

Weather

MONSOON SEASON (JUNE—SEPTEMBER 1961)

Chief features : (1) Early onset and late withdrawal of the monsoon; (2) Persistent activity of the monsoon without any significant 'breaks', and (3) Excess rainfall and devastating floods at many places in the country, notably the July floods in the south Peninsula, August floods in the Punjab (I) and in Uttar Pradesh, September floods in Madhya Pradesh and in Vidarbha and early October floods in Bihar State.

The southwest monsoon advanced in south Kerala and the south Andaman Sea on 18 May. A severe cyclonic storm developed in the east central Arabian Sea and crossed coast near Devgad on the night of 24-25 May. In association with it, the monsoon rapidly advanced northwards up to Lat. 16°N in the Peninsula and in the Bay of Bengal by 22nd, the advance in the Peninsula being about ten days earlier than usual. Under the influence of another severe cyclonic storm in the Bay of Bengal, which struck East Pakistan coast near Chittagong on the morning of 30 May, the Bay branch of the monsoon extended further northwards and advanced into Assam on 31 May. Fairly widespread rainfall with a few very heavy falls occurred in Assam on 1 and 2 June. Cherrapunji recorded 28 cm on 1st and 22 cm on 2nd and Tura 32 cm on 2nd.

In association with a low pressure wave from the east, a depression formed over the head Bay of Bengal with centre about 200 km east of Sandheads on the morning of 8 June. It moved to Bihar Plateau and adjoining northeast Madhya Pradesh on 10th, remained practically stationary for two days

and then recurved northeastwards. It filled up over Bihar Plains and neighbourhood by 15th. Under its influence, the monsoon strengthened along the west coast and also advanced as a feeble current to West Bengal, Orissa, Bihar State, east Uttar Pradesh, east Madhya Pradesh and Maharashtra State on 6 June. It also extended to west Madhya Pradesh, the Punjab-Kumaon hills and Himachal Pradesh by 13th. The monsoon was active or vigorous over some parts of northeast India and in east Madhya Pradesh between 10th and 13th. Raigarh reported 19 cm of rain on 11th, Champa 13 cm on 12th and Darjeeling 17 cm on 13th; Cherrapunji 25 cm on 11th, 39 cm on 12th, 40 cm on 13th and 30 cm on 14th.

An upper air low developed over the east central Bay of Bengal off the Arakan coast on 16 June. It moved in westerly direction, crossed the Peninsula and emerged into the east central Arabian Sea where it developed into a depression centred about 200 km westnorthwest of Bombay on 21st. Moving northwestwards, it intensified into a cyclonic storm with centre about 150 km west of Porbander on 23rd morning. It recurved, crossed Kutch coast near Naliya the same night and progressively weakened. It merged into the seasonal low over northwest Rajasthan and neighbourhood by 28th. In association with it, the monsoon strengthened and advanced further to cover the entire country by 21st, ten to fourteen days earlier than the normal date.

Under the influence of a low pressure wave from east, a depression developed over the

east central Bay of Bengal with centre about 200 km southwest of Sandoway on the morning of 27th. It intensified into a deep depression, crossed the Sunderbans coast on the afternoon of 28th and weakened rapidly. It filled up over Bihar State on 30th. In association with it, the monsoon was active in West Bengal, Bihar State and the Punjab-Kumaon hills and vigorous along the west coast, towards the close of June. Mahabaleshwar recorded 36 cm of rain, Ratnagiri 24 cm and Mangalore 20 cm on 26th; Kozhikode 23 cm on 27th; Askote 19 cm and Nainital 18 cm on 29th and Mercara 27cm and Karwar 25 cm on 30 June.

Another depression developed over the northwest angle of the Bay of Bengal on 1 July, crossed coast near Balasore on 2nd evening, lay as a low pressure area over northwest Madhya Pradesh on 4th and became unimportant by 5th. A second depression developed over Saurashtra and Kutch on 2nd, persisted there without appreciable movement for about four days and then merged into the seasonal low over Sind and neighbourhood by 7th.

Another low pressure area developed over Bihar State on 9th, moved to Uttar Pradesh on 10th and merged in the monsoon trough by 12th. In association with these systems, the monsoon was generally active along the west coast and over the north Peninsula during first ten days of July. Mercara recorded a rainfall of 135 cm from 1 to 6 July and a total rainfall of 189 cm from 26 June to 6 July. Mahabaleshwar recorded a total rainfall of 231 cm from 1 to 11 July. Severe floods occurred in Kerala, Mysore and Madras States, these floods being comparable to the severe floods in the south Peninsula during July 1924. According to press reports, in Kerala alone, about two lakh acres of land were submerged under water this year, some eightyfive persons lost their lives and some two thousand heads of cattle perished. Further, the sea walls were damaged and the earthen bunds protecting fields and gardens from the intrusion of brine were completely

washed away at a number of places. Also, huge land slides damaged the roads and also wiped out a complete village Attapadi in Palghat district. The rivers Ghataprabha in Mysore State and Cauvery in Madras State also caused devastating floods. Due to the bursting of the two dams on Mutha river in Maharashtra State, Poona city experienced an unprecedented and devastating flood on 12 July. The river Mahanadi and Brahmani in Orissa were also in floods.

A low pressure area developed over West Bengal and neighbourhood on 15 July, moved in a westerly direction across the country and intensified into a depression over lower Sind and Kutch on 19th morning. It later weakened and merged into the seasonal low over Sind by 21st. Another low pressure area developed over the northwest Bay of Bengal off the Orissa coast on 19th, moved in a westerly direction, lay over Sind on 26th and merged in the seasonal low by 28th July. In association with these, the monsoon activity was generally sustained over the north Peninsula and along the west coast during the second half of July. A few noteworthy amounts of rainfall were: Umaria 17 cm on 16 July; Dohad 15 cm on 17th; Neemuch 14 cm on 18th; Pachmarhi 22 cm on 21st; Honavar 21 cm on 22nd Dahanu 29 cm on 23rd; Veraval 14 cm on 24th; Bombay (Santacruz) 16 cm on 25th; Mahabaleshwar 18 cm on 26th; Dwarka 18 cm on 27th and Karwar 13 cm on 30th. There was a second spell of heavy rain and floods in the south Peninsula towards the end of July.

An upper air cyclonic circulation developed over the head Bay of Bengal on 13 August, moved inland and filled up over northwest Madhya Pradesh and adjoining west Uttar Pradesh on 16th. Another low pressure area developed over the head Bay of Bengal on 23rd, moved to Saurashtra and Kutch, where it concentrated into a depression centred near Naliya on 27th morning. It filled up over Sind and neighbourhood by 29th. In association with these two systems, there was good

rainfall activity over the north Peninsula during the second half of August. Honavar recorded 20 cm on 16th; Mahabaleshwar 16 cm and Bombay (Santacruz) 15 cm on 19th; Broach 22 cm and Veraval 18 cm on 26th and Dwarka 20 cm on 27 August.

Principal monsoon activity, from about the close of July to the end of August however, occurred over the Punjab (I), Uttar Pradesh and neighbourhood, in association with a series of westerly waves which moved across the Punjab(I). Notable spells of very heavy rain occurred over this region from 28 July to 12 August and from 20 to 23 August. A few noteworthy amounts of rainfall were: Kheri Lakhimpur 24 cm and Nainital 19 cm on 29 July; Jammu 34 cm on 31 July; Dharamsala 25 cm and Pathankot 24 cm on 9 August; Bahraich 22 cm on 20th and Bareilly 22 cm on 30 August. These spells of heavy rain were responsible for severe floods in most of the rivers of the Punjab (I) and of Uttar Pradesh and in some rivers of Madhya Pradesh also. In Rohtak district alone, 240 villages were affected by the floods. Damage worth 40 lakhs of rupees was done to the crops in Amritsar district. In Uttar Pradesh, about 25 lakh acres of land were flooded. In Madhya Pradesh, parts of Katni town were under water for a few days. Floods in the river Ganga were also reported from Bihar State.

A series of well marked low pressure systems then developed over the head Bay of Bengal in the month of September. The first one was a well marked low pressure area which crossed the Sunderbans and north Orissa coasts on 1 September and filled up over Rajasthan on 6th. The second was a deep depression which entered inland near Contai on 6th, reached Sind on 13th without loss of its intensity, emerged into the northeast Arabian Sea on 14th and moving westsouthwestwards crossed the Saudi Arabian coast by 17th. The third low pressure system attained the intensity of a cyclonic storm centred about 100 km southsouthwest of Cox's Bazaar on the morning of 12th. It crossed coast near Contai on the morning of 13th, weakened into

a deep depression and lay over central Madhya Pradesh on 15th. It recurved northwards and filled up over Uttar Pradesh by 18th. The fourth system was a depression which developed over the head Bay of Bengal on 22nd and filled up over north Madhya Pradesh and neighbourhood by 28th. The fifth system was a deep depression which crossed the Sunderbans coast on 28th and lay over extreme northeast Madhya Pradesh and adjoining Bihar State on 30 September. From here, it curved eastnortheastwards and then westnorthwestwards and filled up over central parts of Uttar Pradesh by 6 October.

In association with the above mentioned series of low pressure systems, active to vigorous monsoon conditions prevailed, on a number of days during September, in the region extending from coastal West Bengal and Orissa to south Rajasthan and Gujarat State. Very heavy rains also occurred in Bihar Plains in the beginning of October. A few noteworthy amounts of rainfall were: Gondia 28 cm and Sambalpur 22 cm on 2 September; Mount Abu 20 cm on 5th; Pachmarhi 38 cm, Jaisalmer 32 cm and Betul 24 cm on 9th; Mount Abu 33 cm and Deesa 21 cm on 13th; Raigarh 21 cm on 14th; Betul 27 cm on 16th; Bhopal 23 cm on 26th; Saugor Island 30 cm, Contai 21 cm and Balasore 20 cm on 29 September; Ambikapur 21 cm on 1 October; Sabour 19 cm on 2nd and Darbhanga 14 cm on 4 October. In association with this persistent strong activity of the monsoon during September and in the beginning of October, severe floods occurred in Orissa, Bihar State, Madhya Pradesh, Vidarbha and Gujarat State. Some floods were also reported from West Bengal and Uttar Pradesh. According to press reports, one hundred feet of railway line were washed away between Gondia and Gangazari by the flood waters in Madhya Pradesh during the first week of September. An area of approximately 2500 square miles with a population of over 10 lakhs was affected by floods in Orissa during the second week of September. The river Narbada registered record levels in Madhya Pradesh. Vidarbha floods affected

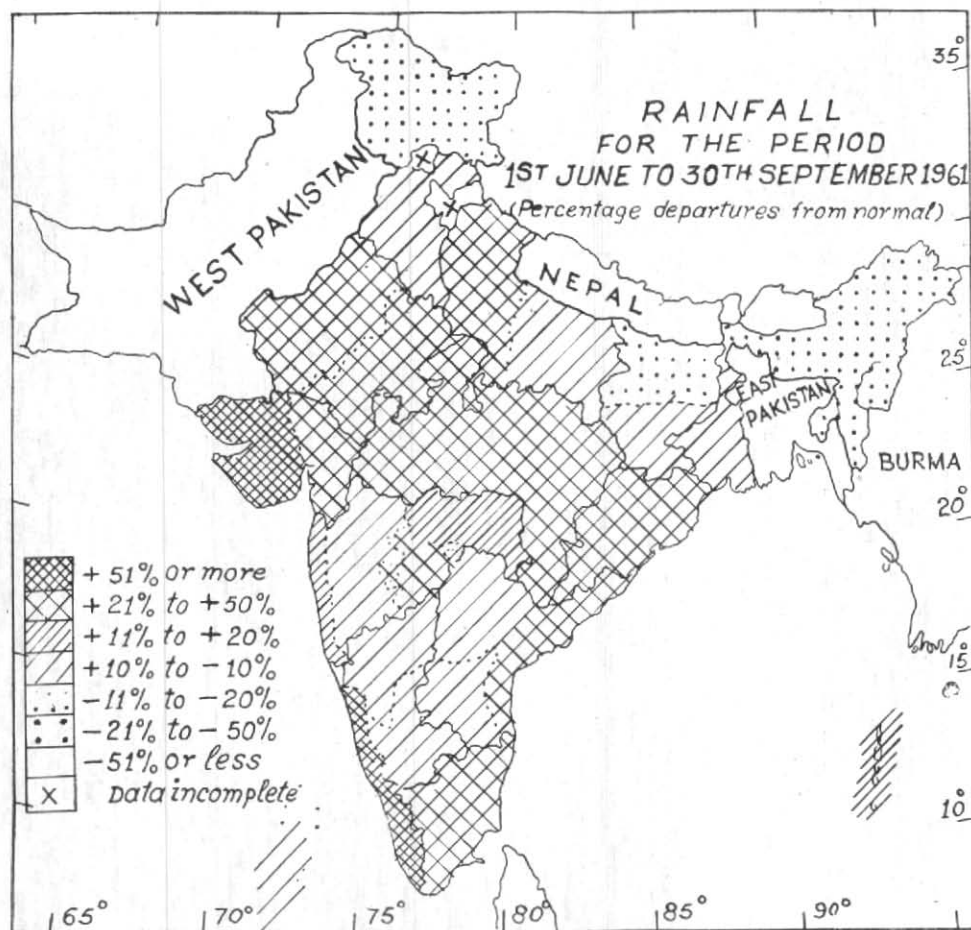


Fig. 1

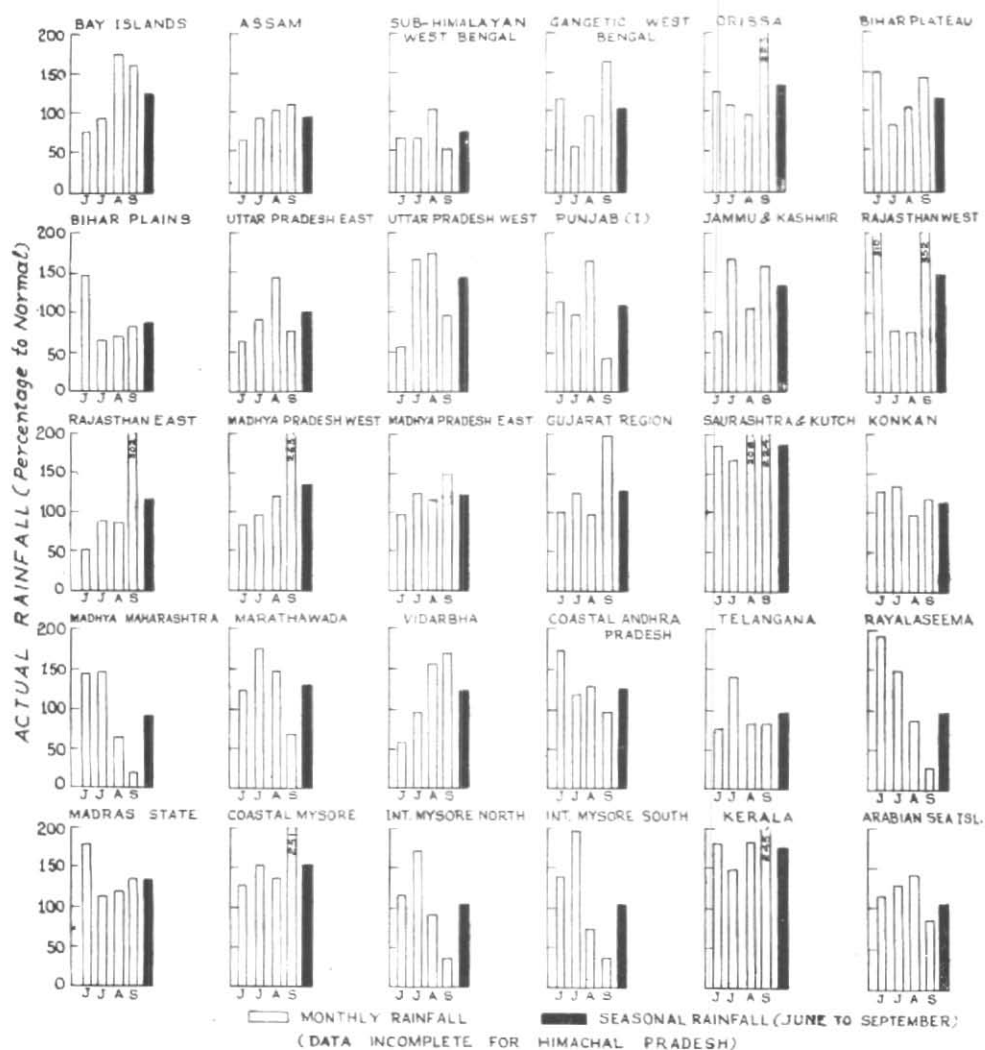


Fig. 2. Progress of the monsoon month by month—1961

over one lakh acres of agricultural land, washed away about 3500 houses and damaged another 5000 houses. Mount Abu in Rajasthan was temporarily cut off from the plains due to floods and land slides on the approaching roads. The entire Rann of Kutch in Gujarat State was reported to be under water for a few days in September. In the beginning of October, Bihar State was in the grip of devastating floods and according to press reports, the floods took a toll of nearly nine hundred human lives in the state out of which, nearly eight hundred casualties occurred in Monghyr district alone.

The monsoon withdrew from practically the whole of northwest India between 1 and 3 October. Its further withdrawal got temporarily arrested due to a low pressure system which moved westwards across the Circars coast on 7 Oct. and developed into a deep depression centred near Amravati on 11th.

This deep depression broke up over the Nepal Himalayas by the 15th. After its dissipation, the monsoon withdrew from Uttar Pradesh, Bihar Plains, northeast and west Madhya Pradesh, Gujarat State and Maharashtra State by 18 October and during the next four days, it withdrew further and got confined to the south Peninsula by 22 October. The withdrawal of this monsoon was generally a fortnight later than usual over different parts of the country outside the south Peninsula.

The total rainfall for the period 1 June to 30 September 1961 in terms of its departure from normal is shown in Fig. 1. It will be seen that over large parts of the country, the season's rainfall was in excess by more than 20 per cent of the normal. The progress of the monsoon over various sub-divisions of India, month by month, is shown in Fig. 2.
