

S M R C

NEWS LETTER

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Research activities of Synoptic Division

BANGLADESH:

Extreme Weather Events in Bangladesh during January-June, 2005:

During the period from January to June, 2005 in the pre-monsoon season no cyclonic storm formed in the Bay of Bengal. Only one monsoon depression formed in the Bay of Bengal (28-30 June, 2005). However, due to late onset of southwest in this year the country's highest maximum temperature was recorded in the month of June. The highest maximum temperature of 43°C was recorded at Chuadanga on 2nd June, 2005. at that time moderate to severe heat wave prevailed over the country.

The Depression of 28-30 June, 2005:

A monsoon low formed over Northwest Bay and adjoining area on 27th June, 2005. The system moved north-northwestwards and after crossing the coast it concentrated into a land depression over Gengetic West Bengal and adjoining Bangladesh on 28th June, 2005. After that it moved north-westerly direction towards Bihar and adjoining West Bengal. Steep pressure gradient associated with the land depression lay over North Bay. On 30th June, 2005 the land depression moved further north westwards and weakened into a low over Bihar & adjoining area and merged with the monsoon axis.

Due to this monsoon land depression squalls and heavy to very heavy rainfalls occurred at many places over the country.

On 28th June, 2005 squalls were reported from Chittagong & Sylhet stations and heavy to very

heavy rainfall occurred at Teknaf 126 mm, Swandip 107 mm, Hatia 84 mm and Cox's Bazar 79 mm.

On 29th June, 2005 to very heavy rainfall occurred at Teknaf 248 mm, Patuakhali 152 mm, Hatia 116 mm, Swandip 111 mm, Majidi Court 99 mm and Kutubdia 72 mm.

Significant amount of rainfall recorded on 30th June at Khepupara 226 mm, Sitakunda 158 mm, kutubdia 128 mm, Hatia 109 mm, Teknaf 90 mm, Patuakhali 86 mm and Cox's bazaar at 77 mm.

INDIA:

Cyclones and Depressions:

During the period January-June, 2005 three systems formed over the North Indian Ocean, of which only one system attained the intensity of Cyclone named HIBARU and other two were depressions (Fig. - 1)

Cyclonic storm "Hibaru" over the Bay of Bengal on January 13-17, 2005:

A low pressure area formed over southwest Bay of Bengal and adjoining north Indian Ocean on January 12, 2005, it concentrated into a depression at 131200 UTC near lat 5.5° N/long. 87.0° E. The System remained practically stationary and intensified into a deep depression at 140300 UTC. It further intensified into a cyclonic storm at 150300 UTC. Satellite picture of January 15, 2005 showed CDO type of cloud pattern close to the equator (Fig. - 2). Subsequently the system moved slowly southwestwards and lay centred near lat 5.5° N/long 86.5 °E at 160300 UTC. The cyclonic storm weakened into a deep depression at 170000 UTC and subsequently into a depression and lay

centred near lat 5.0 ° N/long. 86.0 ° E in the morning of 17th January 2005 and subsequently weakened into a low-pressure area in morning of 18th January 2005.

Fig.2

Significant features:

- The formation of cyclonic storm in the month of January is very rare, last such occurrence was in the year during 13 Jan. - 4Feb. 1987 over the Bay of Bengal.
- The system formed over a very low altitude.
- Though the system attained and remained as cyclonic storm for about two days, its movement was very sluggish.

Depression over northeast Arabian Sea on June 21-23, 2005:

A deep convective activity developed over north east Arabian Sea ahead of the monsoon current during the third week of June. Under its influence a depression formed over northeast Arabian sea and adjoining Saurashtra and Kutch lay centred close to Probandar in the morning of 21st June 2005. Satellite picture of June 22, 2005 showed spiral bands clouds south of the system (Fig. - 3). Moving northwestwards it lay centred at 0300 UTC of 23rd June near lat. 22.0 ° N/long. 68.0 ° E and thereafter it moved in westerly direction and lay centred near at 22.0 ° /long. 67.0 ° 1200 UTC of the same day. The system weakened into a low pressure area in the morning of 23rd June over northeast Arabian sea. Under its influence fairly widespread rainfall has occurred over Gujarat State.

Land depression during June 28- July05, 2005:

A well marked low pressure area formed over northwest Bay and adjoining Gangetic West Bengal on 28th June, 2005. It moved northwestwards and concentrated into a depression in the morning of June 29 and lay centred near Jamshedpur(42798). The system further moved with the same intensity and lay centred and close to Khajuraho (42567) in the morning of July 4, 2005. Subsequently the system

recurred and weakened into a well marked low pressure area on July 6, 2005 over south Uttara Pradesh and adjoining northwest Madhya Pradesh. Under its influence fairly widespread rainfall has occurred over east and central parts of the country.

Winter Season (January-February):

- During the Winter season cumulative rainfall was normal to excess in 23, deficient in 7 and scanty in 5 out of 36 meteorological sub-divisions of the country.
- The cumulative rainfall for the country as a whole was 69.8 mm which was 59% more than the normal value.
- Jammu and Kashmir experienced heavy to very heavy snowfall (126% above normal) causing avalanches and land slides at many places in February which resulted in loss of human lives and property.
- Both maximum and minimum temperatures showed large fluctuations over northwest and central India due to approach and passage of western disturbances. However, minimum temperature were generally above normal by 2-3°C on many days. Fog and cold wave conditions occurred only on few occasions in isolated pockets.

Pre-monsoon Season (March-May):

- During this season the cumulative rainfall was excess/normal in 20 out of 36 meteorological sub-divisions. It was deficient/scanty in the remaining 16 meteorological sub-divisions.
- The rainfall activity was more in March (+25%) which gradually decreased in April and May. The cumulative rainfall for the country as a whole was 7% below normal.
- Heat wave conditions were not experienced in most parts of the country up to mid May. However, they prevailed over central and adjoining plains of northwest India during 2nd fortnight of May.

Heat Wave:

An anomalies anti-cyclonic circulation persisted over the central parts of the country during first

half of June. The penetration of strong and dry continental northwesterly flow into the eastern parts of the country along the periphery of above said anti cyclonic circulation prevented the entry of monsoon flow into the northeast and eastern parts of the country. The entry of these dry winds and the delay in the onset of monsoon resulted in severe heat wave conditions over the eastern and then over the northern parts of the country during first three weeks of the June.

Long-Range Forecast for Southwest Monsoon 2005:

- i. Based on the 10 Parameter power regression model, IMD’s long range forecast for the southwest monsoon season (June-September) was that the rainfall for the country as a whole likely to be 98% of long period average value with a model error of $\pm 4\%$
- ii. The probabilistic model suggested a very high (70%) probability for 2005 southwest monsoon season rainfall for the country as a whole to be near normal or above.

Progress of Monsoon:

The southwest monsoon entered the southeast Bay of Bengal on 26th May (11 days late) and over Kerala on 5th June (4 days late). It advanced into northeast India on 16 June with a delay of about 2 weeks. It rapidly advanced thereafter and covered the entire country by 30th June (ahead by 2 weeks of its normal schedule).

Rainfall upto 30th June:

Due to delayed advancement of monsoon, all India rainfall deficiency was 59% at the end of the 2nd week of the June. However, there was remarkable improvement in the 2nd half due to extensive rainfall activity over central parts of the country and the all India rainfall deficiency reduced to 15% as on 30th June.

MALDIVES:

Significant Weather Events:

An area of convergence located in the south of Addu Atoll on 12 th January had intensified into a low-level circulation later and brought occasional heavy downpours to southern atolls. Heaviest rainfall recorded for this period was 114.5 mm on 13th January, at the Meteorological office, Gan.

Once again on the 26th January, another convergence area formed over the southern atolls causing scattered rain over the country. Thunderstorms with some heavy downpours caused havoc in the southern island heaviest rainfall being 104 millimeters recorded at the Meteorological Office, Gan.



Fig: The satellite imagery of 26th January, 2005

Exceptionally high winds below from 7-14 February due to a formation of a low-pressure trough over the area. Rough seas interrupted domestic sea travel during this period. Maximum gust winds of 37 moles per hour were recorded at the National Meteorological Centre on the 9th and the heaviest rainfall for the period was 80 millimeters that fell on the following day at Kaadedhdhoo Island. In each of these heavy rain sessions several island got flooded.

Capacity Building & Human Resource Development:



- Mr. Zahid (photo): Completed Master of Environmental Science at University of Wollongong (one of Australia’s top research

and teaching institute). After completing Masters Degree program, Mr. Zahid returned home in March 2005.

- Mr. Yazeed Ahmed (photo): Completed nine months Postgraduate Diploma in Satellite Meteorology and Global Climatology on May 2005. This course was conducted by Centre for Space Science & Technology Education in Asia Pacific (CSSTEAP) India, affiliated to United Nayion.
- Mr. Ahmed Muslim: Completed nine months Postgraduate Diploma in Space and Atmosphere Science. This course was conducted by Centre for Space Science & Technology Education in Asia Pacific(CSSTEAP) India. Mr. Muslim returned home in May 2005.
- Mr. Ahmed Shafeez: Completed Bachelor of Computer Applications in Osmania University in Hyderabad, India in May 2005.
- Mrs. Azeema Ahmed (photo): Completed International Training Course on Monsoon Meteorology (April-May, 2005) held at WMO Regional Meteorological Training Center (RMTC), Nanjing University of Information Science & Technology, China.
- Mr. Ahmed Hafiz (photo) and Mr. Jaufar Abdulla: Completed WMO Class IV training course in Meteorology. This programme was conducted by India Meteorological Department, New Delhi, From September 2004-January 2005.

New installations and upgrades:

As an expansion of the DORIS (Doppler Orbitography and Radio positioning Integrated by Satellite) network, a DORIS beacon was placed in the Maldives's National Meteorological Centre during January 2005 in collaboration with the Institute Geographic National (IGN), France.



Fig:

PAKISTAN:

Significant Weather Events:

A severe gust of 100 km/hour was observed at Lahore Airport during thunderstorm/rain on 17-3-2005.

During the month on February a wide spread system consisting of a series of low pressure area over Balochistan and west of southern Iran covering a large area of Pakistan prevailed from 5th February to 12th February. Consequently, light/intermittent rainfall occurred in most parts of Punjab and N.W.F.P. region, which received rain more than its normal in February and Snowfall, was observed in the northern area.

In June 2005, heat wave persisted over a major parts of the Punjab region, except on June 9, 2005, when a dust storm along with light rain generated by strong westerly system, which brought down the temperature, making weather pleasant. Lahore recorded wind speed 111 Km/hr. and highest recorded 195 Km/hr in Multan. The dust storm caused heavy loss of property in Lahore city and its surroundings.

CLIMATE EXTREMES DURING JANUARY-JUNE, 2005:

Heaviest Rainfall in a month:

482.2 mm during February, 2005 at Rawlakot.

447.0 mm during February, 2005 at Garhi Dupatta.

387.4 mm during February, 2005 at Muree.

332.8 mm during February, 2005 at Balakot.

Lowest minimum temperature:

Skardu & Astore recorded (-14.0°C) on 23.01.05 & 19.01.05 respectively.

Snowfall recorded:

(a) Malam Iabba (223.5 inches)

(b) Kalam (200.0 inches)

Highest temperature:

50°C at Kamara & Risalpur, 49.4°C at Sargodha and 46.4°C at Lahore.

FLOOD SEASON 2005 IN PAKISTAN:

Flood in Pakistan are generally experienced when there are heavy rains due to monsoon systems reaching the catchments areas of the rivers of Pakistan. This year no monsoon system reached the catchments areas, still the high floods were recorded in the river Indus due to which extensive damage to the property was reported in the areas along the riverbed, In fact it was due to the enormous volume of water generated due to melting of snow in the upper catchment areas located in NWFP, Northern areas and Kashmir.

This year the month of March & April experienced heavy rainfall and snowfall in Baluchistan, N.W.F.P., Northern Areas and Kashmir. At some places 16 feet of snow was recorded beating previous records for many years. It was due to passing of westerly waves very frequently which was an abnormal phenomena up-to some extent. Floods were also observed in Baluchistan during the late winter period washing out some local small dams and water reservoirs. During the month of June the temperature started to rise in the hilly areas and it was the melting of fresh snow. Due to this, the rivers Chitral, Swat, Panjkora etc. all tributaries of river Kabul which in itself is a major tributary of river Indus joining at Nowshera down stream Tarbela started to swell. The outflow from river Indus at Tarbela had to increase due to increase inflow, considering the dam level and safety of the dam. The outflow from Tarbela and high flood level in river Kabul generated a flood wave, which traveled down to Kotri causing the damage all along side the river Indus.

It was a very rare phenomena that river Kabul remained in high flood level from 21st June which caused inundation of vast area of Nowshera, Peshawar, Charsadda and Mardan districts and inflicting heavy damage to crops, property and also to human life. At present there is no system of monitoring the river Kabul regarding the flood

situation in the river. Pakistan Meteorological Department has proposed to install a comprehensive flood forecasting system for NWFP and adjoining Afghanistan from where the river Kabul enters into Pakistan. For this purpose a QPM radar is also proposed to be installed in NWFP to monitor the heavy winter rainfall/snowfall.

ESTABLISHMENT OF TSUNAMI EARLY WARNING SYSTEM IN PAKISTAN:

In the aftermath of river deadliest associated with the Great Surnatra Earthquake of 25 December 2004, Government of Pakistan responded promptly to this issue of great humanitarian concern and the Prime Minister directed the concerned agencies to submit a detailed feasibility report in this regard, appointing Federal Minister for Science & Technology as the Focal point. A Technical Committee, headed by DG PMD, was constituted to formulate recommendations for this purpose. The Technical Committee held its UNESCO/ICO, WMO, UN, ISDR, JMA and ADRC also visited PMD from 13-15 June 2005 for assessing requirements for the establishment and operation of Tsunami Warning & Mitigation System, to assess the available resources and to identify capacity building needs. Consequently, a comprehensive report was submitted to Federal Minister for Science & Technology on 20th June 2005 with the under mentioned recommendation:

❖ Pakistan Meteorological Department may be declared as the Lead Agency with the following as the partner organizations for the Establishment of National Tsunami Early Warning System in Pakistan and its subsequent linkage with other regional/global tsunami early warning centres:

- a) Emergency Relief Cell of the Cabinet Division (ERC).
- b) National Institute of Oceanography (NIO).
- c) Hydrography Department of Pakistan Navy (HDPN).
- d) Geological Survey of Pakistan (GSP)

Phase - I of the project entitled "Up-gradation and Strengthening of Seismological Network in

Pakistan”, however, has already been approved by the government which is being implemented.

UPGRADATION & STRENGTHENING OF SEISMIC NETWORK OF PMD (PHASE-I) (BASIC COMPONENT OF TSUNAMI EARLY WARNING SYSTEM).

The project has been approved at a total cost of Rs. 193.574 million including an FEC of Rs. 103.962 million by CDWP on 20-05-2005. An amount of Rs. 40.2 million has been allocated during the current financial year 2005-06. Mr. Arif Mahmood, Chief Met. Will act as Project Director for this project.

The major object of the project is to improve the socio-economic condition of the human being. This is a part of over all measures being adopted by the Government of Pakistan in order to mitigate the losses of precious lives and property by earthquakes and associated Tsunamis.

The following centers will be established under this project.

National Seismic Monitoring Centre at Met. Complex, Karachi.

Back-up & Regional Seismic Monitoring Centre at Islamabad.

Regional Seismic Monitoring Centre-I at Quetta.

Regional Seismic Monitoring Centre-II at Peshawar.

FACILITIES PROPOSED FOR THE PROJECT:

- Establishment of 15 Board Bann Seismic Stations in major, moderate & minor Seismic Zones of the country.
- Establishment of 50 Short Period Seismic Stations in rest area of the country.
- Establishment of 50 strong motion recorder in main populated cities of the country.
- Seismic data of short period seismic stations will be transferred to the main station through radio link.

SAARC Meteorological Research Centre (SMRC):

11th Governing Board Meeting:

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Meteorological scientists of SAARC Member States are requested to contribute SMRC Newsletter by sending success stories of their research. The writeups/article, if found suitable will be printed under the authorship of the writer(s). The contributors are requested to preserve copies of their dispatches. Unacceptable writeups/article shall not be redirected to the contributor.

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