

### Seasonal Outlook:

Southwest monsoon set in over Teknaf coast on 6<sup>th</sup> June 2013, about 4 days later than its normal onset dates. It covered central part of Bangladesh on 9<sup>th</sup> June and entire country on 11<sup>th</sup> June respectively. Initially southwest monsoon was less active over the country but at the end of June it was active over the country. As a result of active monsoon heavy to very heavy rainfall occurred over the country. In this month two monsoon low formed over Bay of Bengal. One of them intensified into a well-marked low but none of them was strengthened further. In July, southwest monsoon was fairly active or less active over the country at the beginning however at the end of the month southwest monsoon became active and due to active monsoon heavy to very heavy rainfall occurred at many places over the country. As a result, landslides occurred over Chittagong division and two persons died. In this month five monsoon low formed over Bay of Bengal, four of them concentrated into well-marked low. In August, SW Monsoon was fairly active or less active over the country. Due to less active or fairly active monsoon, amount of rainfall was below normal over the country. In this month two monsoon low was formed over Bay of Bengal and one of them was intensified into a land depression over Gangetic West Bengal and adjoining area. Due to this land depression heavy rainfall associated with gusty wind occurred over Bangladesh. In September, Rainfall was above normal over Barisal division, nearly normal over Chittagong & Khulna divisions and below normal elsewhere over the country. In this month three monsoon low formed over Bay of Bengal and none of them was strengthened further. The Southwest monsoon rainfall over the country as a whole was below normal by 16%. However, it was characterized by spatial and temporal variability. In the months of June, July, August and September country average rainfall was below normal by 13%, 30%, 6% and 10% respectively.



Chief Guest, Mr. Md Shah Alam, Director, BMD (Left), Special guest Mr. Olavo Rasquinho, secretary of the Typhoon Committee (Middle) and Mr. James C. Weyman, Project Manager, ESCAP/WMO Typhoon Committee (Right) are seen in the opening session of the workshop of 'Identification and Development of Synergized Standard operating Procedures (SSOP) for coastal Multi-Hazards Early Warning System' held at Dhaka, BMD on 06 October 2013.

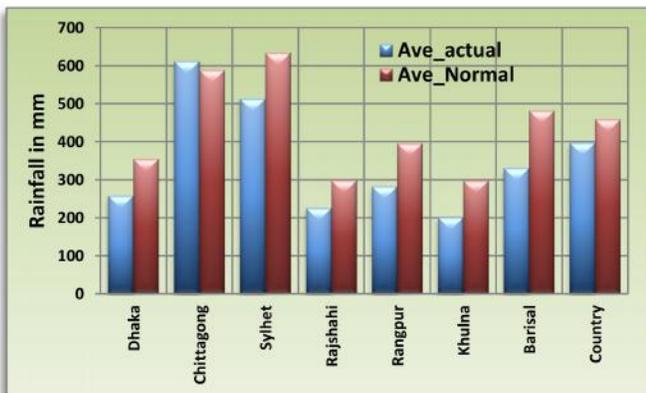


Fig 1: Comparison of actual and normal rainfall in June 2013

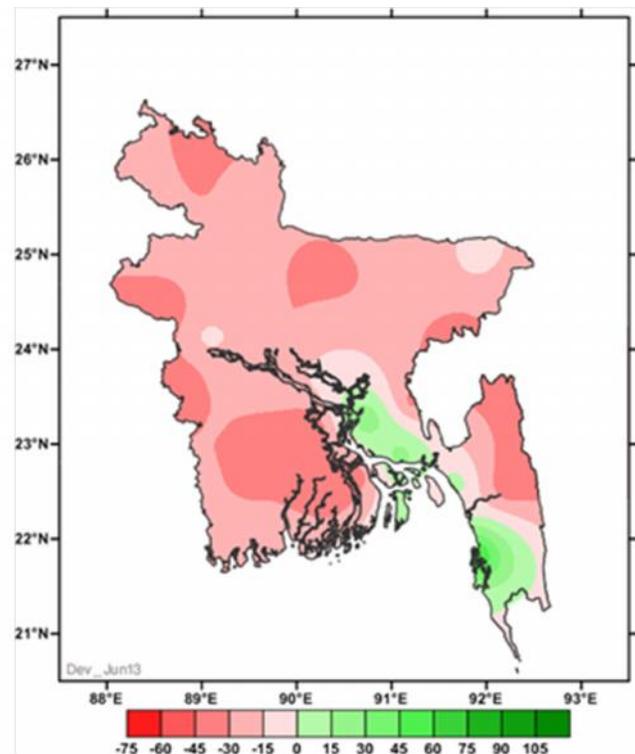


Fig 2: Deviation of rainfall from normal in June 2013



Director of BMD, delegates of ICG/IOTWS/UNESCO and participants in the workshop of Supporting Policy for Tsunami Exercise, BMD, Dhaka on 08-11 October 2013

**Rainfall:**

In the month of June rainfall was below normal over Dhaka, Sylhet, Rajshahi, Rangpur, Khulna & Barisal divisions but it was above normal by 3.9% over Chittagong division. During June rainfall over the country as a whole was 13.4% below normal (fig-1). The Spatial distribution of rainfall in June is shown in the figure-2. From the figure it is clear that rainfall in the month of June was below normal over the country except for southeastern tip of the country and Noakhali region where it was above normal.

In Bangladesh July is the highest rainfall occurring month but in July 2013 country average rainfall was below normal (fig-3). In this month rainfall over individual seven divisions were below normal also. It is shown from spatial distribution of deviation of rainfall from normal that during July, rainfall was below normal all over the country except for some parts of Khulna division and extreme southeastern tip of Bangladesh where it was slightly above normal (fig-4).

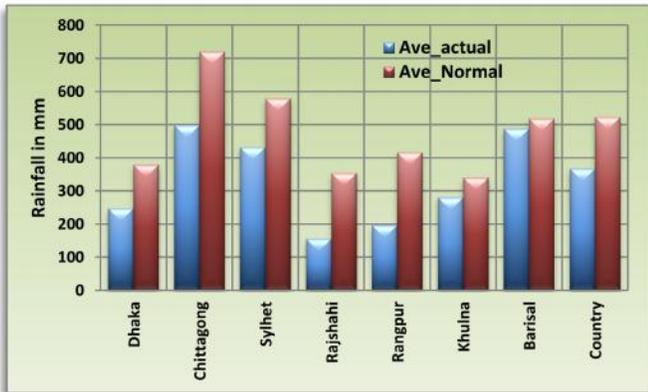


Fig-3: Comparison of actual and normal rainfall in July 2013

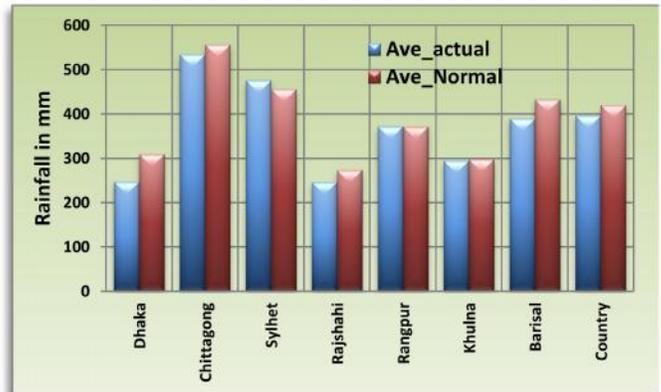


Fig-5: Comparison of actual and normal rainfall in August 2013

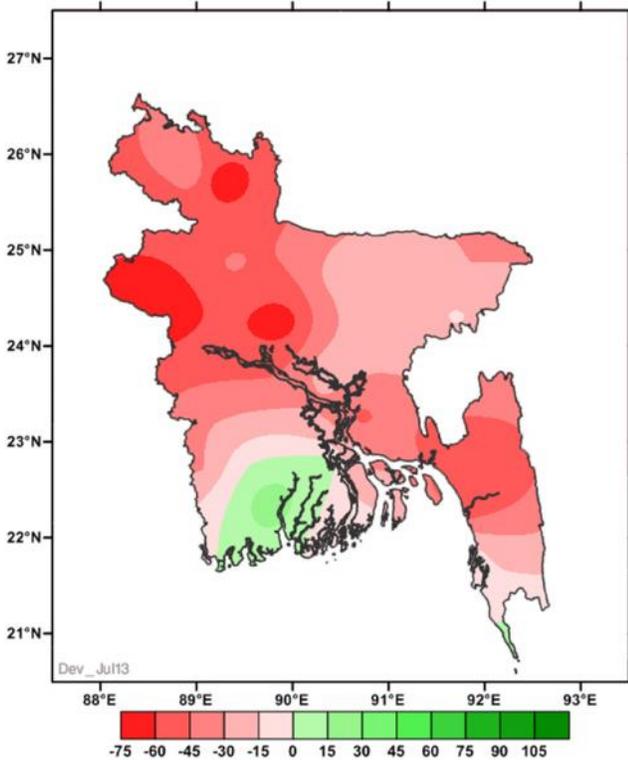


Fig-4 : Deviation of rainfall from normal in July 2013

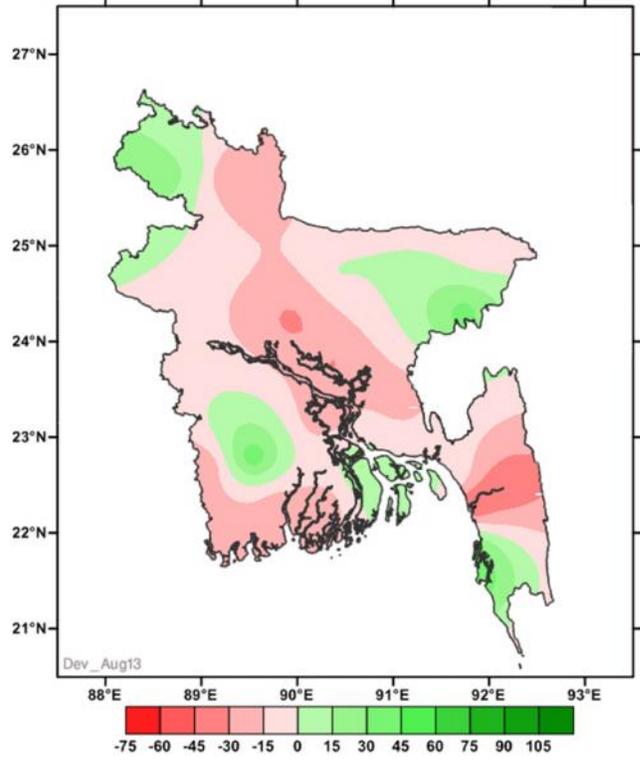


Fig-6 : Deviation of rainfall from normal in August 2013

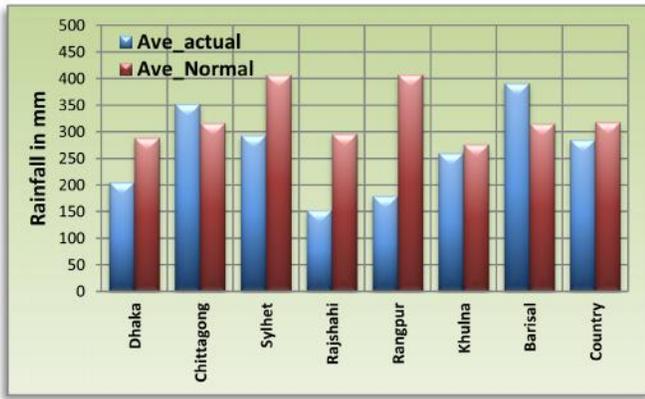


Fig-7 : Comparison of actual and normal rainfall in September 2013

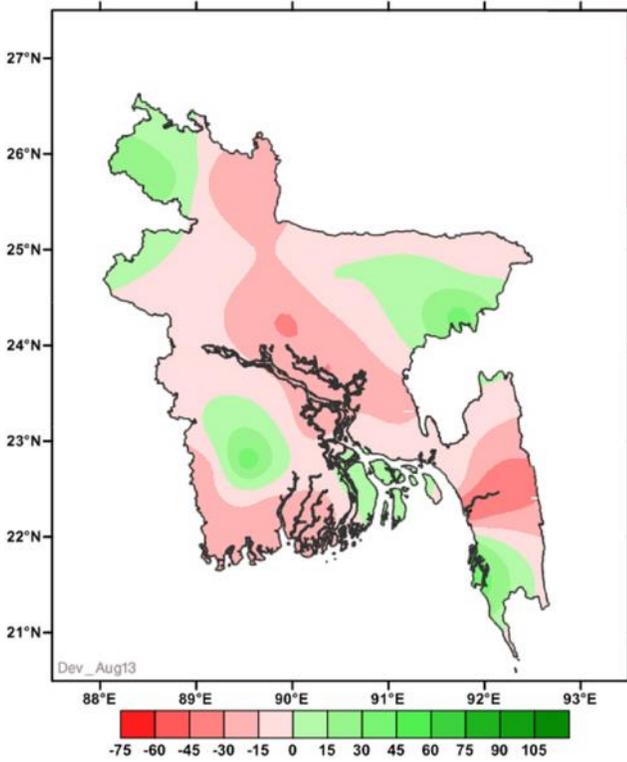


Fig-8: Deviation of rainfall from normal in September 2013

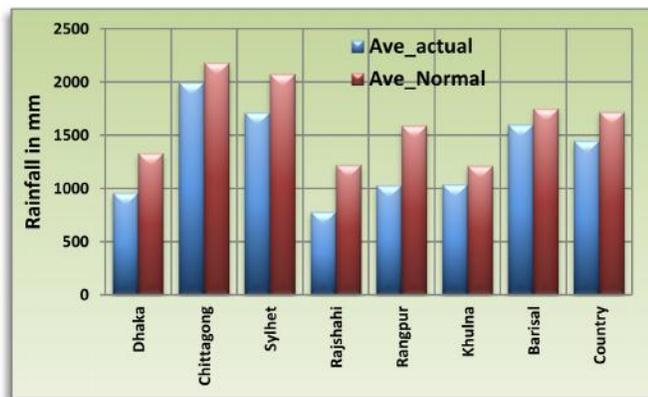


Fig-9 : Comparison of actual and normal rainfall in Monsoon 2013

In August 2013 rainfall situation improved than the rainfall situation of June and July. The country average rainfall in this month was nearly normal (fig-5). Spatial distribution of deviation of rainfall from normal also revealed the improved situation of rainfall during August (fig-6).

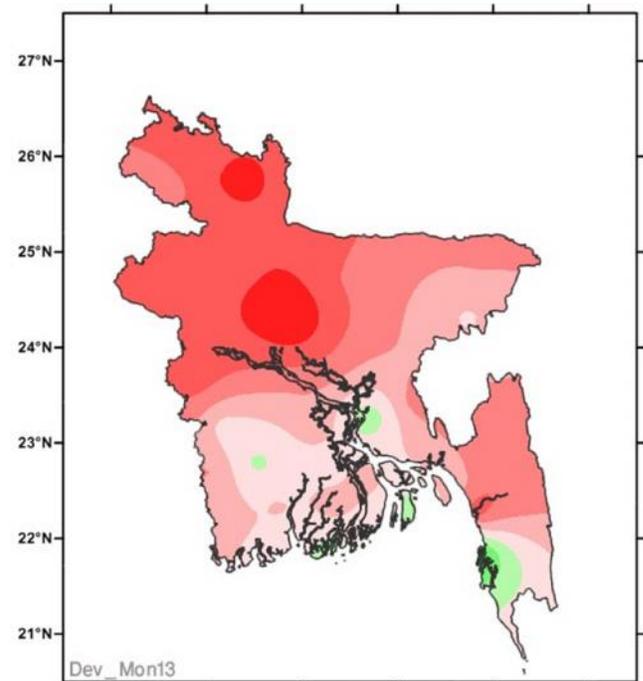


Fig-10: Deviation of rainfall from normal in Monsoon (June-September) 2013

During September 2013 Country average rainfall was below normal by 10%. Rainfall over Barisal and Chittagong division was above normal by 24% and 11% respectively whereas rainfall over Dhaka, Rajshahi, Rangpur, Khuna and Sylhet divisions was below normal by 29%, 48%, 56%, 6% and 28% respectively. Spatial distribution of deviation of rainfall from normal in the month of September 2013 is shown in the figure-8. In the whole monsoon season country average rainfall was below normal by 16%. Rainfall was below normal in all seven divisions - Dhaka, Chittagong, Rajshahi, Rangpur, Khulna, Barisal and Sylhet divisions by 28%, 9%, 36%, 35%, 14%, 9% and 17% respectively. It is observed from spatial distribution of deviation of rainfall from normal also shows that rainfall during monsoon season was below normal almost all over the country (fig-10).

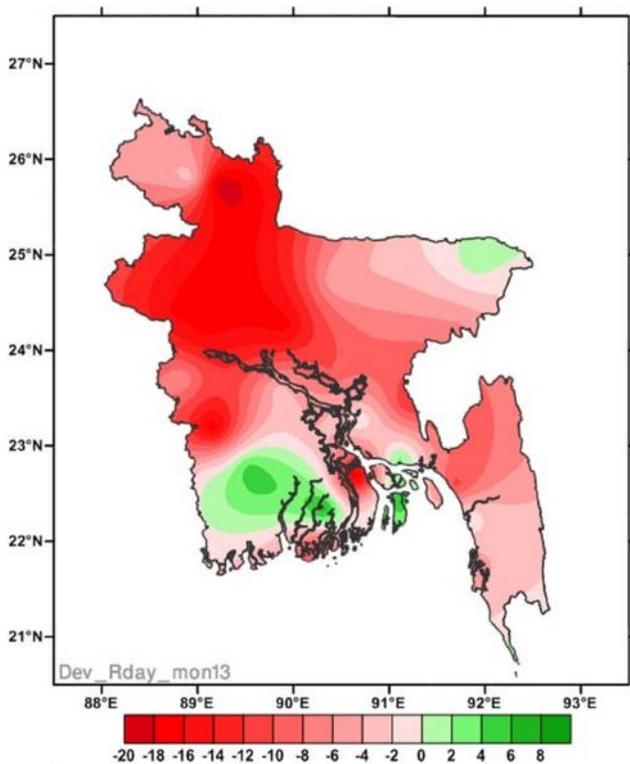


Fig-11 : Deviation of rainy days from normal in monsoon (June-September) 2013

Spatial distribution of deviation of rainy days from normal in monsoon (June-September) 2013 (fig-11) shows that number of rainy days were below normal over the country except Khulna division and the regions of Sylhet and Bhola.

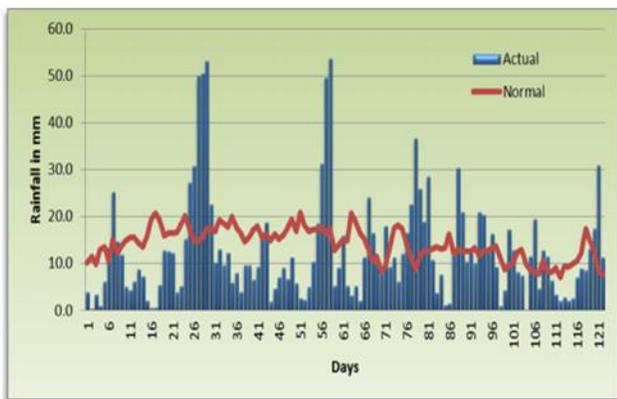
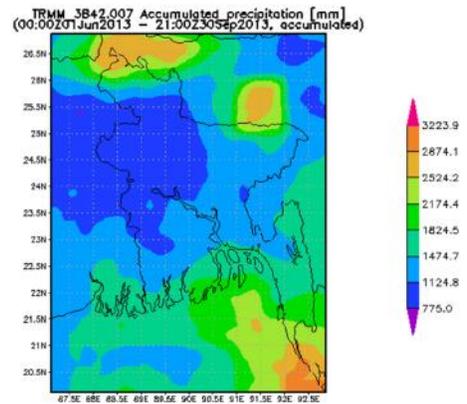


Fig-12 : Variation of daily actual and normal rainfall over Bangladesh during monsoon (June-September) 2013

Table-1: Deviation (%) of rainfall from normal

	JUN	JUL	AUG	SEP	Monsoon
Dhaka	-27	-35	-20	-29	-28
Chittagong	4	-31	-4	11	-9
Sylhet	-19	-26	4	-28	-17
Rajshahi	-24	-56	-10	-48	-36
Rangpur	-29	-53	0	-56	-35
Khulna	-32	-18	-1	-6	-14
Barisal	-31	-6	-10	24	-9
Country	-13	-30	-6	-10	-16



### Seismology:

Eight earthquake events were recorded in June 2013 by the Seismic Observatory and Research Center, Dhaka which were Minor (3.0-3.9 in Richter Scale) in category. One of them of magnitude 3.9 in Richter Scale occurred in Fulpur, Mymensingh region on 20<sup>th</sup> June 2013. The distance of the epicenter of this earthquake was measured 120 Km which was directly to the North from Dhaka seismic observatory. In July 2013 seven earthquakes were recorded. They all were Light (4.0-4.9 in Richter Scale) in category. One of the events occurred in Brahmanbaria-Tripura region of magnitude 4.4 in Richter Scale on 8<sup>th</sup> July 2013. The distance of the epicenter was calculated 104 Km which was directly to the east from Dhaka Seismic Observatory. No reportable earthquake was recorded in August 2013. In September 2013, seven earthquakes were recorded by the Seismic Observatory. On 24 September, a Major (7.0-7.9 in Richter Scale) earthquake of magnitude 7.7 in Richter Scale occurred in Pakistan of distance 2,695 Km, West-Northwest from Seismic observatory, Dhaka. Another Minor earthquake of magnitude 3.4 in Richter Scale occurred in India-Bangladesh border region on 4<sup>th</sup> September 2013 and the distance of the epicenter was calculated 205 Km east from Seismic Observatory, Dhaka.

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