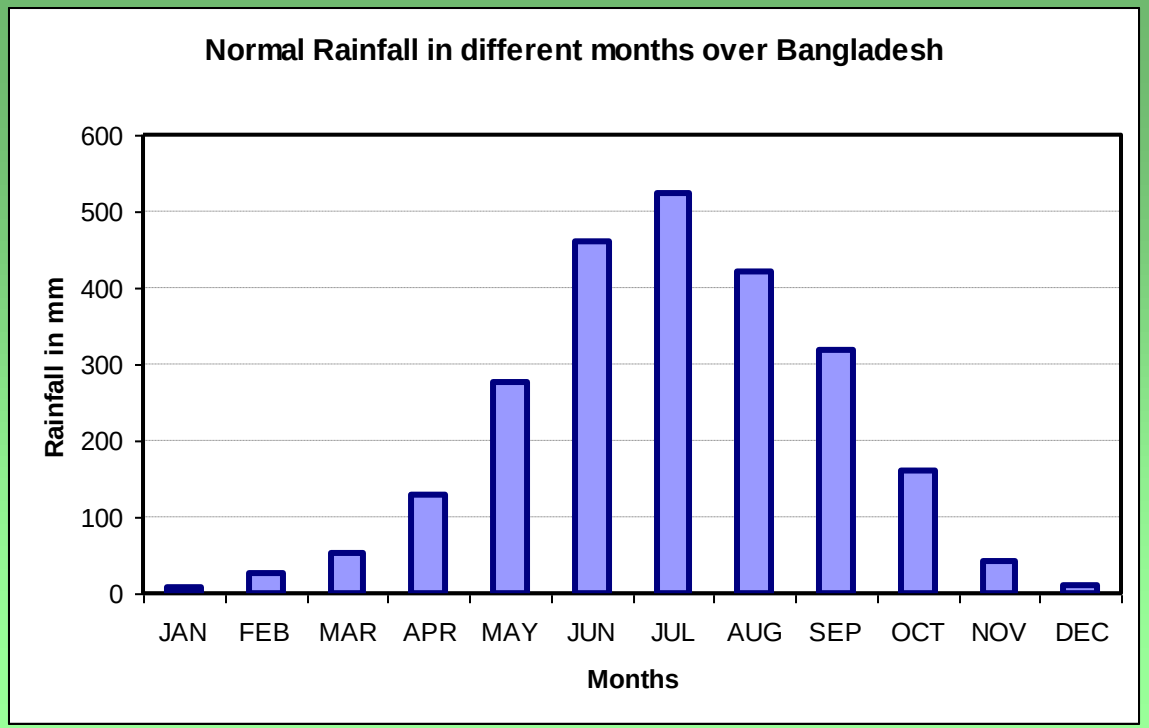


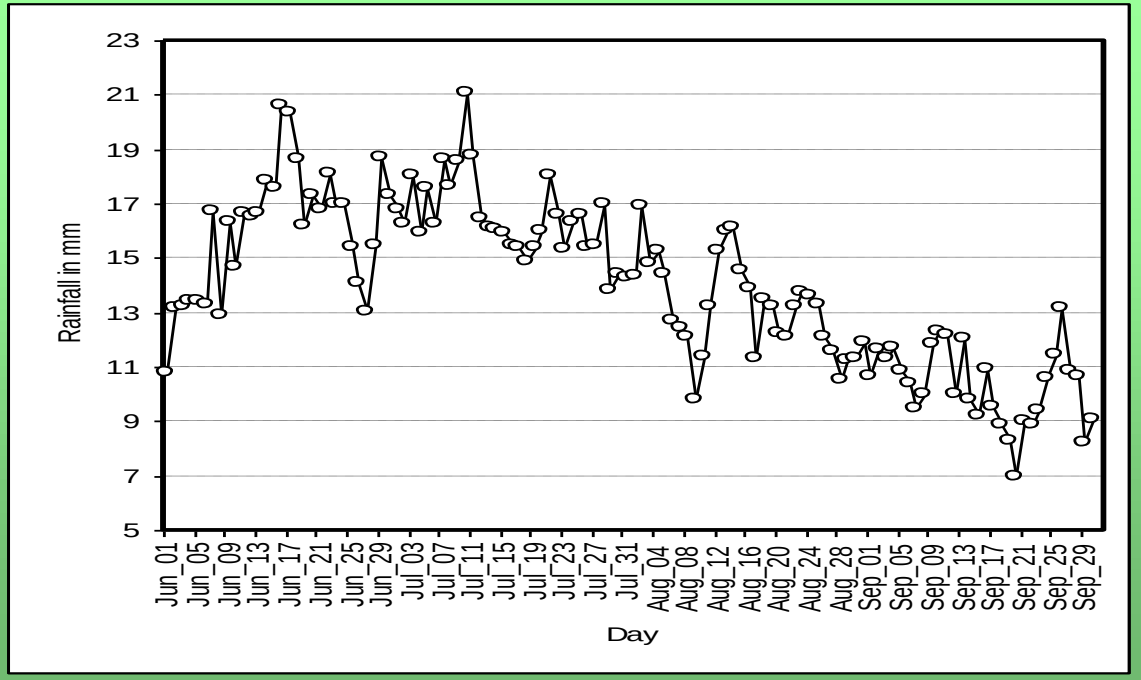
Impact Channel of Climate Change

- Erratic rainfall
- Temperature rise
- Sea level rise and salinity intrusion
- Rise of extreme climatic events :
  - flood frequency
  - cyclone and storm surges
  - droughts

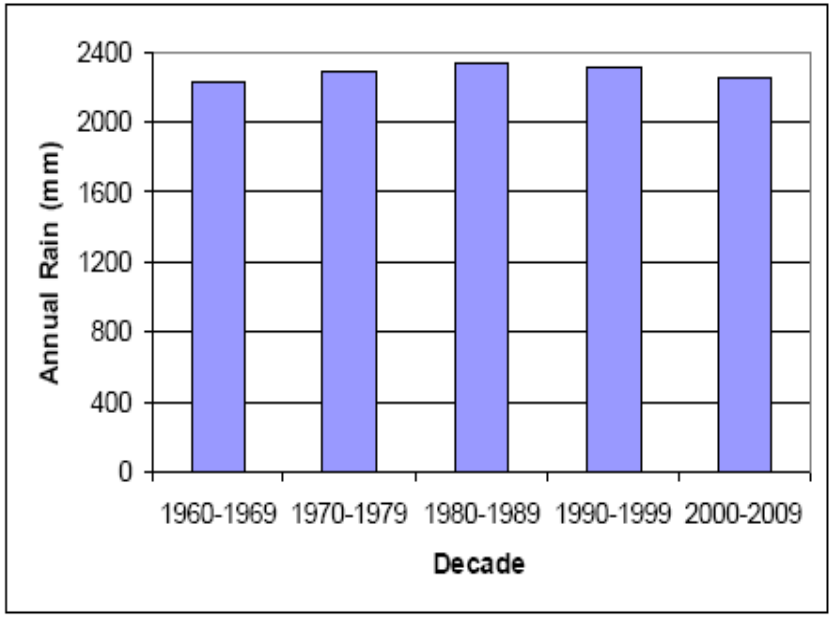
Rainfall Pattern of Bangladesh

- Daily average monsoon rainfall modal value is 20.6 mm on 16 June and 21.1 mm on 10 July.
- The intra seasonal variation is 5-7 days with the changing value of 3-5 mm.

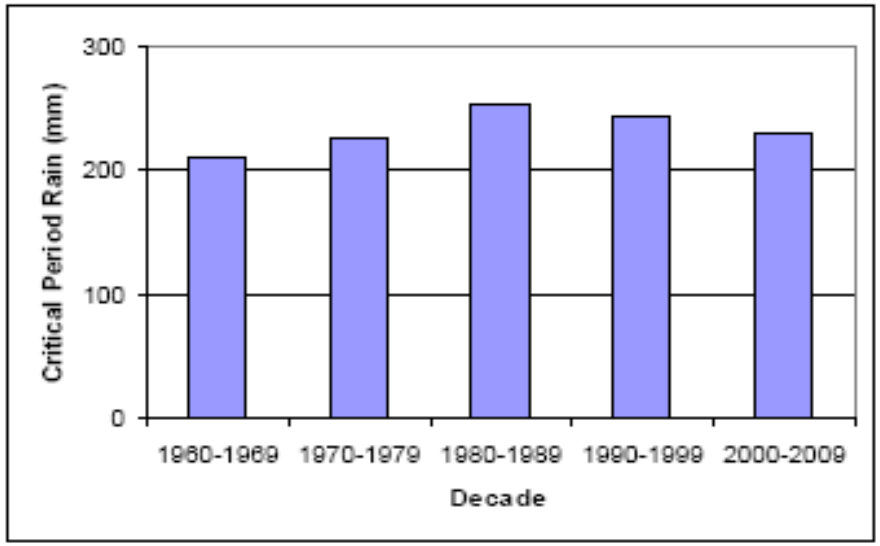


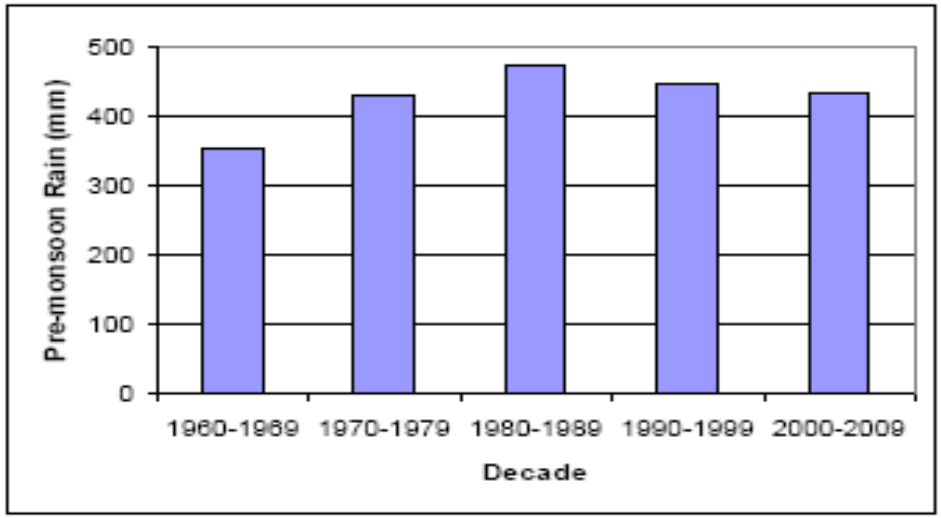


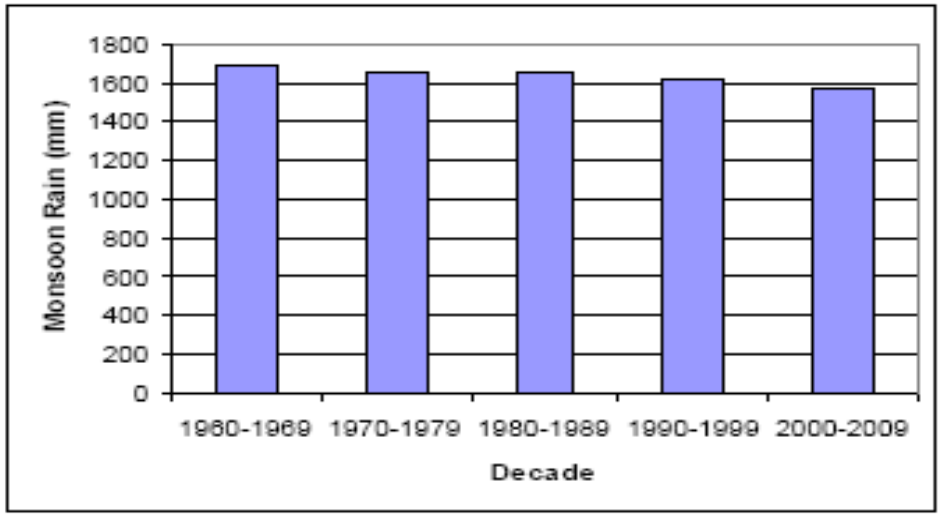
Rainfall Trend in Bangladesh



ure 4.1: All-Bangladesh annual rainfalls during different decades

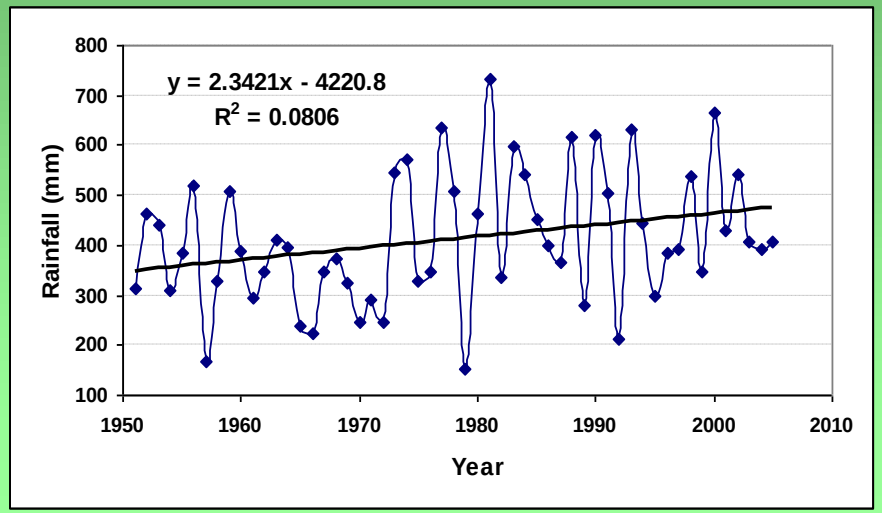




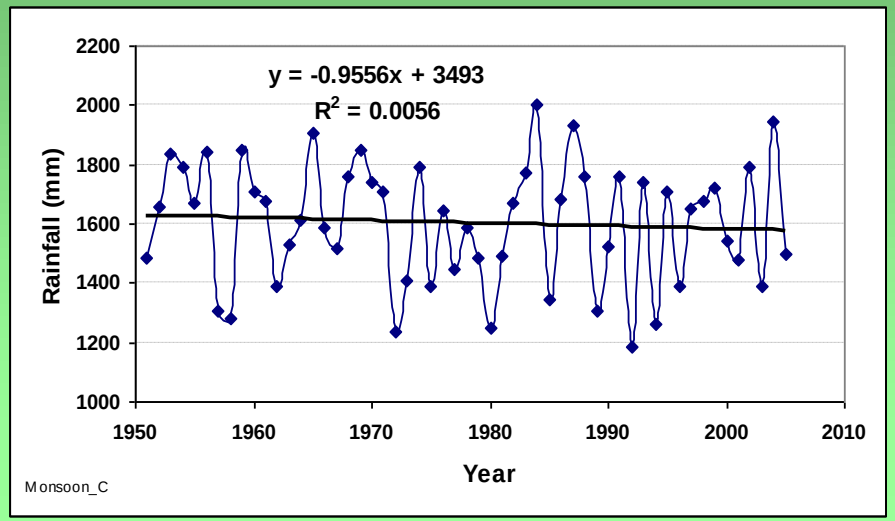


IWFM, BUET, 2011

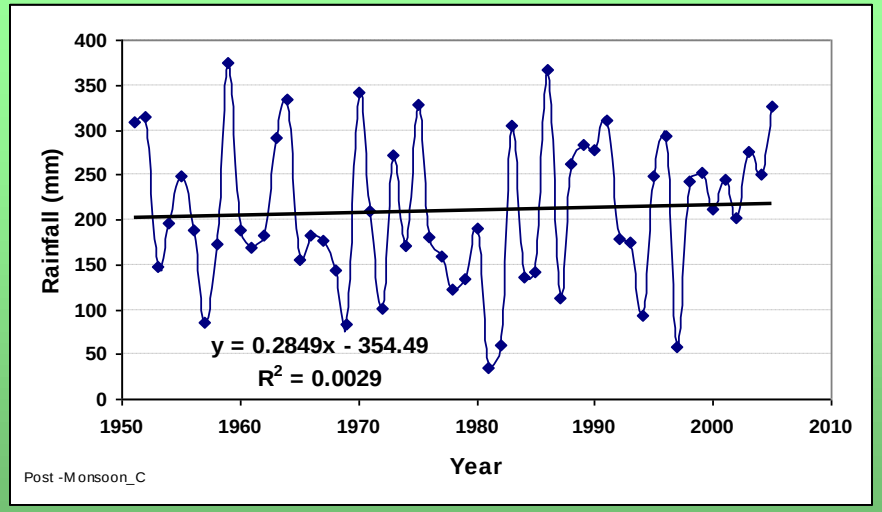
Seasonal Variation of Rainfall in Bangladesh



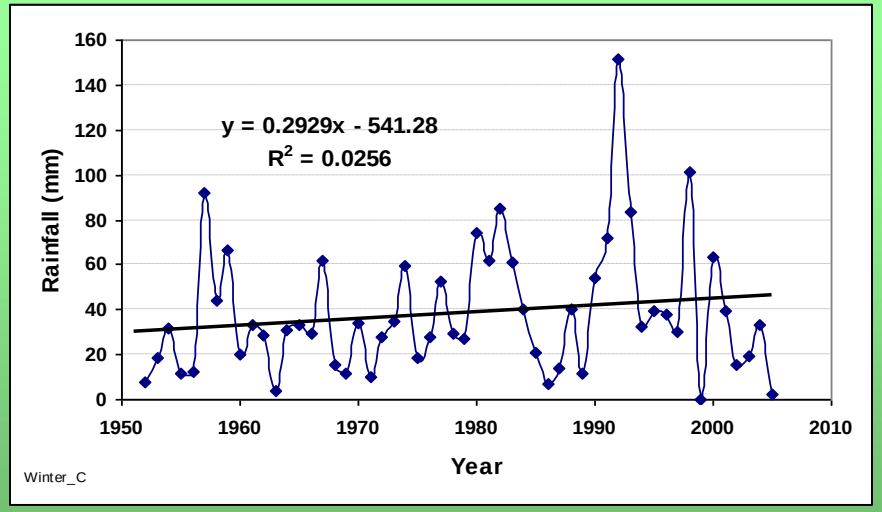
Pre-Monsoon



Monsoon

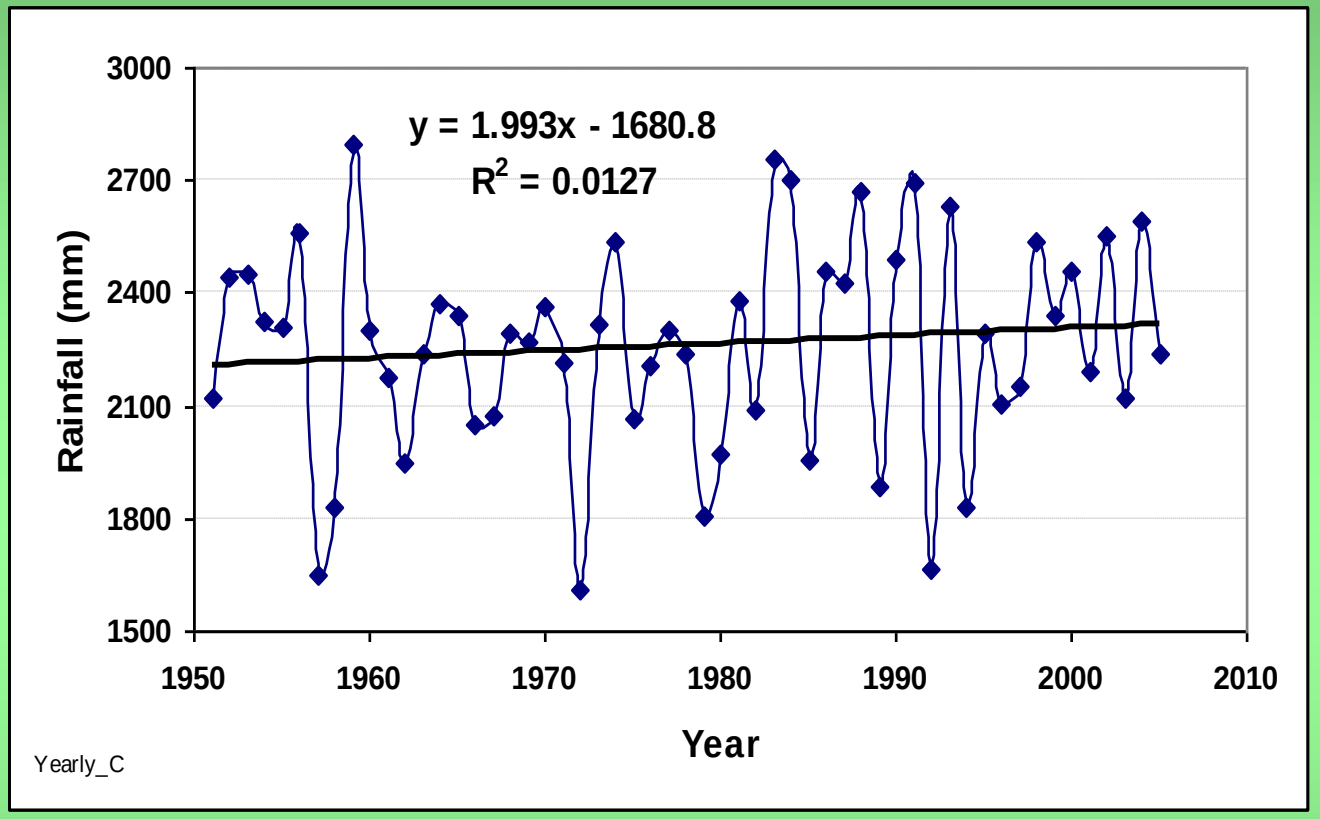


Post-Monsoon



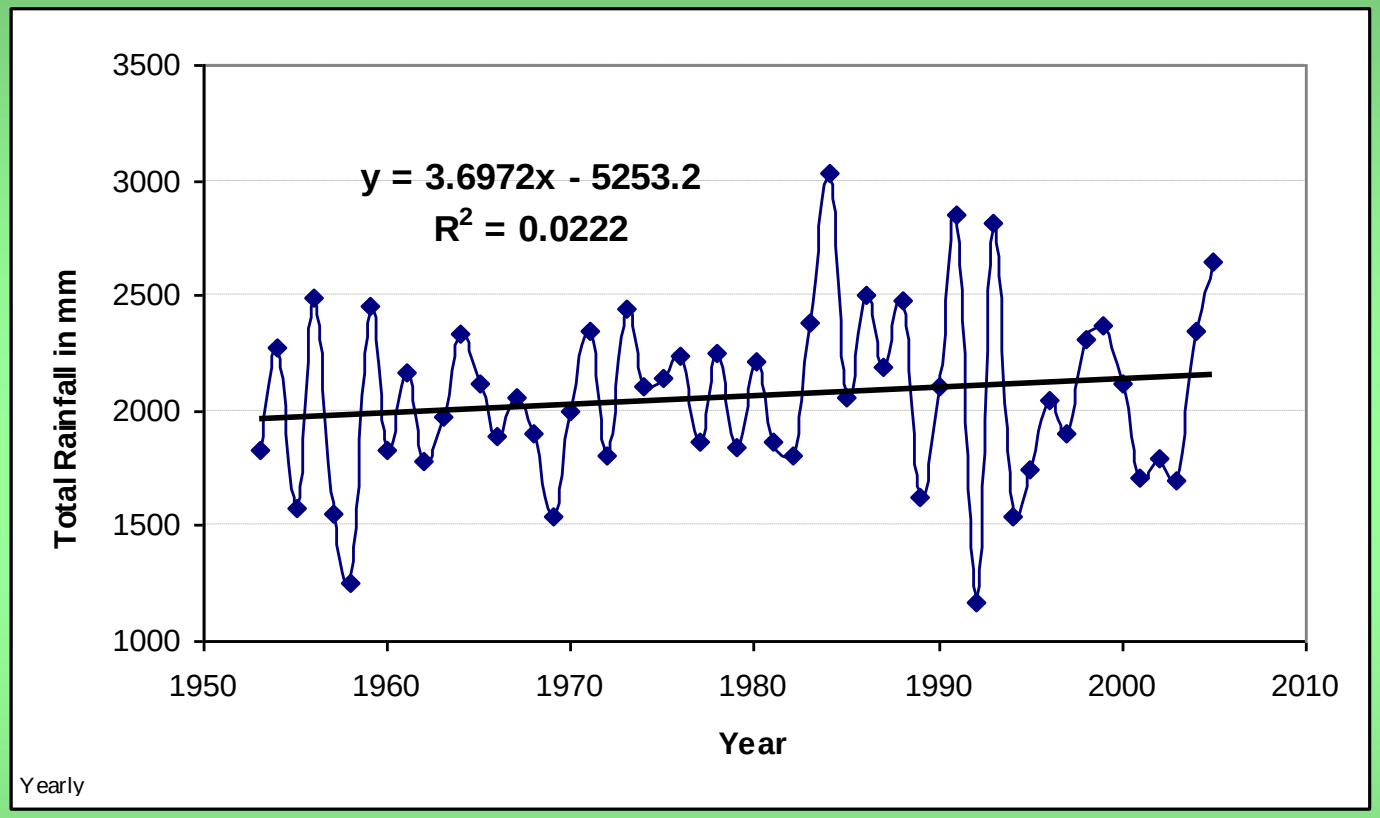
Winter

Over All Bangladesh



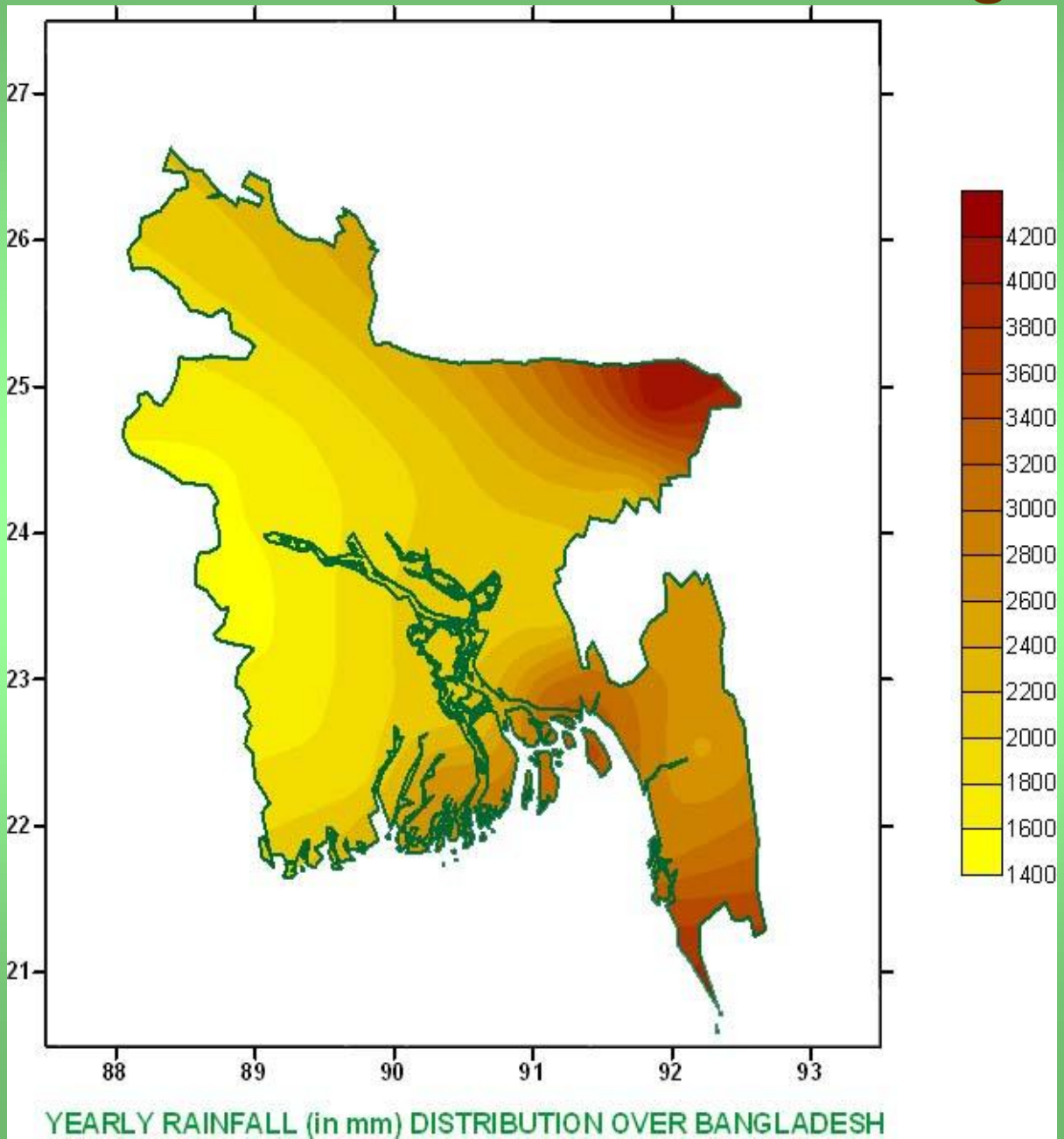
Variation of Yearly Rainfall

Variation of Yearly Rainfall in Dhaka

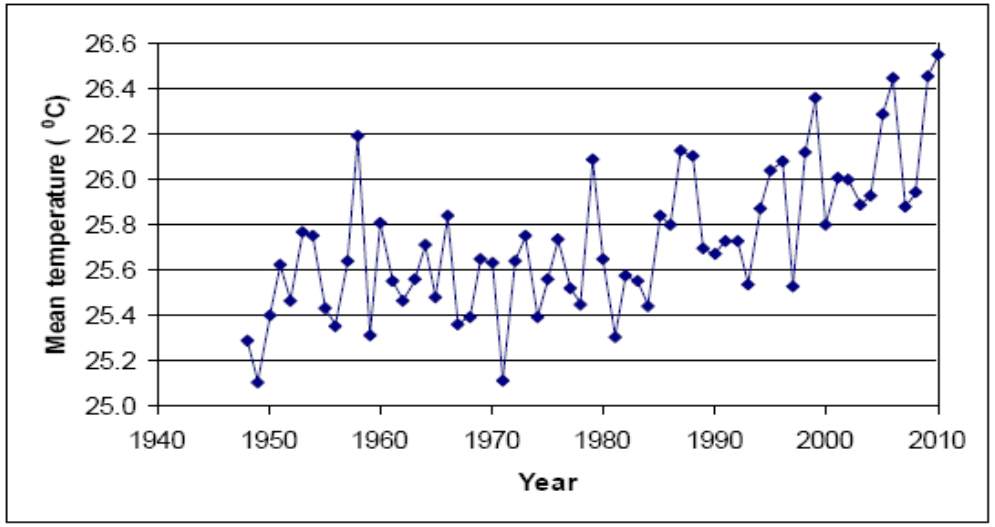


Variation of Yearly Rainfall

Spatial rainfall distribution of Bangladesh

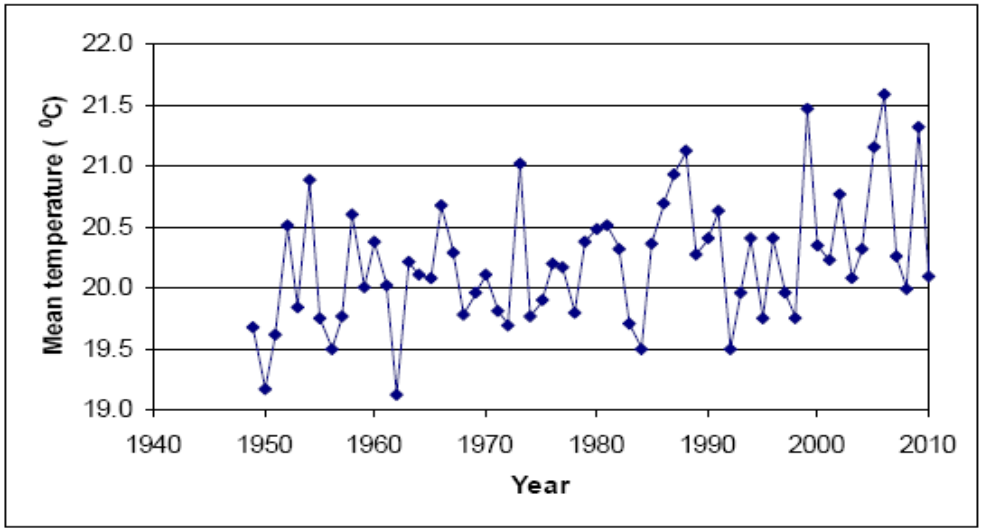


Temperature Trend in Bangladesh

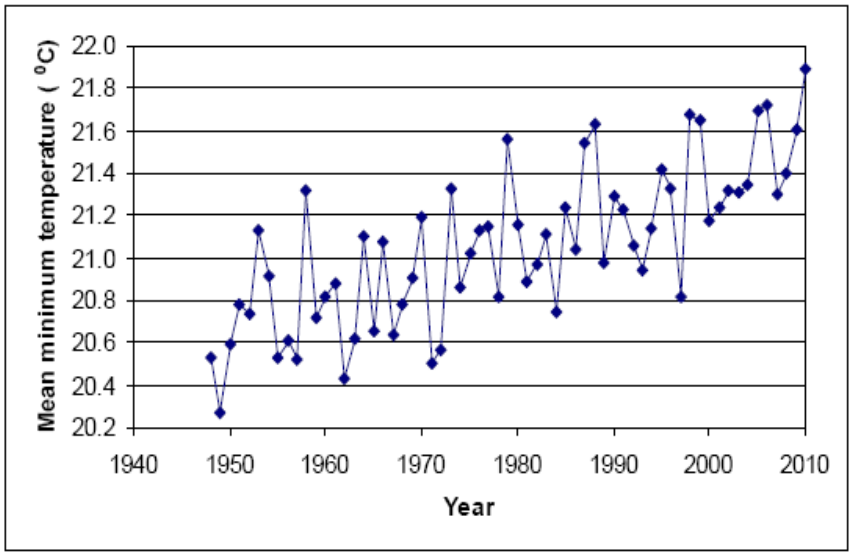


e 3.1 Time series of all-Bangladesh annual mean temperatures
[Data period: 1948-2010]

Almost all the stations exhibit increasing trends in mean annual temperatures, 1.2^{0}C per century (100 years); Increase in winter (December-February) 0.7^{0}C

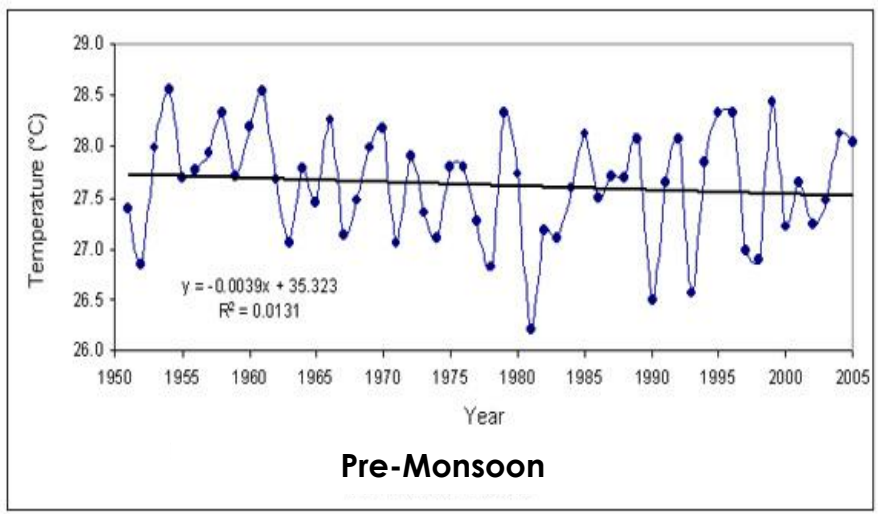


e 3.2 Time series of all-Bangladesh winter mean temperatures

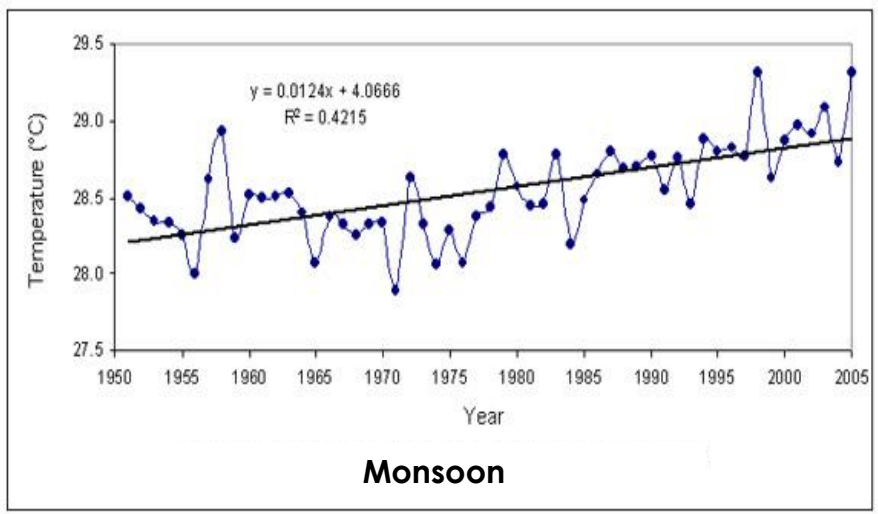


3.8 Time series of all-Bangladesh annual mean minimum temperatures

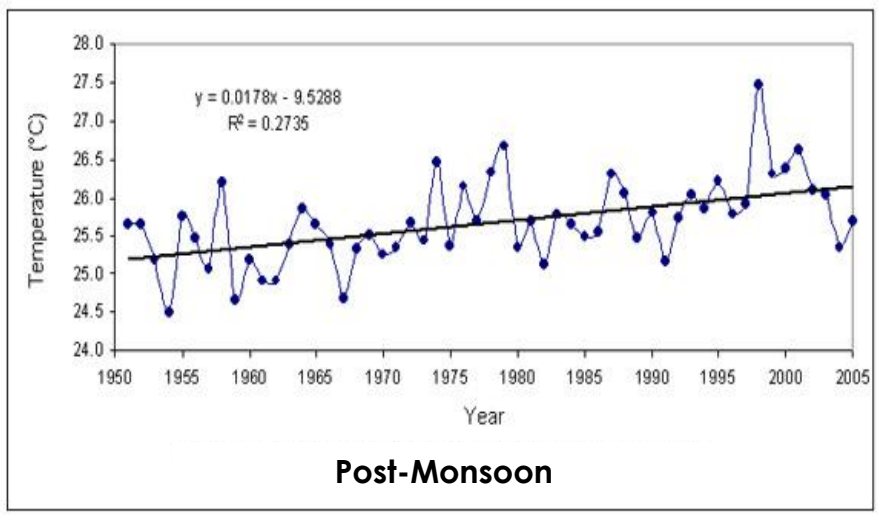
Seasonal Variation of Mean Temperature in Bangladesh



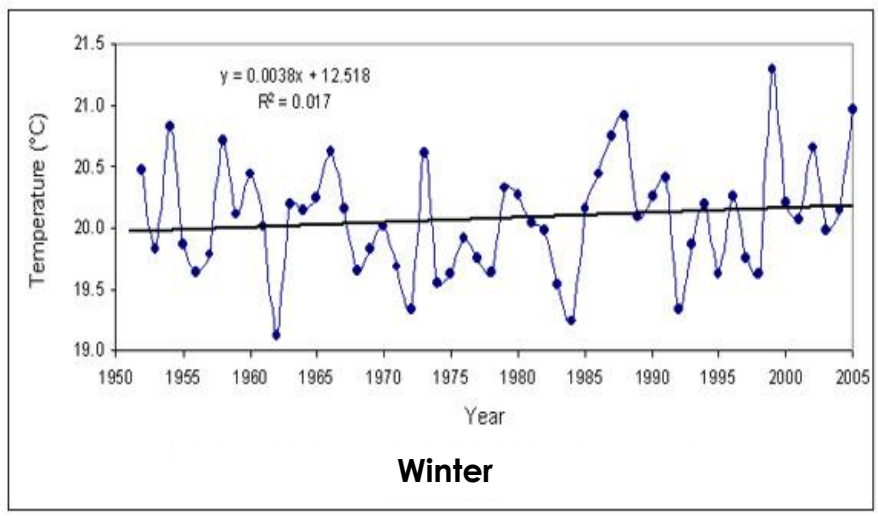
Pre-Monsoon



Monsoon



Post-Monsoon

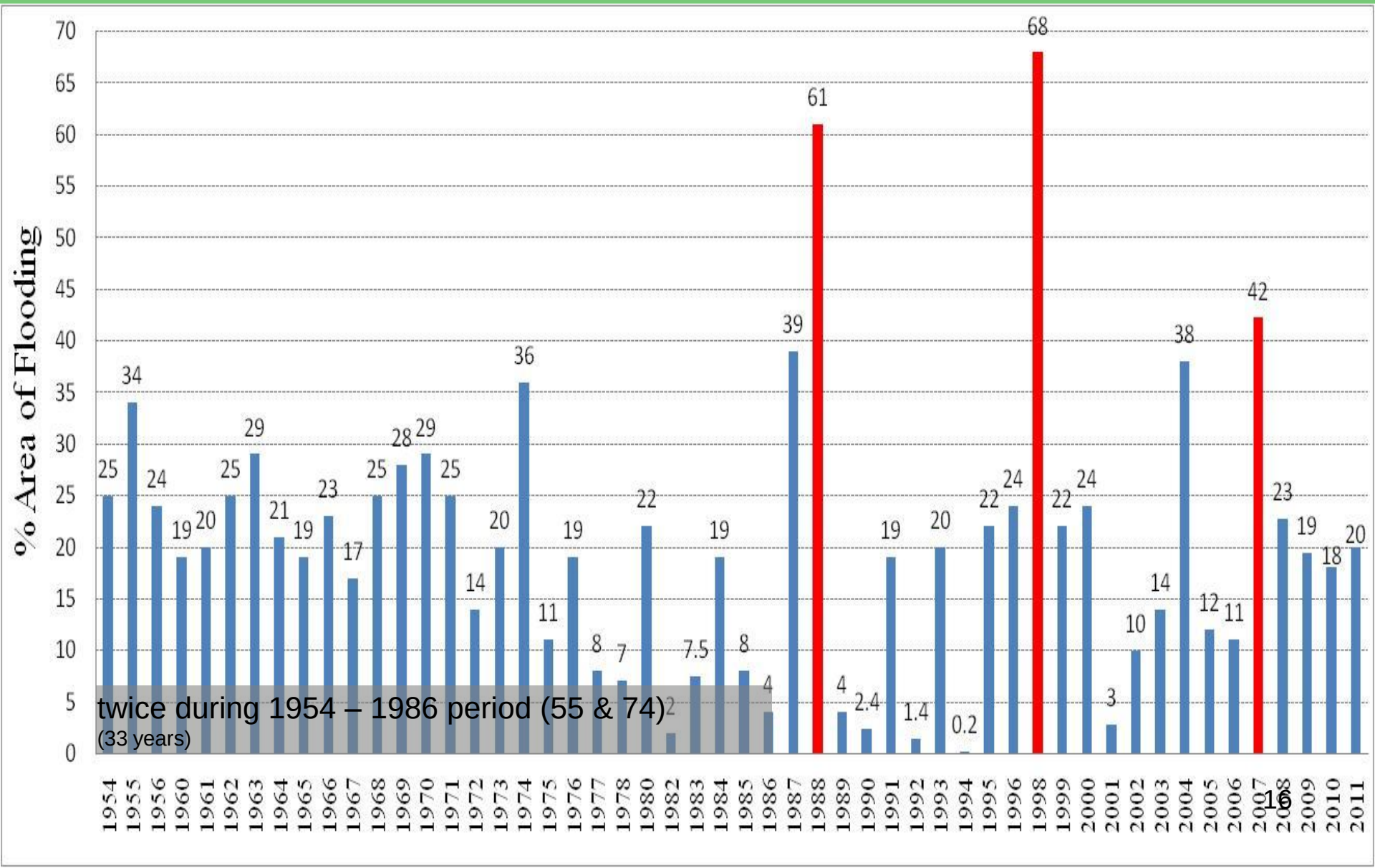


Winter

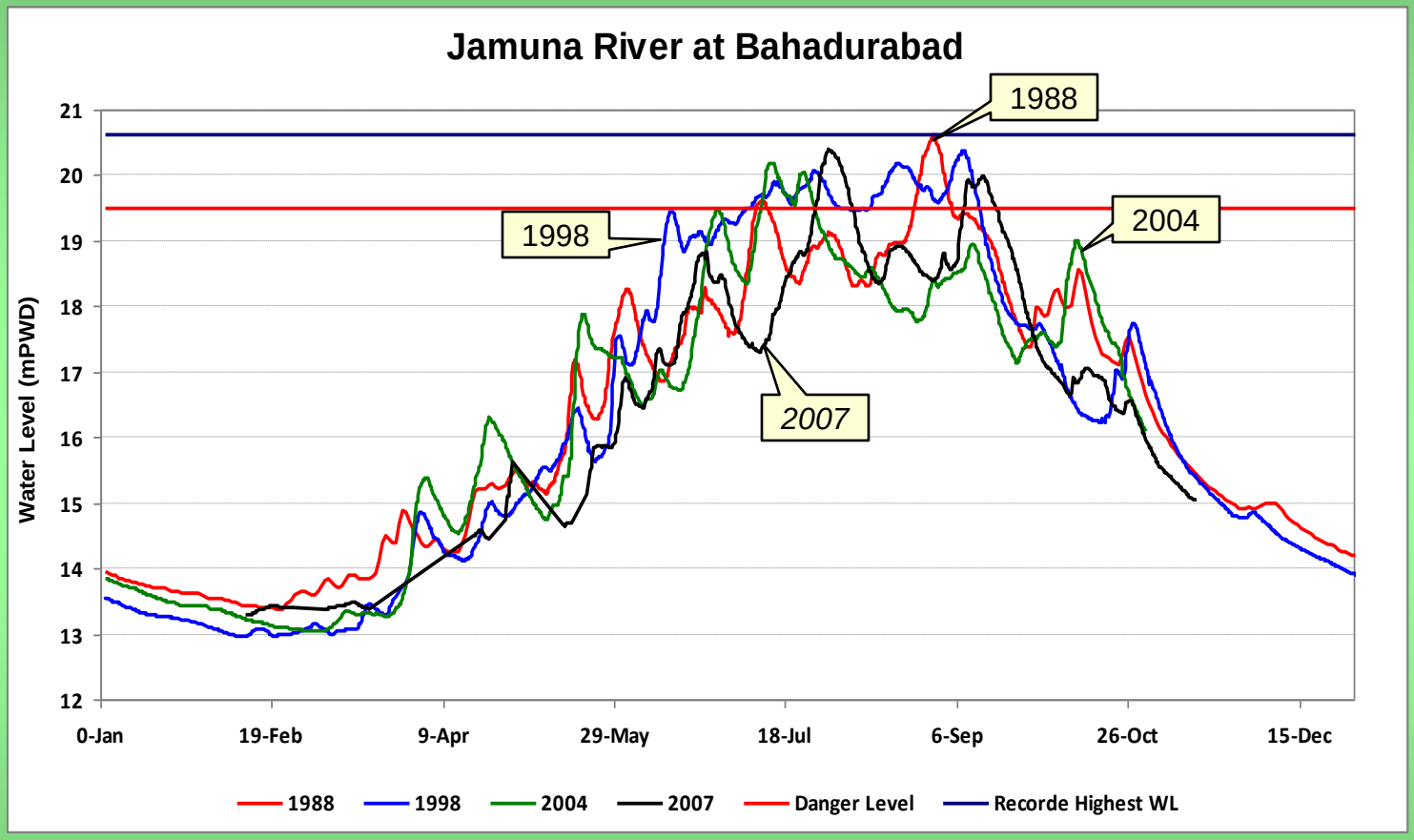
Flood

- Bangladesh is facing floods almost every year due to heavier rainfall inside and outside the country.
- Major flood occurred from 1970 to 2009, but the frequency of major flood occurrenc has increased since 1990.
- 39 million people have been displaced by floods since 1970.
- In 2000, about 3 million people became homeless due to inundation of 5 coastal districts.
- In 2004, 39 districts were affected, leaving 36 million people homeless.

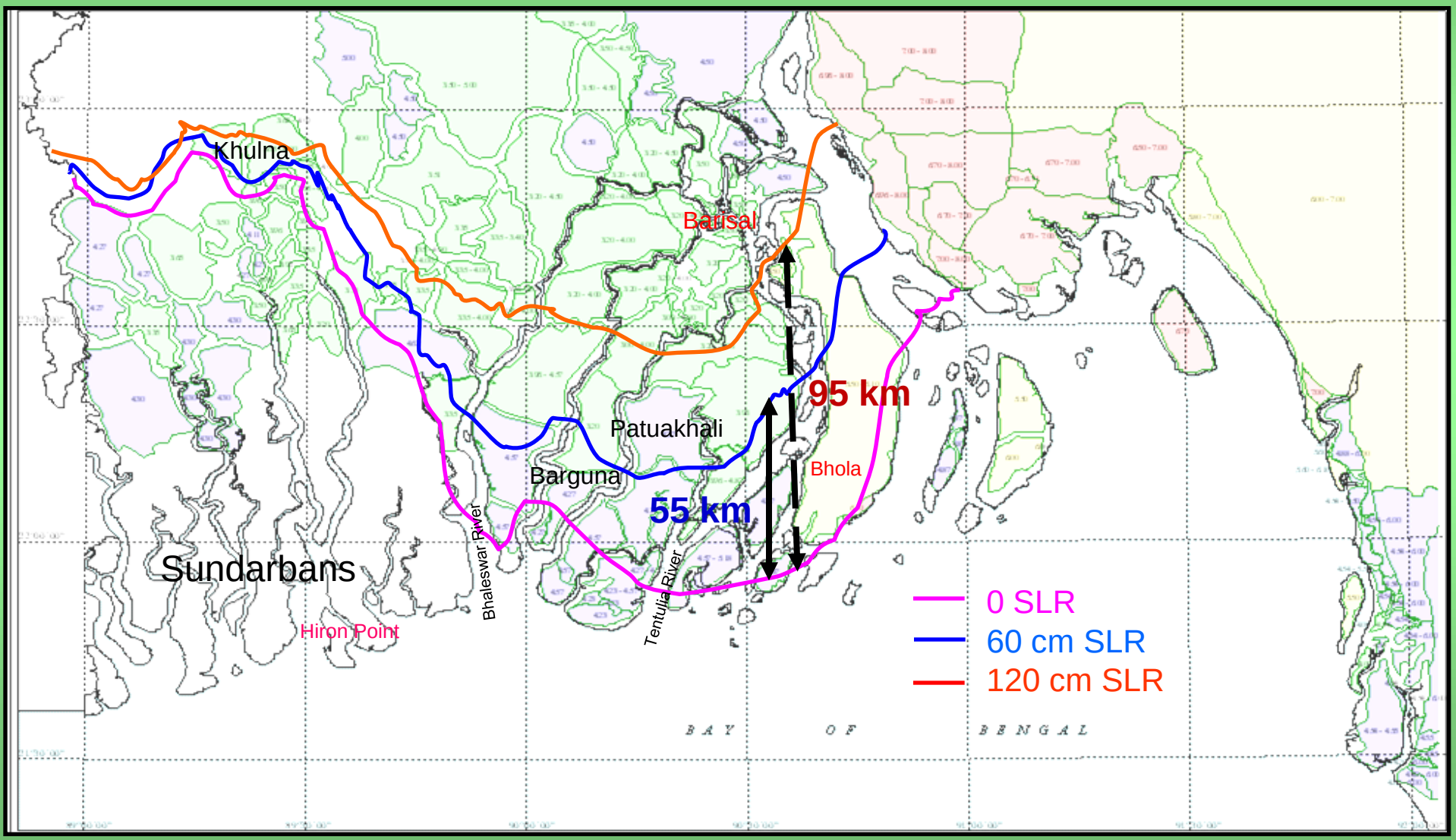
Flooded Area from 1954 to 2011



Flood in Bangladesh



Impact of Climate Change on Salinity Intrusion (5ppt Salinity line)

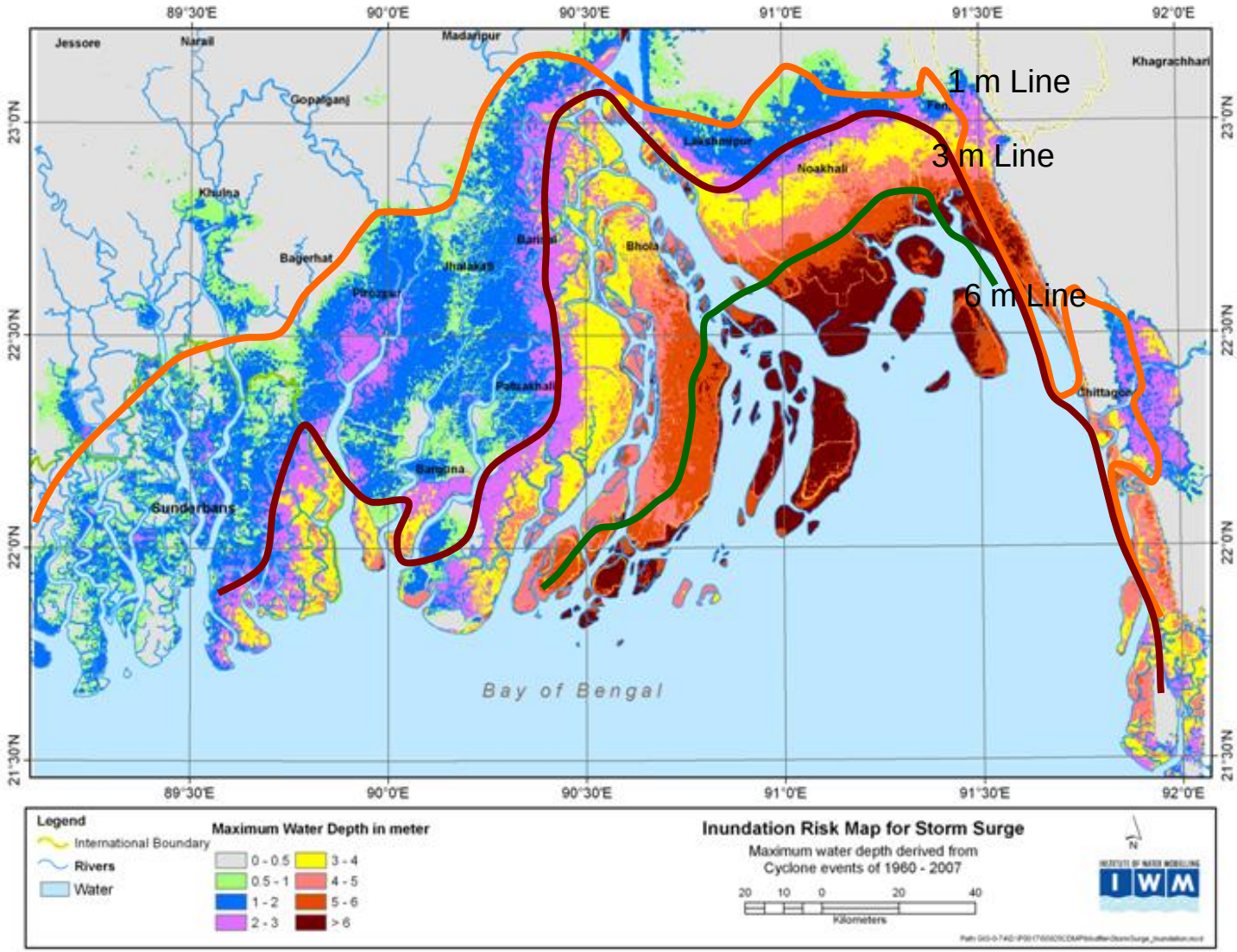


River Erosion in Jamuna

During the last three decades. The Jamuna, Ganges and Meghna rivers have consumed about 180,000 ha land.

Inundation Risk Map

Coastal Area



Climate change impacts in Bangladesh

- **Cyclone/storm surge:** increased frequency & intensity, increasing **salinity**
- **Flood**: increased frequency & magnitude
- **Droughts**: Spreading over time and space
- **Erratic rainfall**: Intensive rain in short time
- **Temperature**: extremely increasing
- **Riverbank and coastal erosion**: increasing
- **Water logging** and permanent **inundation** due to SLR

Drought

Cyclone

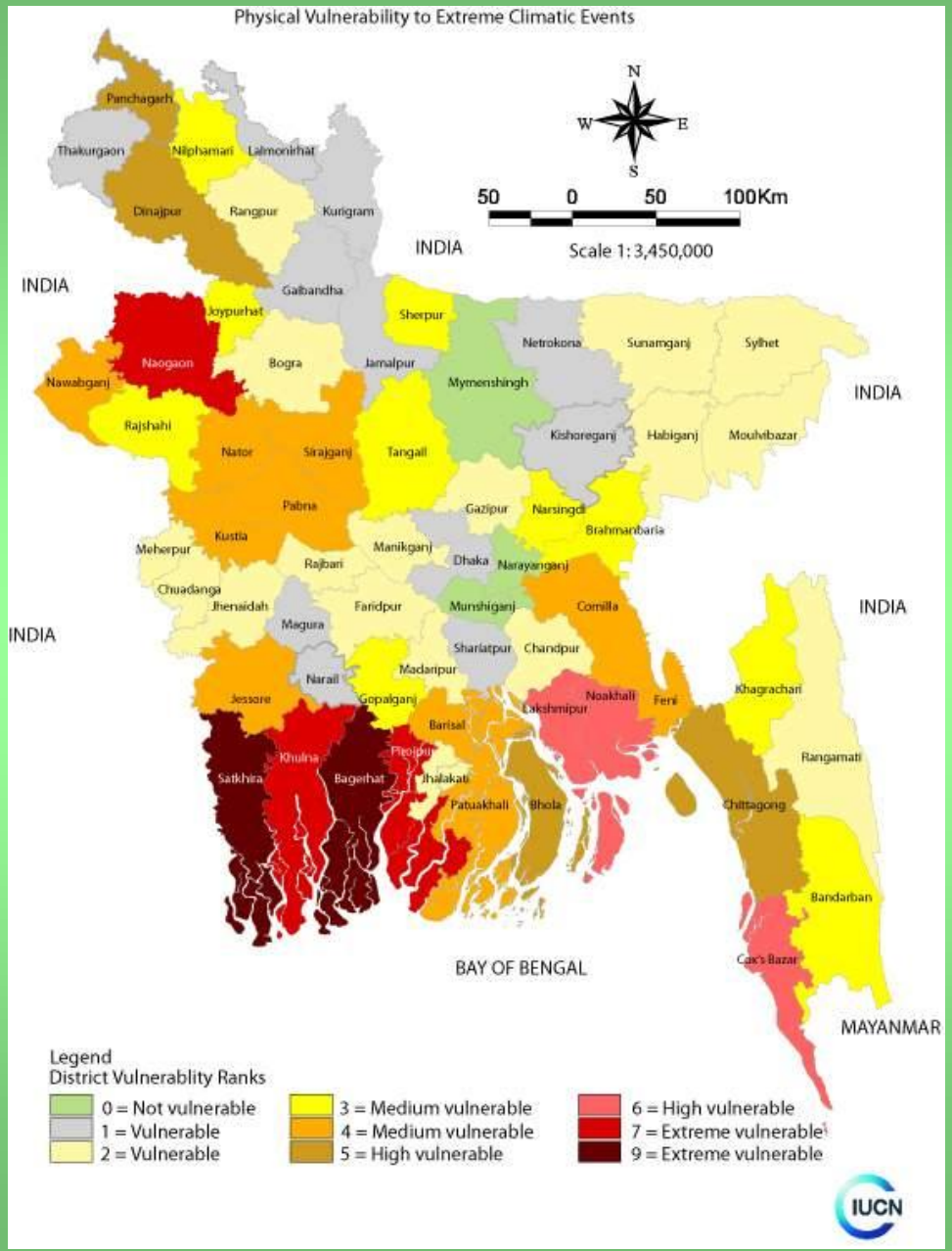
Storm surge, salinity

Hazards Bangladesh faces

Flood

Water logging

River Bank Erosion



Drought, Floods, Cyclones likely to increase in future due to climate change.

Disaster risk reduction strategy need strengthening.

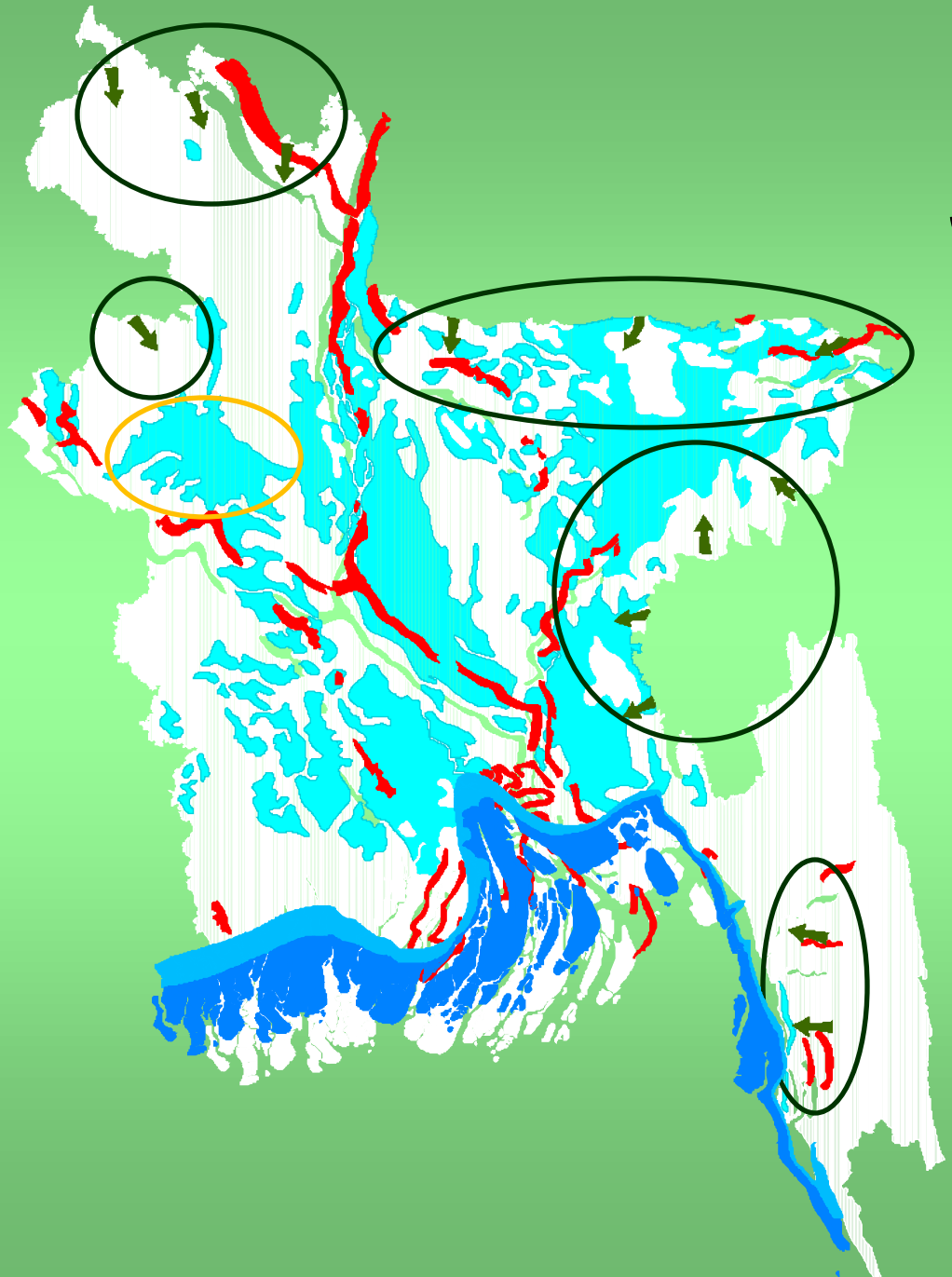
Cyclone

- From 1970 to 2009, the total number of major cyclones stroked Bangladesh was 26.
- 150,000 people and 70,000 cattle died in 1991 cyclone. Loss of property was estimated at about Tk 60 billion.
- Cyclone Sidr, displaced 650,000 people and killed 3,447.
- In the year 2009, about 200,000 people were displaced by cyclone Bijli.

Drought

Drought is another severe natural phenomenon which causes disastrous crop failures.

Critical and Specific Issues



River Flood

River Bank Erosion

Flash Flood.

Surge height >1m

Surge height <1m

Drought

Observational Facilities of BMD

a. Synoptic observatories : 35

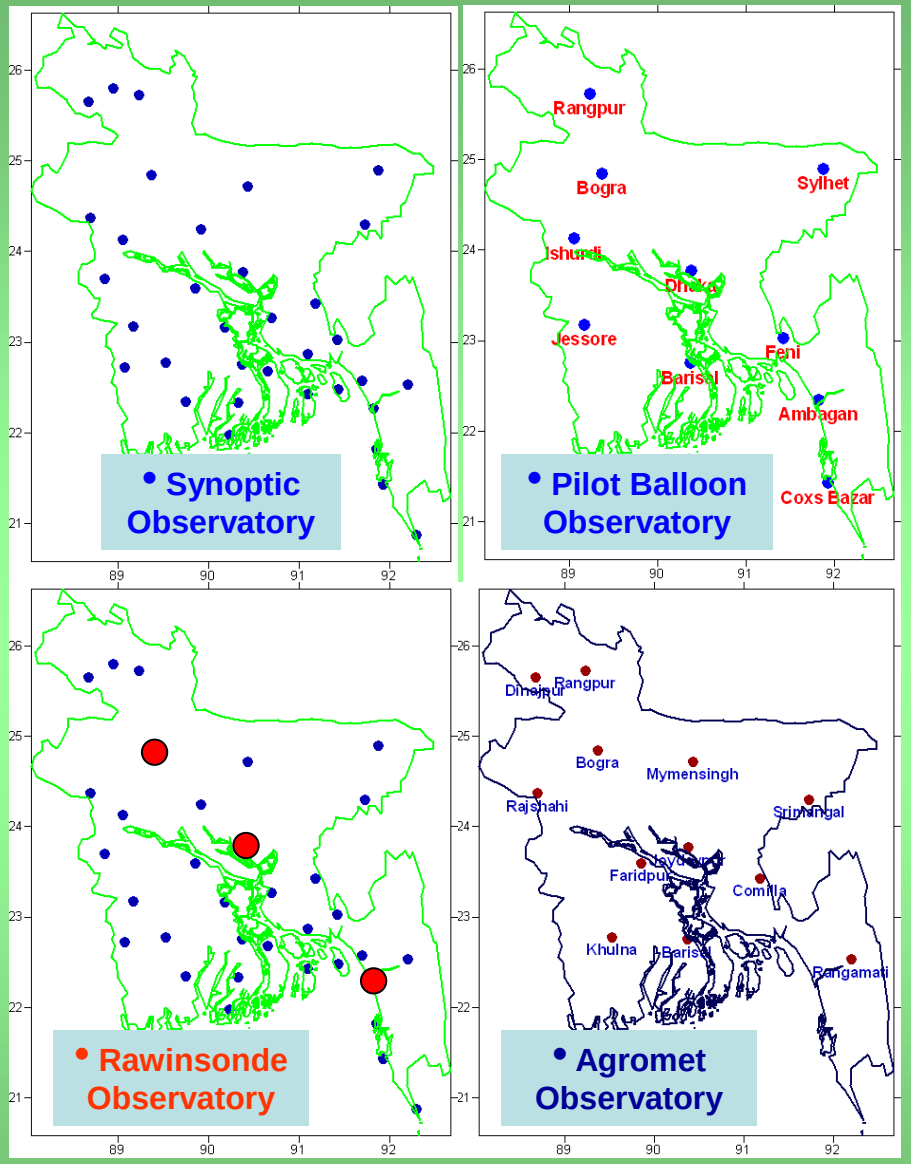
b. Pilot Observatories : 10

c. Rawinsonde Observatories : 3

d. Agromet observatories : 12

e. RADAR Stations : 5

f. Earthquake Monitoring Stations: 4

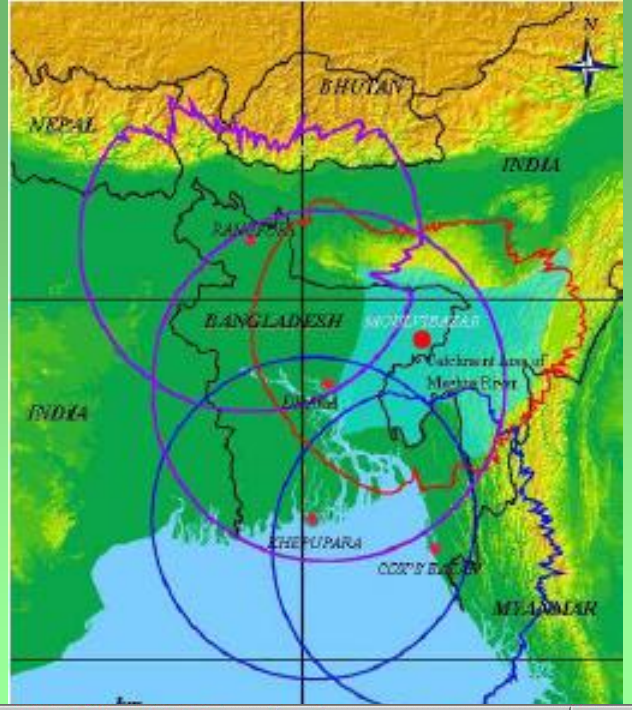


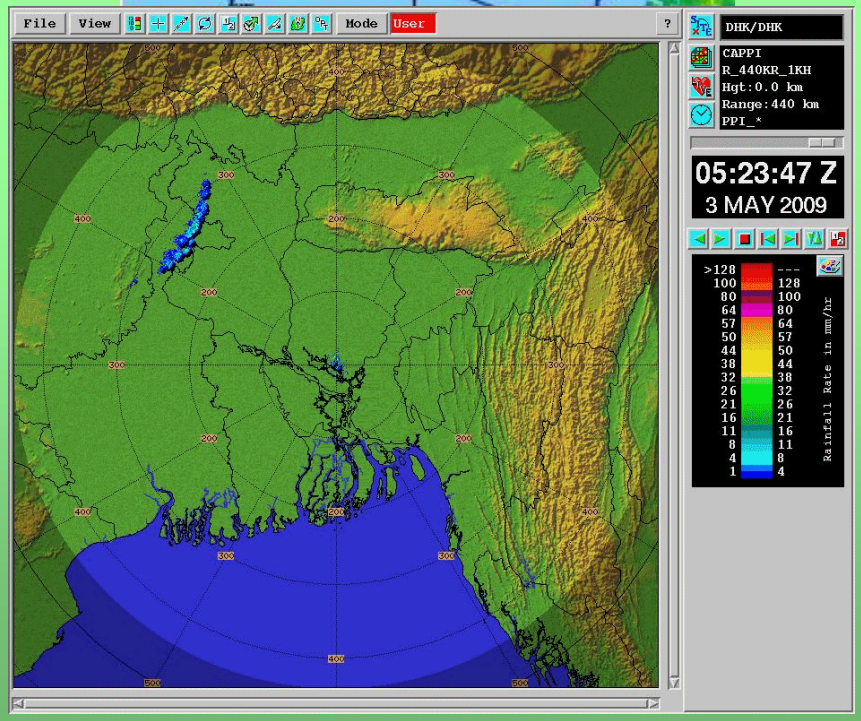
Radar Network of BMD

BMD Radar network have good coverage over Bangladesh and its surrounding areas.

Radar location

- **Khepupara (Doppler)**
- **Cox's Bazar (Doppler)**
- **Dhaka**
- **Rangpur**
- **Moulvibazar (Doppler)**





VSAT Antenna

Moulvibazar Radar

Khepupara Radar

Dhaka Radar

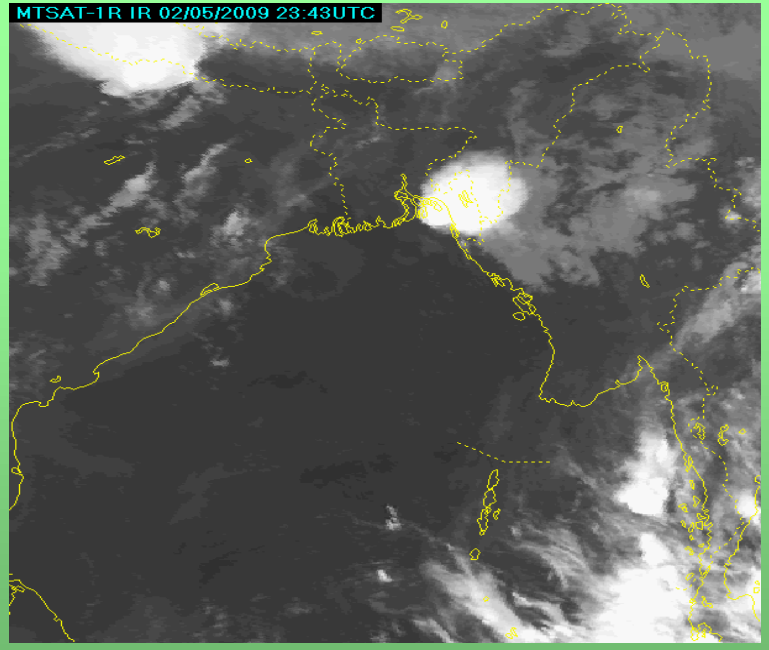
Cox’s Bazar Radar

Rangpur Radar

Satellite Receiving Stations

BMD has the following satellite receiving ground stations:

- **MTSAT**
- **NOAA**
- **MICAPS**



JICA's Contribution to BMD

- **JICA is helping BMD for the installation and maintenance of its**

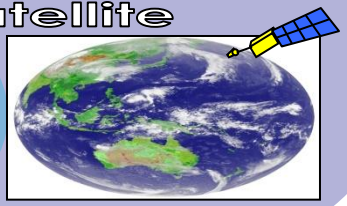
- **infrastructure, communication link,**
- **Automatic Weather Station at airport,**
- **Satellite Receiving System ,**
- **On line TV presentation,**
- **National microwave and VSAT link connectivity for radar stations to get digital radar image**
- **Preparation of composite radar picture at the Storm Warning Centre**
- **Human capacity building both in meteorology and seismology.**

Forecasting Technique of BMD

from Sky

from Space

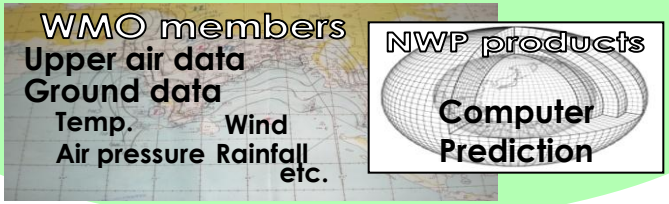
Satellite



Cloud image

from Ground

from Overseas

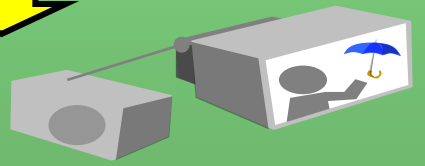


Data Collection

Dissemination

Television. Radio. News paper.

Telephone. Fax. Web page.



BANGLADESH SPACE RESEARCH AND REMOTE SENSING ORGANIZATION (SPARRSO)

- **Established in 1980**
- **Acts for peaceful applications of space science, Remote Sensing and Geographic Information System (GIS) in Bangladesh.**
- **Advises the Government in matters relating to space technology applications and policy.**
- **Keeps close collaboration with national, regional and international organizations, institutions and agencies.**
- **Disseminates research results, satellite data and information to the relevant public, autonomous and private agencies for their development and policy making activities.**

Activities of SPARRSO

- Agricultural research
- Disaster monitoring
- Environment study
- Forestry
- Fisheries
- Water resources
- Oceanography, Coastal environment study etc

Digital Mapping Project in Survey of Bangladesh - Assisted by JICA

- Preparation of 988 Digital Maps of 1:25000 scale for entire Bangladesh.
- Preparation of 263 Digital Maps of 1:5000 scale for 5 Divisional cities.
- Preparation of ortho photo Map of Bangladesh.
- Preparation of Elevation data of Bangladesh.
- Digital Mapping will be completed by 2016.

Conclusion

Regional and international cooperation and coordination along with structural and non-structural measures is essential for mitigation or reduction of disasters and hazards of flood

Thanks for your kind attention