Rainfall and Temperature Scenario Of Bangladesh
For the period of (October to February)

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Outline of presentation

1) About BMD
2) Present forecasting status.
3) Climatological Summery of Bangladesh
4) Impact of climate change in Bangladesh
5) Description of winter
6) Rainfall analysis
7) Temperature analysis
8) Prediction.
Introduction

• The meteorological activities started in this country in 1877 through the establishment of one observatory in Satkhira during the British rule. In 1947, the service was renamed as Pakistan Meteorological Services. After the independence in 1971, it became Bangladesh Meteorological Department (BMD).

• Bangladesh Meteorological Department is a government organization under the administrative control of the Ministry of Defence. BMD is mainly responsible for recording the meteorological observations and providing forecast and warnings for disaster management and all social economic activities.
Bangladesh is situated at the northern tip of the Bay of Bengal. Long continental shelf, shallow bathymetry, complex coastal Geometry with many kinks and islands, and long tidal range between east and west coasts of Bangladesh are well-known features for the highest storm surge and of the longest duration.

About 5% of the global tropical cyclones form over the Bay of Bengal. On an average, 5 to 6 storms form in this region every year. But casualties, here, is 80% of the global casualties. Loss of life and property is mainly attributed to the storm surge.
Observational Facilities of BMD

- Synoptic observatories: 47
- Pilot Observatories: 10
- Rawinsonde Observatories: 4
- Agromet observatories: 17
- RADAR Stations: 5 (operational. Out of 5, 3 are Doppler Radar)
- Earthquake Monitoring Stations: 4
Detection Range of the Radar System
Responsibilities of BMD

- SWC is responsible for national forecasting on all time scales including the issuance of tropical cyclone forecast and warnings.
- Provides seismological information in and around the country along with Tsunami Advisories and warnings to the Government and public.
- Cater all International and Domestic airlines, VVIP and VIP flights by providing take-off, landing and the route forecasts.
- Supply and facilitate the application of climate data and information to the Government and private agencies for planning and performance of socio-economic development activities.
- Archives all weather and climate data, maintenance of historical records of all meteorological and seismological events.
Present status for LRF of BMD

1. BMD produces one month outlook at the 1st week of every month.

2. BMD produces three months extended outlook and update every month.

3. At present, BMD is using LRF of different available regional centre.

4. At present, BMD is not producing any seasonal forecast.

5. BMD doesn’t have any national climate prediction centre.

6. At present, BMD is using CPT model on experimental basis for seasonal forecast.
Climatological Summery of Bangladesh

- Bangladesh is characterized by humid and tropical monsoon climate Based on pressure, rainfall and temperature; the climate of this country can be divided into the following four seasons:
  1) Winter or North-East Monsoon: December, January and February
  2) Summer or Pre-Monsoon: March, April and May.
  3) Monsoon or South-West Monsoon: June, July, August and September.
  4) Autumn or Post-Monsoon: October and November.
Climate of Bangladesh

- Bangladesh has a tropical monsoon-type climate, with a hot and rainy summer and a pronounced dry season in the cooler months. January is the coolest month of the year, with temperatures averaging near 26 deg C (78 d F), and April the warmest month, with temperatures ranging between 33 deg and 36 deg C (91 deg F and 96 deg F). The climate is one of the wettest in the world; most places receive more than 1,525 mm (60 in) of rain a year. Most rain falls during the monsoon (June-September) and little during the dry season (November-February).
Impact of Climate Change

• Bangladesh is recognized as one of the most vulnerable countries to climate change impact in the world. It has a history of extreme climate events claiming millions of lives. Bangladesh is highly vulnerable because it is a low-lying country located in the deltaic plain of the Ganges, The Brahmaputra and Meghna and densely populated. Its national economy strongly depends on agriculture and natural resources that are sensitive to climate change and sea level rise. The impact of higher temperature and more extreme weather events such as flood, cyclone, severe drought and sea-level rise are already happening.
Winter in Bangladesh

Winter is the season of fog and mist. Every thing seems to be decrepit. Dew drops fall at night. When the morning sun peeps through the mists, they look like glittering beads of pearl on grass. The sky is cloudless and blue. Sometimes, biting cold wind blows. During this season, leaves of trees wither and drop off. So, nature looks bare. Winter is the season of abundance. A larger variety of vegetables, such as cauliflower, cabbage, potato, tomato etc. grows up abundantly in this season.
Brief description of winter in Bangladesh

- Bangladesh is a land of six seasons. Among them, winter is the fifth and the colder part of the year. In meteorology, there are four seasons in this land and winter is considered as North-East monsoon. December, January, and February are considered as winter period.

Bangladesh is a tropical country. So, winter here is comparatively, moderate than that in European countries. A stream of cold air flows eastward and enters Bangladesh through her North-West corner. The winter season is very dry in our country. It accounts for less than 3% of the total annual rainfall. The nights are longer than the days and January is the coldest month. In Bangladesh, the lowest temperature of winter was recorded in 1972 which was only 2.8 degree Celsius.
Usual synoptic situation of winter
Ridge of sub continental high extends up to West-Bengal and adjoining area (Synop chart:00utc 27\textsuperscript{th} January 2015)
Monthly variation of rainfall

Monthly Rainfall of Bangladesh

Rainfall in mb

Month
Rainfall over the country during winter is very scanty. But sometimes in winter Bangladesh receives rain and cloud when some powerful western disturbance approaches from Mediterranean Sea crossing Iran, Pakistan, Northern India and then in Bangladesh. This is the only source of winter in Bangladesh. The driest month of the season is December when the northern and the western districts get hardly 3-10 mm of rainfall.
Average Rainfall of December, January and February

Rainfall Year

Rainfall

Year

### October

![October Rainfall Graph]

### November

![November Rainfall Graph]

### Average of October and November

![Average Rainfall Graph]
**X Domain**

Domain limits:
(Approximate data limits in brackets)
(Southern latitudes and western longitudes negatives)

Northernmost latitude (90): 4
Southernmost latitude (-90): -31
Westernmost longitude (0): 131
Easternmost longitude (359): 288

**Y Domain**

Domain limits:
(Approximate data limits in brackets)
(Southern latitudes and western longitudes negatives)

Northernmost latitude (26): 26.678
Southernmost latitude (-20): 20.360
Westernmost longitude (88): 87.834
Easternmost longitude (93): 92.897
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Temperature condition of October to February

October to November is considered as transaction period from the 1st week of October minimum temperature starts decreasing
January is the coldest month in Bangladesh. However, the cold winter air that moves into the country from the North-Western part of India and loses much of its intensity by the time it reaches the Northwestern corner of the country. Average minimum temperature varies from 10°C to 12°C in the Northwestern and Northeastern part of the country, reaches 15°C to 17°C in the coastal areas. In late December and early January, minimum temperature in the extreme North-Western and Northeastern part of the country reaches within 4°C-7°C.
PREDICTION

According to special distribution and statistical analysis we may come to the conclusion that the amount of rainfall and the number of cold days is gradually decreasing. So in upcoming year country will receive less amount of rainfall and the intensity of winter will decrease and the number of cold days will be less compared to the previous years.
THANKS