



BMD Newsletter

Bangladesh Meteorological Department



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Seasonal Outlook

Bangladesh has a tropical monsoon climate. During the pre-monsoon season, its climate is characterized by high temperatures and occurrence of thunderstorms. April is the hottest month. Mean Temperatures of this month range from 30°C to 33°C. Rainfall from the thunderstorms of this season is copious, varying from 15 cm in the west-central part of the country to more than 80 cm in the northeast. This reflects the effect of orography in the northeastern parts of the country which sets the trigger action for uplift and convective overturning of the moist air from the Bay of Bengal. The thunderstorm season begins in the northwestern parts of the country by the first week of March. Then the thunderstorm activity gradually moves eastward, and becomes significant in the eastern part of the country only before the advent of the summer monsoon in late May or early June. During the early part of the thunderstorm season, a zone of discontinuity crosses the country from southwest to northeast, separating the hot dry air from the dry interior of India, and the warm moist air from the Bay of Bengal. The activity of the thunderstorms during the pre-monsoon season depends upon the supply of moist air from the Bay of Bengal. Since this season is a transitional season between the northerly circulation of winter and southerly circulation of the summer monsoon, the winds from the Bay of Bengal are neither very strong nor continuous.

As the season advances, a few tropical cyclones form in the Bay of Bengal and the Indian Ocean, but they generally move north, Northwest or northeast and strike the West Bengal, Bangladesh or Myanmar coasts.

The Cyclone of 1991 is still one of the most devastating in the history of Bangladesh.

However the maximum average temperature during the summer months remains within 30-38°C. The highest temperature ranging from 34-42°C is attained in the northern and north-western districts. Over rest of the country, it ranges from 34-38°C. The ever recorded highest maximum Temperature was 45.1°C at Rajshahi on 18th May, 1972. Nor'westers or Kalbaishakhi occur over the country from the Bengali month Baishakh frequently. These storms are often associated with strong gusty/squally winds, severe thunders and occasionally with hails.



Fig: 1 Director BMD Mr. Md. Shah Alam is delivering welcome speech at the inaugural sessions of 2nd meeting of SAARC monsoon initiative program, at Ruposhi Bangla Hotel, Dhaka on 28-29 April, 2013

The thunderstorm activity is less in March, moderate in April and severe in May.

Tornadoes also occur in this season. The tornadoes of Dhaka (1969), Manikganj (1989), Tangail (1996) and recently Brahmanbaria tornado (22 March, 2013) are the most devastating ones in the history of Bangladesh.

In the pre-monsoon season, normal rainfall of the country is 460 mm, which is about 19% of the total annual rainfall of Bangladesh.

DIANA (Digital ANALysis)

DIANA (Digital ANALysis) is an open source meteorological visualization and production software developed at the Norwegian Meteorological Institute. It is a 2D presentation system for meteorological data, including fields, observations, satellite and radar images, vertical profiles and cross sections. Diana has tools for on-screen field editing and drawing of objects (areas, symbols etc). Bangladesh Meteorological Department implemented this sophisticated software under the project of 'Institutional support and capacity building for mitigation of weather and climate hazards in Bangladesh' between Bangladesh Meteorological Department and Norwegian Meteorological Institute. (Met.no). High resolution (15 Km) ECMWF model products can be visualized and analyzed by Diana which is very effective for operational weather forecasting.

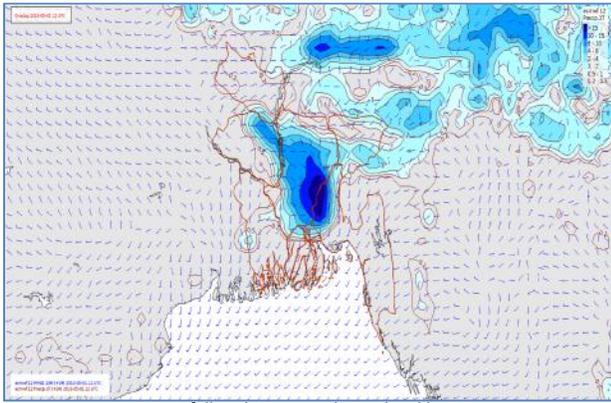


Fig:2 Rainfall and 10 m wind visualized by Diana.

T-series (Time series)

T-series of Norwegian Meteorological Institute (Met-no) can link up to a Diana instance if Diana is open to such linking. T-series is also very helpful for ten days outlook for rainfall, temperature, mean sea level pressure, cloud & fog cover with weather symbols.

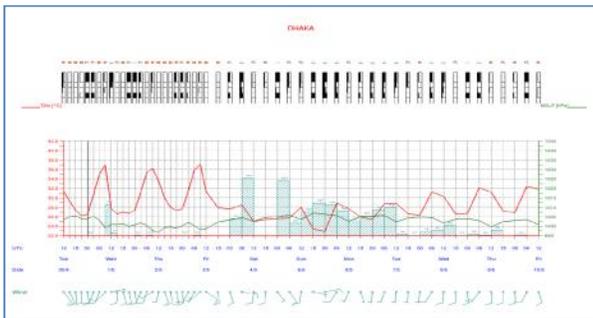


Fig:3 Rainfall , Temperature & cloud cover visualized by T-series.

Maximum Temperature in March 2013

In March 2013, average maximum temperature was above normal all over the country. The maximum deviation of maximum temperature from normal was 3.8°C over Sylhet. Mean temperature was also above normal over the country (figure-5). Maximum positive deviation was also in Sylhet and it was 2.6°C.



Fig:4 Deviation of daily mean temperature over Bangladesh in March 2013

In this month the country average maximum temperature was 33.0°C which was above normal by 1.4°C. Country average minimum temperature and mean temperature in this month were 20.0°C and

26.5°C respectively, both were above normal by 0.4°C and 0.9°C.

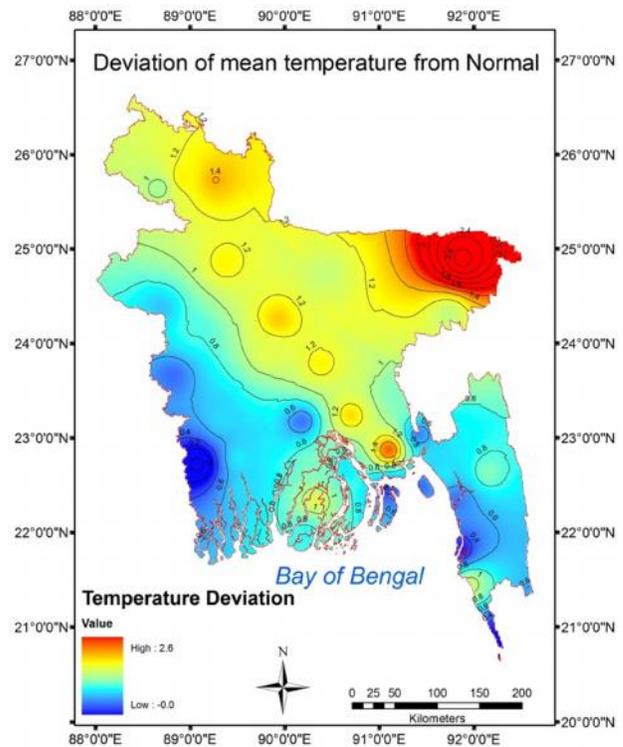


Fig:5 Deviation of Mean Temperature from normal in March-2013.

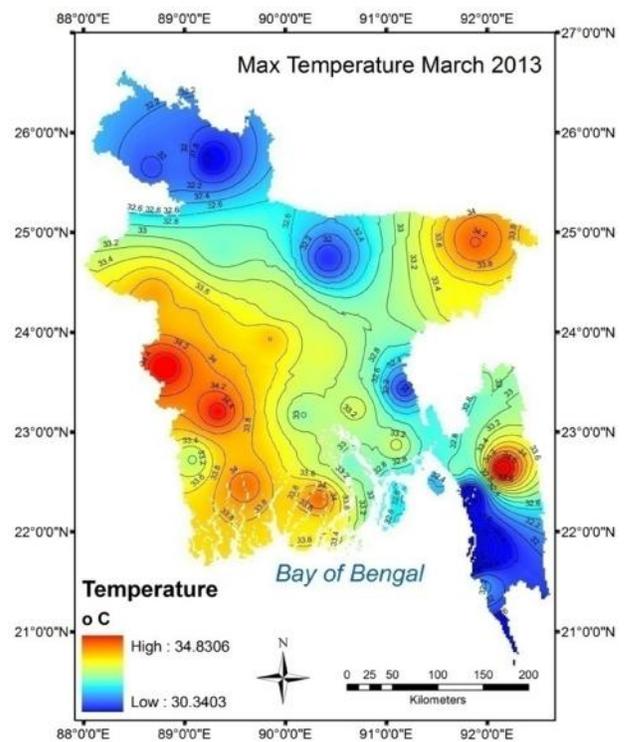


Fig:6 Spatial distribution of Maximum Temperature in March-2013.

Rainfall in March 2013

In March 2013 rainfall was about 81% below normal over the country. Rainfall was below normal over Dhaka, Chittagong, Rajshahi, Rangpur, Khulna, Barisal and Sylhet divisions by 56%, 87%, 79%, 93%, 69%, 98% & 80% respectively.

The spatial distribution of rainfall in March 2013 is shown in figure-5. The highest rainfall (49mm) occurred over Dhaka.

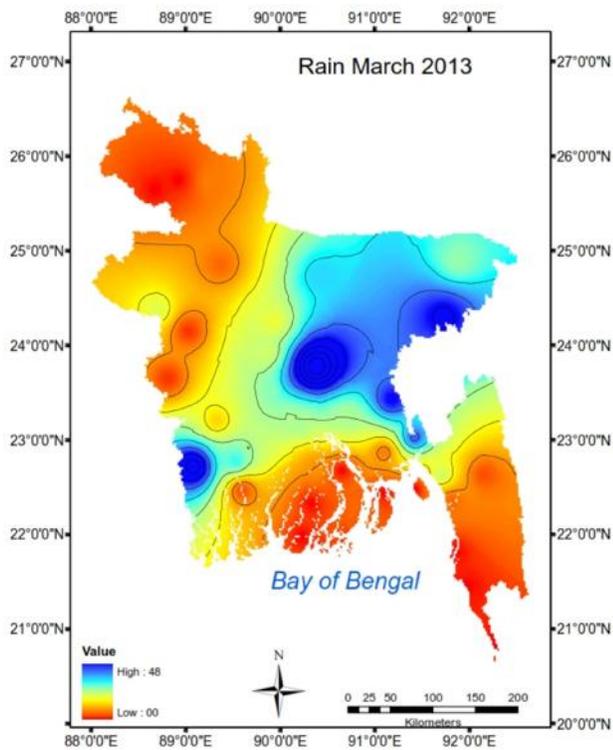


Fig:7 Spatial distribution of rainfall in March 2013

Brahmanbaria tornado

The situation:

A tornado ripped through more than a dozen rural villages in eastern Bangladesh in the district of Brahmanbaria on late Friday, 22 March 2013, killing at least 34 people, battering six unions of three upazilas, severely injuring 388 and affecting 1,728 families. The tornado affected people reported more than 2,635 houses completely destroyed and more than 750 homes partially damaged. 200ft boundary wall and 420ft security wall of district prison collapsed and road communication disrupted due to tumbled trees. The tornado wreaked havoc in Brahmanbaria district in a 15-20 minute period, uprooting thousands of trees and flattened hundreds of tin and mud-built houses in the area and snapping road and rail communication with affected villages.

The identified damages are-

- i. Destruction and collapse of many houses.
- ii. Blown away tin-roofs of many houses up to several tens of meters.
- iii. Collapse of a few concrete-roof buildings.
- iv. Broken, uprooted and torn many trees.

Based on the damage caused by the tornado and observations of the site by BMD surveyors, the following estimations are made:

- Movement of Tornado: west to east, then east-southeast and then again east-northeast.
- Occurrence Time: About 1030 – 1100 UTC (1630 to 1700 BST).

- Wind speed: Approximately 200 km/h.
- Total distance traveled: 12-15 km.
- Width: 100-150 m.
- Extreme destruction time: 5-7 minutes.
- Categorization as per Enhanced Fujita Scale: F-2



Fig:8 Brahmanbaria Tornado on 22 March 2013.



Fig:9 Tornado affected area in Basudev Union.



Fig:10 WMO-ESCAP Panel meeting on Tropical Cyclones over Bay of Bengal and Arabian Sea, Colombo, Sri Lanka

WMO-ESCAP Panel Meeting

The 40th session of the WMO/ESCAP Panel Meeting on Tropical Cyclones was held in Colombo, Sri Lanka from 25 February to 1 March 2013. The Panel recalled the discussion at the previous session (5-9 March 2012, Myanmar) regarding the National Sub-Project for JCOMM/CHY Coastal Inundation Forecasting Demonstration Project (CIFDP) in

Bangladesh, denoted as CIFDP-B. It congratulated the Government of Bangladesh on successfully completing the Phase 1 (Information Gathering - Project adaptation) of the project, by finalizing the Definitive National Agreement (DNA) in participation of the key national and regional stakeholders, including the Bangladesh Meteorological Department (BMD), Department of Disaster Management (DDM), Cyclone Preparedness Programme (CPP) and Regional Integrated Multi-Hazard Early Warning System (RIMES). The CIFDP Steering Group (PSG) has completed the review of CIFDP-B Phase 1, based on the progress report prepared by Bangladesh National Coordination Team (NCT), and approved for the implementation of Phase 2 and thereafter.

The Panel also noted with appreciation that the WMO Secretariat has successfully secured financial resources for the full cycle of CIFDP-B implementation, from the USAID. Based on this progress, the PSG at its 4th meeting (22-23 February 2012, Fiji) reviewed and approved the work plan for the CIFDP-B Phase 2 (until 2014), pending the further discussion with BMD and system developers. The core component of the Phase 2 would be the development of a (pre-operational) integrated Coastal Inundation Forecasting system, to be operated by BMD after testing and validation. It is expected that, in collaboration with the national technical partners (including BMD), several international partners would participate in the Phase-2 implementation who have been actively assisting BMD to enhance capabilities for marine meteorological and oceanographic forecasting - such as RSMC-TC and JMA.



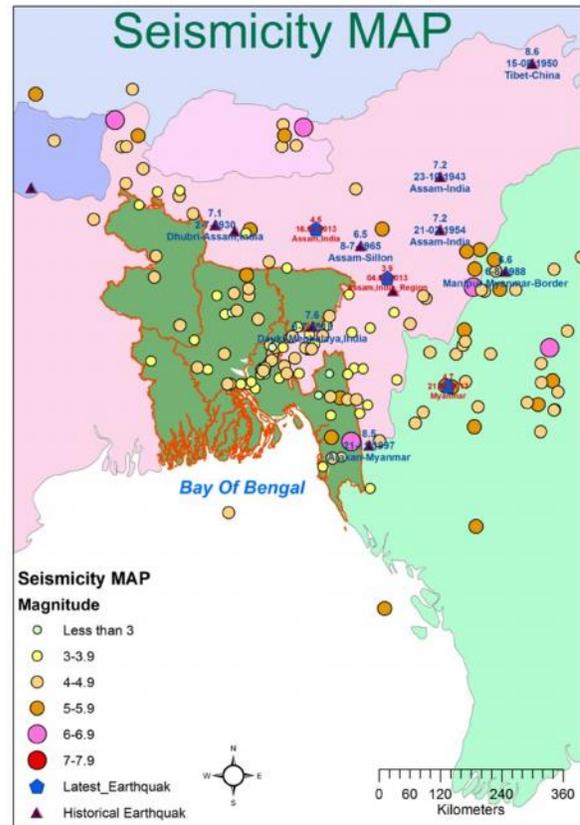
Fig: 11 Mr. Shamsuddin Ahmed, Deputy Director, Storm Warning Center, BMD visited NCMWRF Super Computer Center, India

The Panel recognized that, once the CIFDP-B is completed, the developed coastal inundation forecasting system should be operated and maintained by BMD itself, and therefore the operational structure and procedure should fully take the progress into account in view of ensuring the operation of the coastal inundation forecasting by the NMHS (BMD for the case of CIFDP-B) in the future. In this context, the Panel agreed to continue to

collaborate with CIFDP and its outcomes be duly shared by the Members.

Seismology

The generalized map indicates the frequency or magnitude of earthquake activity in Bangladesh and surrounding India. Data are from April 2007 to March 2013 recorded by seismic observatory Dhaka, Bangladesh.



Sahidul Hasan, Met Assistant

Fig:12 seismicity map

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