United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

Member State Report for

Country : BANGLADESH

Intersessional Meeting of the ICG/IOTWMS November 2021

Introduction

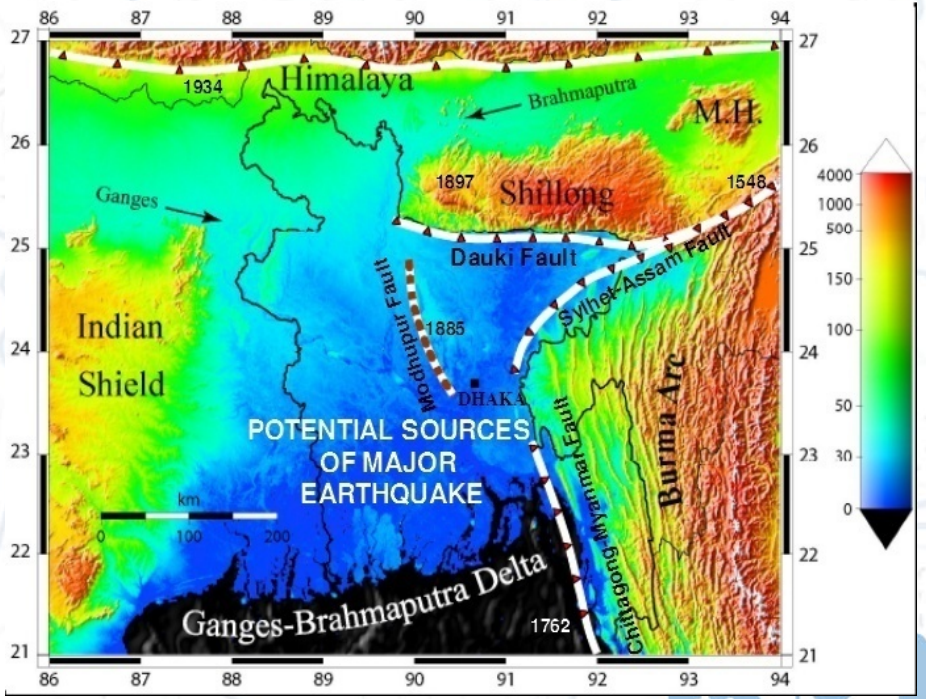
- **Bangladesh Meteorological Department is the only responsible organization in Bangladesh for monitoring earthquake and tsunami. *In early nineteen century some devastative earthquakes were experienced in Bangladesh along with her boarder with India (Assam) and Myanmar.***
- **In Bay of Bengal 2nd April 1762 a large earthquake with magnitude 8.7 occurred near the Arakan coast in Western Myanmar and adjoining part of Bangladesh due to this earthquake and associated ground movements propagated the tsunami. The water in the Hoogly river at Kolkata rose by two meters. The rise in the water level at Dhaka was so sudden that hundreds of boats capsized in Burigonga river and many people drowned, lot of people lost their lives and properties.**

Tectonic Setting of Bangladesh and Neighbor

Bangladesh and Neighbor region at the Junction of three Tectonic plate.

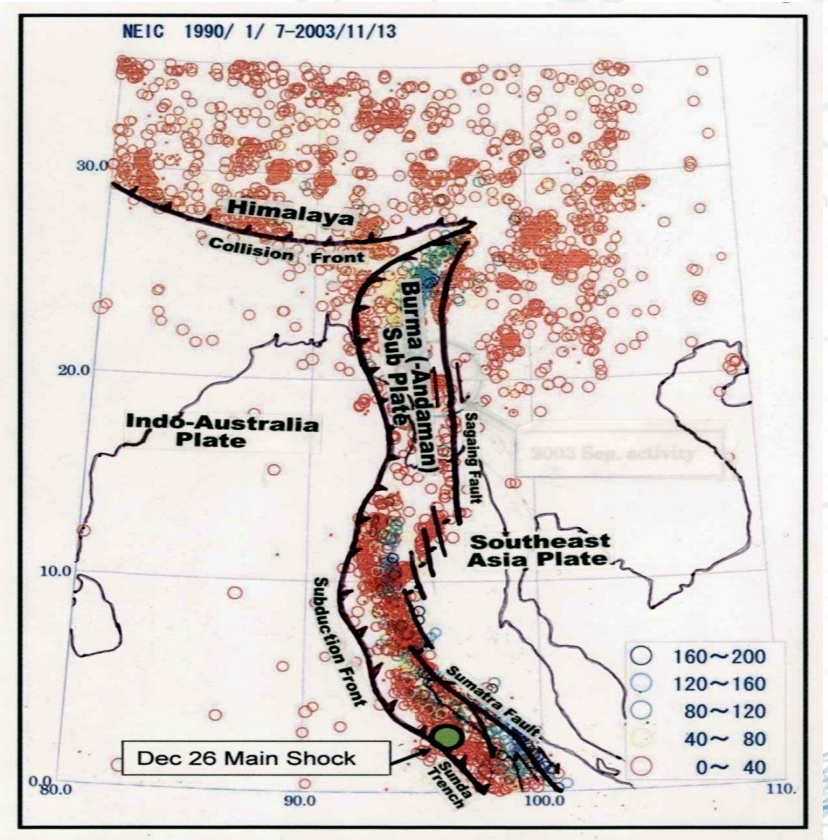
- ***Indo Australian Plate (Bangladesh stands)***
- ***Eurasian plate is in the North***
- ***Burma Micro Plate in the East***

That causes Bangladesh is Tectonically active zone of earthquake.



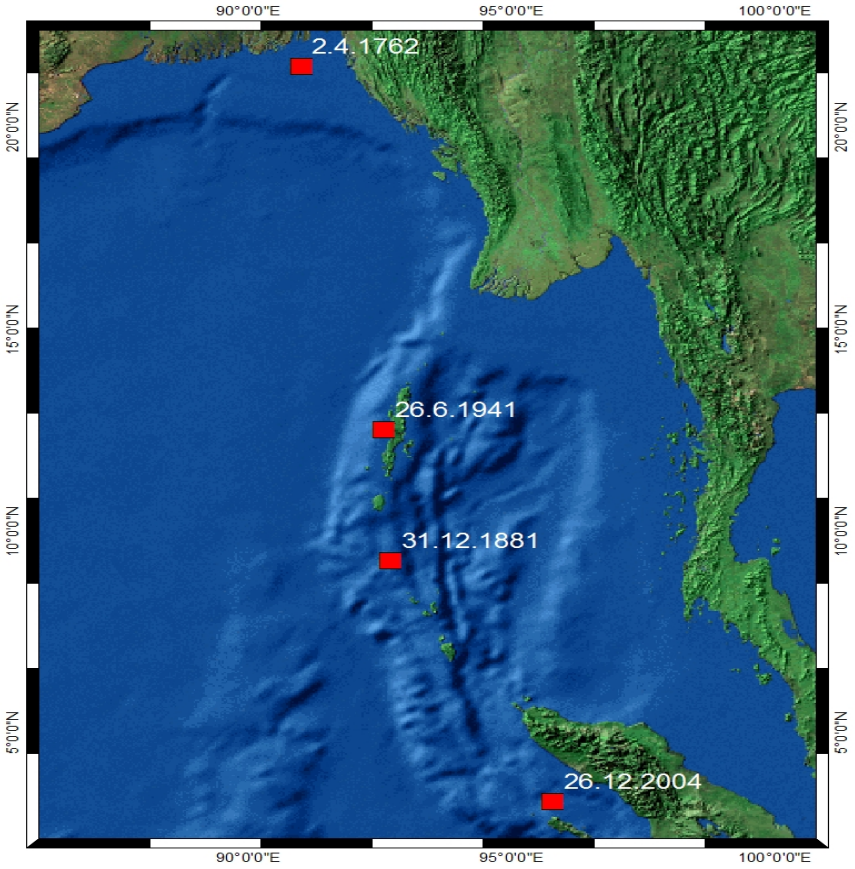
1.Dauki Fault, 2.Modhupur-Tangail Fault, 3.Teknaf- Sitakunda Fault 4. Chittagong - Tripura Fault, 5. Bogra Fault

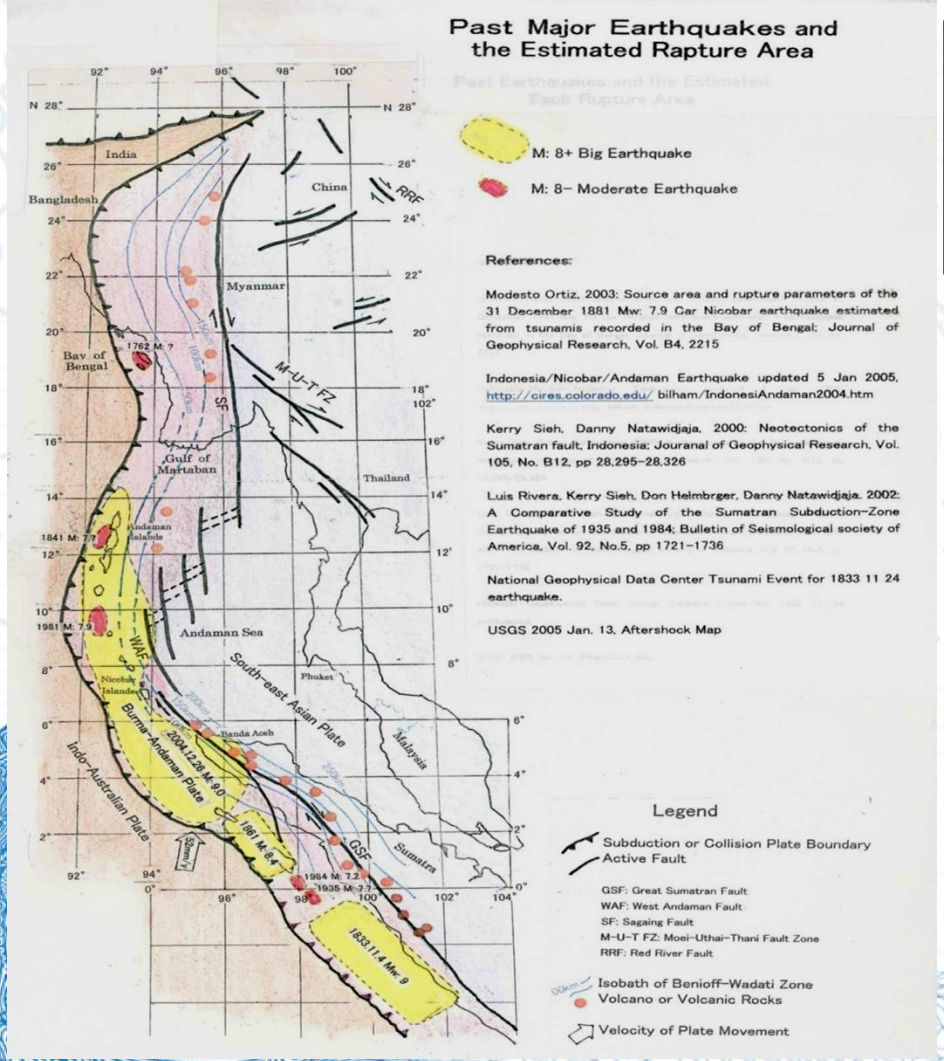
Seismicity Map of Bangladesh and Neighbor With Tectonic Boundary



Historical Tsunami Earthquake Bangladesh and Neighbor

No	Date	Location		Magnitude	Region
		Lat (N)	Long (E)		
1	2.4.1762	21.50	91.00	8.7	Arakan, Myanmar
2	31.12.1881	9.25	92.70	7.9	Nicobar Island
3	26.6.1941	12.50	92.57	8.1	Andaman Island
4	26.12.2004	3.29	95.77	9.2	Andaman - Sumatra





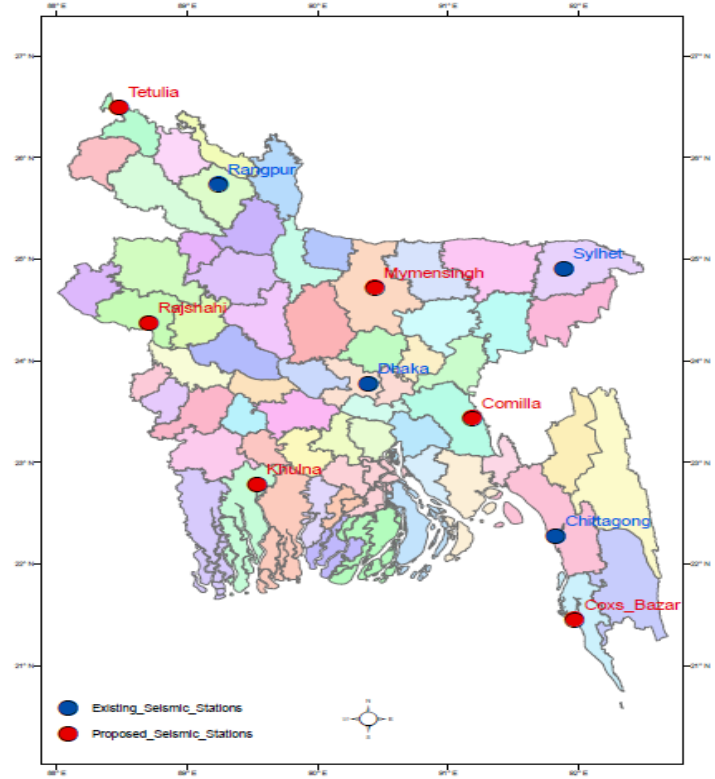
The past big earthquakes and the aftershock distribution (rupture area)

Starting the 1933 huge earthquake
Next 1961 earthquake then followed by
The Sumatra-Andaman Earthquake.

We have to pay a special attention
The migration tendency of earthquake
Along the Sunda Trench from South to North.

That suggest the next big one will be happened in the western part of Myanmar.

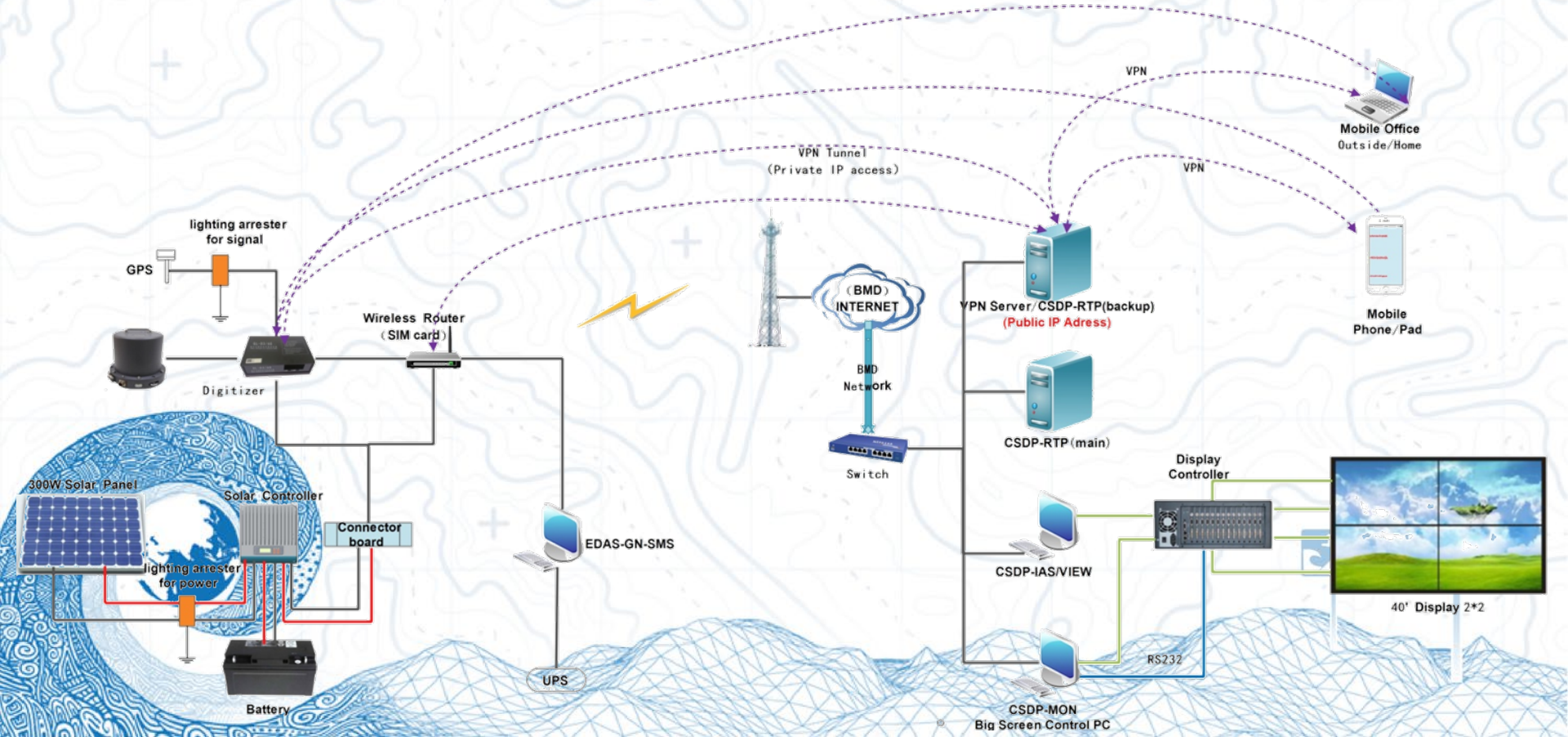
Existing Seismic Stations in Bangladesh



Earthquake monitoring system established in 1954. At present BMD has 10 Broadband seismic center. Seismic Stations are:

1. **Dhaka**
2. **Chittagong**
3. **Sylhet**
4. **Rangpur**
5. **Tetulia**
6. **Mymensing**
7. **Rajshahi**
8. **Comilla**
9. **Khulna**
10. **Cox's Bazer**

Topological Diagram of BMD Seismic Network



Tsunami Warning System in Bangladesh

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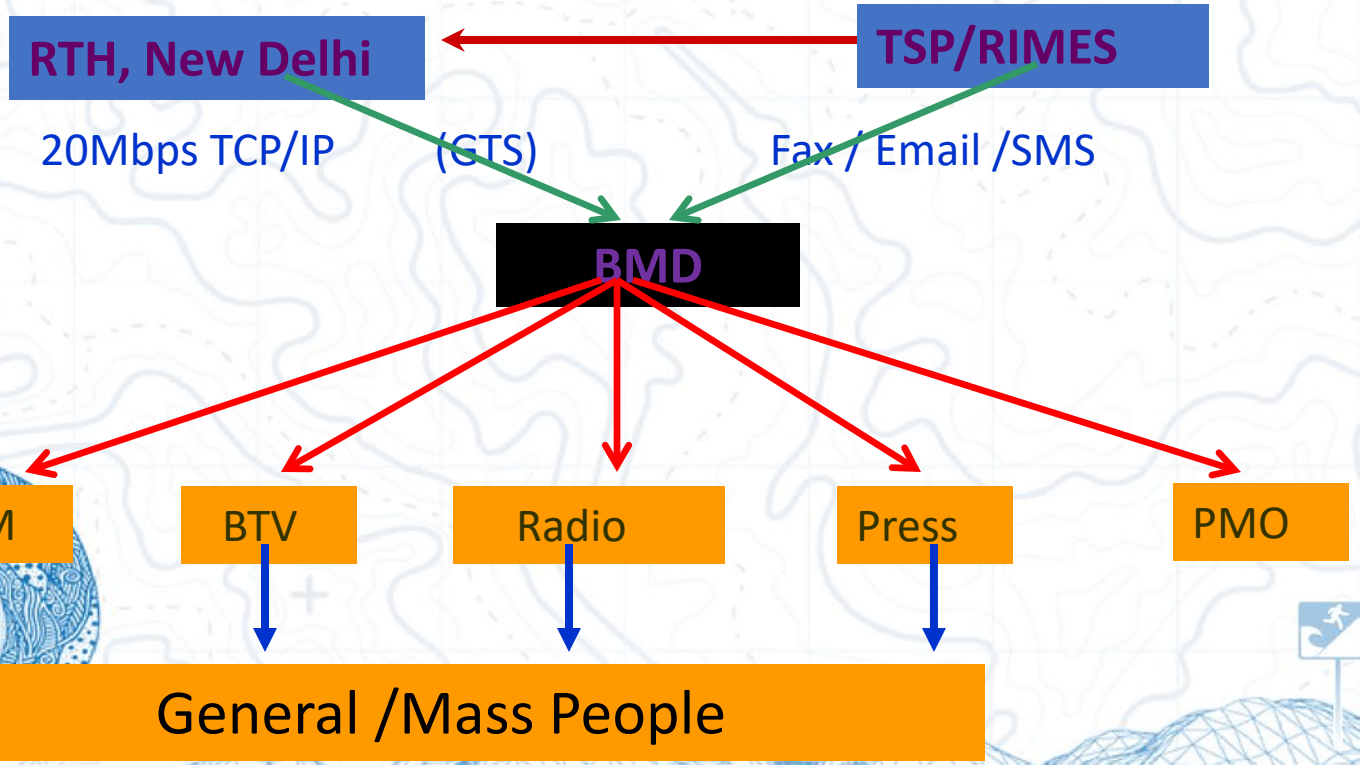

BMD Tsunami Bulletin Types

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BMD Bulletin Type 1: Earthquake Occurrence and Tsunami Information
-Issued within 10-20 minutes of earthquake
(From TSP Bulletin-1 and Local seismicdata analysis)
-Contains earthquake details qualitative tsunami threat assessment.

BMD Bulletin Type 2: Potential Tsunami Threat Bulletin (Potential Tsunami watch Bulletin)
- Issued within 30-45 minutes of earthquake
(After receiving TSP Bulletin-2)
- Contains earthquake details, model prediction time of TSP
(Arrival time of first wave and Max Beach height, related agencies are advised to be watchful)

BMD Bulletin Type 3: Tsunami Warning Bulletin
-Issued after TSP Bulletin-3 (Confirmed tsunami generates)
-Contains all Bulletin-2 information, observations of tsunami waves
(Advised to evacuate coast and beach area)

BMD Bulletin Type 4: Tsunami Withdrawn Bulletin
- Issued 2 hours after the last arrival T4 time on the basis of TSP Bulletin.
- Contains tsunami threat passed and no further bulletin will be issued

Activities

- *If earthquake occurs in Bangladesh coast magnitude more than 6.8 with shallow depth and TSP provide the information that Bangladesh coast is in threat for tsunami and sea level rising in the coast then BMD declare potential tsunami threat and issued direct Tsunami Warning.*
- *After receiving the Tsunami threat information from TSP, Bangladesh Meteorological Department send it to the DDM, CPP, NDRCC and Media to disseminate the information to the coastal region of the country.*
- *For distant Tsunami BMD carefully Monitors TSP Bulletins and if needed then issuing tsunami watch/Warning bulletin to DDM/CPP and the high officials.*
- *If Bangladesh Coast is not in threat or passed the threat then BMD provide Tsunami warning withdrawn bulletin to the DDM, CPP, NDRC to disseminate the message to cancel the warning bulletin.*

Future Plans

- ***To mitigate Earthquake and Tsunami Risk in Bangladesh, BMD need capacity building of human resources by improving the advance and updated knowledge on seismology, seismic data analysis,*** **hazard assessment,** ***tsunami early warning*** **capacity development.**
- ***Bangladesh Govt. wants to increase more seismic station*** **within the existing network and collaboration with other relevant organizations.**
- **Although DDM and AFD arranged International programme like DREE every year, BMD wish to take more a*wareness and capacity* build-up programme for the community who are at risk.**

Issues

- As NTWC we facing some difficulties in dissemination activities. When earthquake happened then we manually analyzing seismic waveform to provide the earthquake information like Magnitude, Epicenter, Focal depth, Origin time, probable Tsunami text etc to the peoples. We firstly send it to DDM, NDRC, Media & CPP. Then we face some lack of communication tools like Fax, Phone, Internet etc. and technical personal's.
- Early warning system can face power outage and interruption to telecommunication and lack of backup service.
- In sufficient sea level monitoring instrument.
- Lack of access to shared data and better computer modeling.
- Infrastructural development in coastal zone are not planned considering tsunami risk.

Conclusion

- ***Bangladesh is the most disaster prone country of south-Asia. It is well known to international communities for frequent attack by natural disaster. Most of the area of this country is only a few feet above from sea level because of its geographical location. The subduction structure of Bangladesh, Myanmar continues to Andaman island area and to Sumatra. Possibility of local and distant Tsunami strike cannot be rolled out. Historical events are the evidence for future disastrous earthquake. So TSP products websites are very important for providing tsunami warning and tsunami disaster mitigation in Bangladesh. Government of Bangladesh is willing to expansion of Seismic observation networks, sharing of real/near real-time seismic data to improve quality of earthquake location, training facilities and multi-lateral study between Bangladesh and neighbor countries.***

Thank You All