People's Republic of Bangladesh

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Bangladesh

Status of quality management in rainfall observation

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Country report in RAII WIGOS workshop on quality management of observation held in Tokyo , March 2018.

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Introduction

The meteorological activities started in Bangladesh 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.

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Observational Facilities of BMD

Synoptic observatories	54 Nos.
Pilot Observatories	10 Nos.
Rawin Sonde Observatories	04 Nos.
Agro Meteorological Observatories	19 Nos.
RADAR Stations (operational. Out of 5,3 are Doppler Radar)	05 Nos.
Earthquake Monitoring Stations	04 Nos.
Automatic Weather Stations (AWS)	58 Nos.

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Challenges in rainfall observation

1. Quality control of rainfall observation and perfectly calibration of rain gauge.
2. Absence of automation for archive precipitation data.
3. Insufficient number of rain gauge.
4. Frequently arises problem to transmit AWS data.

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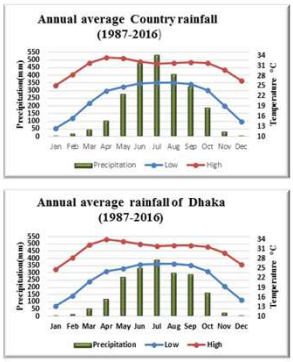
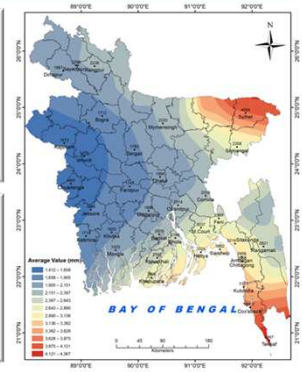
Annual Rainfall Information's





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Major recent rainfall related disaster

Water stagnation in Dhaka city

Dhaka receives about 200mm rainfall annually , of which almost 80% falls during monsoon period . Floods are one of the main natural hazards affecting the city

Heavy rainfall in Chittagong city in June 2017.

There was over 300 mm of rain in between the early mornings of June 13 and 14.

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Heavy rainfall causes the landslides in hilly areas

In June 2017 Heavy overnight rains triggered a series of landslides in southeast Bangladesh, killing at least 133 people and injuring many more, officials said. The highest total, 98 deaths, were reported in the hilly Rangamati district, where rescuers found bodies buries under mud.

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Overview of Flash Flood, April 19,2017

Heavy rainfalls as well as onrush of water from the upstream Meghalaya hills in India have led to the inundation of a vast areas of croplands of Haors and low-lying areas of the northeast. Flood started on 28th March affecting six districts (Sylhet, Moulavibazar, Sunamganj, Habiganj, Netrokona and Kishoreganj) in the north east region. Rising water overflow and breeched embankment in many places and inundated vast areas of croplands. It destroyed nearly-ready-for-harvesting boro rice in about 160,170 hectors areas .

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Heavy rainfall and flash flood having the negative effect on Local crops.

Effect on Local crops

Haor famers of Sunamganj, Sylhet have incurred around Tk 1500 crore losses as the flash flood damage the Boro paddy of 1,50,000 hectares.

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Rainfall Observation network

1. BMD is receiving every three hourly rainfall data from their 54 manned synoptic stations over telephone/mobile or through internet.
2. BMD has already installed 58 AWS. The dates of AWS are automatically transmitted to the central server of BMD at Dhaka through GSM .

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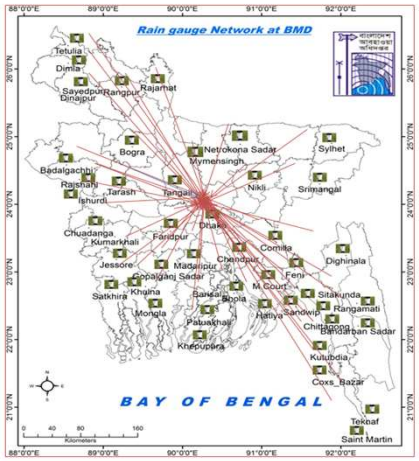
Image of a conventional rain gauge.



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Utilization of rainfall observation data

- Rainfall is one of the most important weather parameters for regular and seasonal forecasting.
- BMD frequently arranges so many training program ,workshop ,seminar for their capacity buildup and uses historical and current rainfall data.
- BMD officers are also engaged in some research work specially for improving forecast quality for monsoon and norwester period. So rainfall data is one of the most important data for their research work.
- BMD is authorized to supply data to various national and international organizations as per their demands.
- BMD is receiving AWS data from 58 observatory and using these data for forecasting and also in mobile apps for common people.

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Quality management in rainfall observation

- The rain gauges of BMD are calibrated by using a Graduated measuring Jar.
- Inspectors of BMD routine basis visit every observatory and check the instruments throughout the year.
- If there is any complain for any instrument they immediately repair or replace that from their reserved.
- Rainfall data is scrutinized manually on regular basis at Climate division of BMD. Enters the scrutinized data into the departmental data base. The punched data is corrected by running quality control programs written in fortran programming language and corrected data is preserved in the departmental data base on regular basis .

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Expectation for this workshop

- Hopefully we will be able to gather knowledge from this workshop that will be helpful for our rain gauge calibration, management, maintenance and quality control of precipitation data.
- JMA will provide logistic support to BMD and also arrange some training program for BMD officers and staffs for capacity building on regular basis.
- If possible JMA will arrange a program to visit Radiation calibration laboratory at Tsukuba.