

# Weather

MONSOON SEASON (JUNE—SEPTEMBER 1962)

## *Chief features—*

(i) Onset of the monsoon as a weak current over the entire country by the end of June, a fortnight earlier than the normal date and its rapid withdrawal from most parts of the country outside south Peninsula by the end of September ;

(ii) Formation and movement of a cyclonic storm and three depressions in the Bay of Bengal and one depression in the Arabian Sea ;

(iii) Spells of heavy rains leading to floods in (a) Assam and north Bihar in June and August, (b) Kerala in the first fortnight of July, (c) east Uttar Pradesh in August and (d) Telangana and the Punjab (I) in September ; and

(iv) Markedly above normal temperatures which caused a few fatal cases of heat stroke in Uttar Pradesh and Bihar in June.

The special features of the weather are given below month by month.

*June*—The southwest monsoon which had set in along the west coast in the second half of May advanced further though only as a feeble current over most parts of the country. Under the influence of a low pressure wave from the east a depression formed in the north Bay of Bengal with the centre about 200 km eastsoutheast of Puri on 6th. Moving northnortheastwards, it crossed the Sunderbans coast on 8th, weakened into a low pressure area and lay over Assam and neighbourhood till 11th. It caused very heavy rains in Assam and Sub-Himalayan West Bengal during the second week leading to

floods in Assam and north Bihar. An upper air circulation which persisted over Bihar State and neighbourhood between 22nd and 25th caused a second spell of widespread rain in Assam and West Bengal, further aggravating the flood situations in Assam.

Two spells of good monsoon activity occurred along the west coast in the second and fourth weeks. Bombay (Colaba) recorded 20 cm of rain on 9th. A feeble upper air trough which moved slowly westwards from west central Bay across the Peninsula revived the monsoon slightly by the end of the third week. The monsoon also extended into Gujarat State on 18th and steadily advanced northwards as a feeble current to cover the entire country by about the 25th.

Steep pressure gradient and strong dust raising winds prevailed over Rajasthan and the Punjab (I) in the beginning and middle of the month. During the third week, the monsoon trough was near the foot of the Himalayas and a spell of heavy rains occurred in the Western Himalayas.

Day temperatures were appreciably to markedly below normal in the Peninsula during the first ten days of the month. They were about 10°C below normal in Andhra Pradesh and neighbourhood on 5th and 6th. Temperatures were appreciably to markedly above normal during the third week over most parts of the country, particularly in Uttar Pradesh and Bihar State, where several fatal cases of heat stroke were reported.

*July*—An upper air cyclonic circulation over coastal Andhra Pradesh with a trough extending into east central Arabian Sea

caused a strengthening of the monsoon over the Peninsula and the central parts of the country early in the month. An upper air cyclonic circulation over east central Arabian Sea on 5th shifted northwards and concentrated into a depression by 8th with its centre close to Porbander. Meanwhile, a low pressure area formed over north and adjoining central Bay of Bengal and intensified into a depression by 11th morning with its centre about 250 km east of Kalingapatam. Moving westnorthwestwards, it crossed the coast near Gopalpur on 12th and weakened. Continuing to move in the same direction, it merged into the depression which was persisting over Saurashtra and Kutch by 14th. The system moved westwards, weakened and became unimportant over northeast Arabian Sea by 15th. Under the influence of these systems the monsoon continued to be active over the entire country particularly along west coast till 17th. Porbander recorded 29 cm of rain on 12th and Khandala 36 cm on 11th. The prolonged spell of heavy rains caused most of the rivers in Kerala to rise in spate and this resulted in serious floods there. According to official estimates, 24 persons lost their lives, nearly 20,000 acres of land under cultivation were affected and over 20,500 houses were damaged or destroyed. The monsoon was weak during the last week over the Peninsula.

The monsoon continued to be active or vigorous over Assam and Sub-Himalayan West Bengal during the first week, Cherrapunji recording 36 cm of rain on 1st. Later the activity decreased considerably and the flood situation began to improve by the second week.

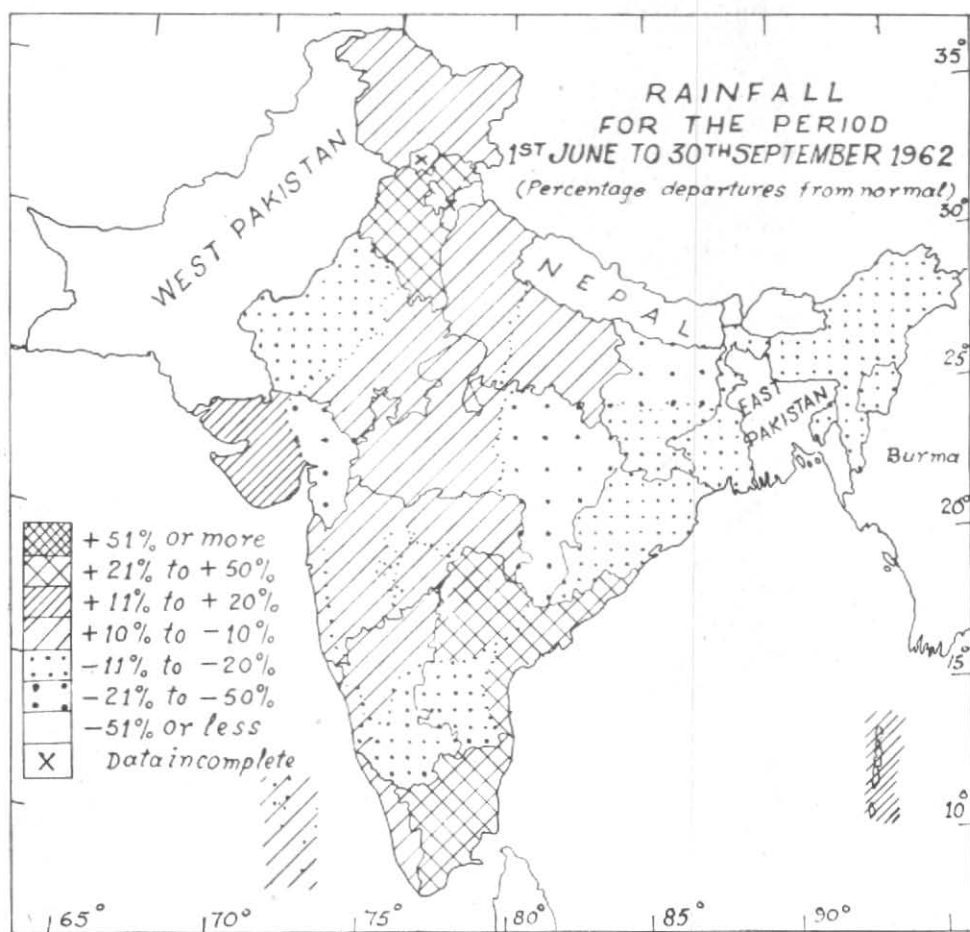
Under the influence of a well-marked low pressure area moving from northeast Bay to the Punjabs during the period 14th to 22nd, well distributed rain occurred in north India with some heavy or very heavy falls particularly in Rajasthan and the Punjab (I). The water level in some rivers was reported to have risen considerably causing floods. Abu recorded 31 cm of rain on 19th. Another low pressure area which was over

northeast Bay on 20th moved westnorthwestwards to north Madhya Pradesh and later northeastwards to Bihar State where it persisted from 25th till the end of the month. In association with it, the monsoon was active in northeast India, east Uttar Pradesh and central parts of the country. The Western Himalayas also received heavy rains in association with the movement of two active westerly troughs during this period.

*August*—The monsoon activity was evenly maintained over most parts of the country during the month. A series of low pressure areas which formed in the north Bay of Bengal moved inland and caused spells of heavy rains leading to serious floods in east Uttar Pradesh, north Bihar and Assam. More than six million people in 10,000 villages were reported to have been affected in these three States. Also 75 human lives were lost and 38,823 houses had been destroyed or damaged.

A low pressure area moved from northwest Bay to Bihar Plateau during the period 3rd to 7th causing heavy rains in northeast India, east Madhya Pradesh and east Uttar Pradesh during the first week. This led to floods in southern Bengal, east Uttar Pradesh, north Bihar and Assam. Two other low pressure areas from northwest Bay moved westwards and merged into the seasonal low during the period 7th to 18th. Under their influence, the monsoon was fairly active over the entire country. The floods in east Uttar Pradesh continued and there were also reports of floods in Madhya Pradesh due to the river Indravati rising in spate.

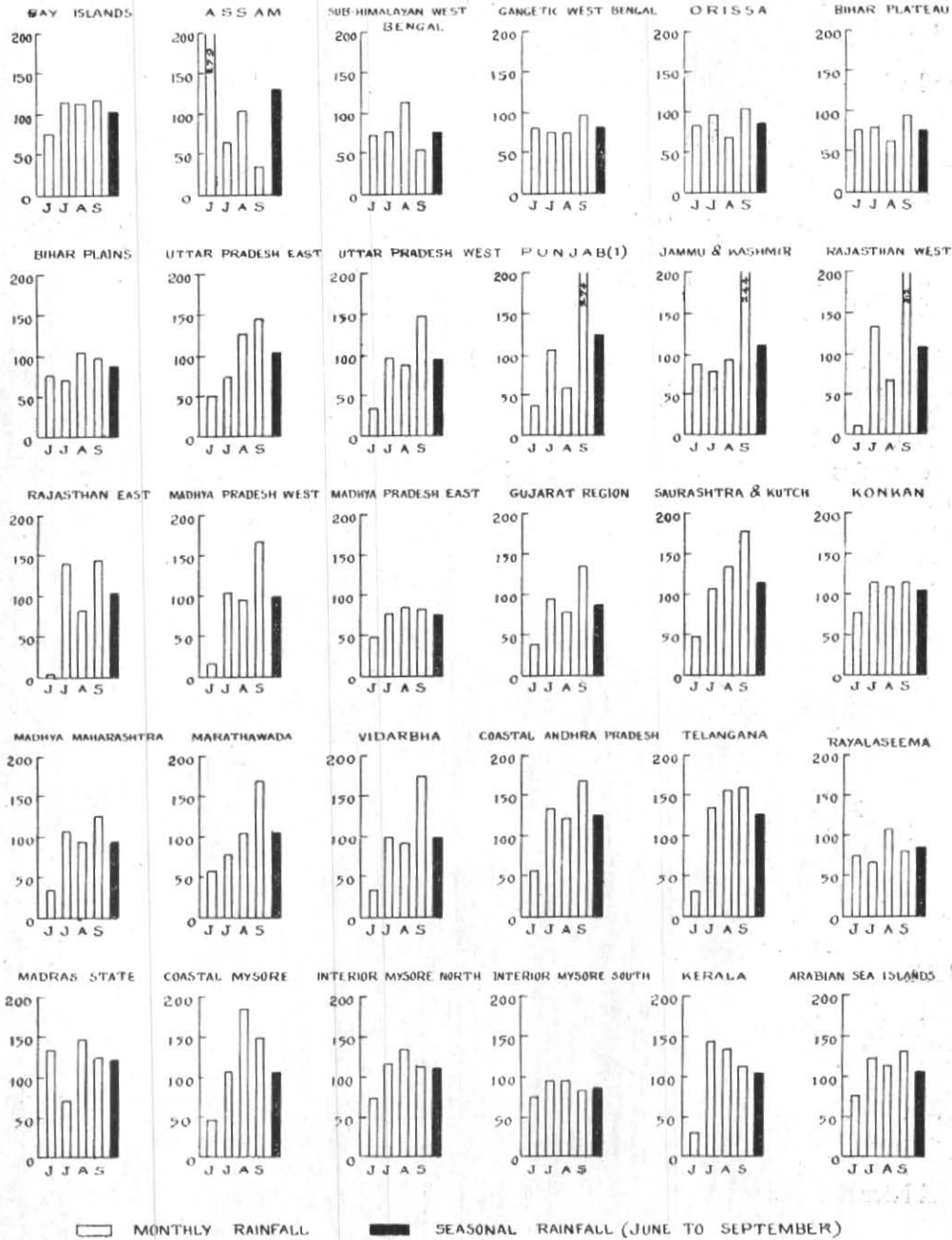
The monsoon trough lay close to the foot of the Himalayas during the third week resulting in good rainfall over the northern parts of the country. The floods in northeast India continued upto the 26th after which the rainfall decreased considerably and the flood waters began to recede. The monsoon was weak over the Peninsula but it strengthened in the last week under the influence of a low pressure area moving slowly westwards across the Peninsula from the southwest Bay



(Sikkim and Bhutan States are attached to India by Special treaties)

Fig. 1

ACTUAL RAINFALL (Percentage to Normal)



(DATA INCOMPLETE FOR HIMACHAL PRADESH)

Fig. 2. Progress of the monsoon month by month—1962

Three western disturbances which moved successively eastwards across the extreme north of the country during the first fortnight and a deep westerly trough during the last week resulted in good rainfall over many parts of northwest India. According to official reports, the rivers of the Punjab (I) were in moderate floods. Lack of adequate rainfall in parts of east Madhya Pradesh, Orissa and Bihar Plateau in the second half of the month was reported to have affected adversely the agricultural operations in these areas.

*September* — Rainfall activity continued over the Peninsula during the first week of the month. A persistent low pressure area over the central parts of the country caused heavy rains in Madhya Pradesh and neighbourhood during the first week. The Narmada was reported to be in floods on 7th and 8th.

Under the influence of a low pressure wave from the east, a depression formed in the Bay of Bengal on 8th morning with centre about 350 km east of Kakinada. Moving northwestwards, it crossed coast near Kakinada the same night and emerged into the northeast Arabian Sea near Dwarka by 11th morning. Later moving slowly northwestwards, it merged into the seasonal low by 16th. It caused abundant rainfall in the areas lying between the Circars and Kathiawar coasts. Bombay (Santa Cruz) recorded 21 cm of rain on 10th and Veraval 22 cm on 11th.

Another depression formed in the west central Bay on 16th with its centre about 300 km southeast of Kalingapatam. It intensified into a deep depression and crossed the coast near Gopalpur on the night of 17th-18th. Moving westnorthwestwards initially and later northwards, it was over the Punjab

(I) by 21st evening. Thereafter, it weakened and merged into the seasonal low by 23rd. Under its influence very heavy rainfall occurred in the northern parts of the Peninsula, central parts of the country and in the Punjab (I). Ratlam recorded 27 cm of rain and Ambala 20 cm on 21st. According to press reports, the heavy rains caused very heavy floods in the Punjab (I) and Delhi areas. Serious floods in the Musi river affected 40,000 people in the cities of Hyderabad and Secunderabad.

A depression from the east moved into the north Bay on 20th and intensified into a cyclonic storm. It crossed the Sunderbans coast by the morning of 21st. Moving northwestwards, it weakened into a depression over east Uttar Pradesh by 23rd. It persisted there and weakened gradually until it became unimportant by 26th. The heavy rains that occurred in association with this disturbance caused floods in West Bengal and east Uttar Pradesh. Daltonganj reported 39 cm of rain on 23rd.

Two deep troughs in the westerlies and the deep depression which moved into the Punjab (I) as mentioned earlier caused a spell of rain over northwest India, from 7th.

By the 27th, westerlies were established over north India and progressively strengthened. This resulted in the rapid withdrawal of the monsoon from most parts of north India and the central parts of the country by 29th.

The total rainfall for the period from 1 June to 30 September 1962 in terms of its departure from normal is shown in Fig. 1. The progress of the monsoon over various sub-divisions of India, month by month, is shown in Fig. 2.

## मौसम

मानसून अवधि (जून—सितम्बर 1962)

**मुख्य विशेषतायें:—**(1) हर साल सामान्यतः जिस समय मानसून आया करता है, इस साल उससे पन्द्रह दिन पहले, जून के अन्त में, देश भर में मानसून का हलका दौर आया और सितम्बर के अन्त तक दक्षिण प्रायद्वीप के सिवाय, देश के अन्य अधिकांश भागों से शीघ्र ही चला गया।

(2) बंगाल की खाड़ी में एक चक्रवाती तूफान और तीन अवदाब बने और चले, अरब सागर से भी एक अवदाब चला।

(3) भारी वर्षा के दौर के फलस्वरूप बाढ़ें—

(क) आसाम और उत्तरी बिहार में जून व अगस्त में,

(ख) केरल में जुलाई के पूर्वार्द्ध में,

(ग) पूर्वी उत्तर-प्रदेश में अगस्त में, और

(घ) तेलंगाना और पंजाब (भारत) में सितम्बर; तथा

(4) तापमान असाधारण रूप से अधिक रहा जिसके कारण जून में उत्तरप्रदेश और बिहार में लू लग जाने से कुछ घातक दुर्घटनाएं हुईं।

प्रत्येक महीने की मौसम विषयक मुख्य बातें नीचे दी जा रही हैं:—

**जून—**दक्षिण पश्चिमी मानसून जो मई के उत्तरार्द्ध में पश्चिम घाट से आरम्भ हुआ था देश के अधिकांश भागों की ओर एक क्षीण धारा के रूप में बढ़ा। पूरब की निम्नदाब की लहर के प्रभाव के कारण बंगाल की खाड़ी के उत्तरी भाग में एक अवदाब बना जिसका केन्द्र 6 ता० को पुरी से लगभग 200 किलोमीटर पूर्वदक्षिणपूर्व की ओर था। उत्तरउत्तरपूर्व की ओर चलकर उसने 8 तारीख को सुन्दरबन समुद्रतट पार किया, कमजोर होकर यह निम्नदाब बना और आसाम तथा उसके आसपास के क्षेत्र पर 11 तारीख तक बना रहा।

इसके फलस्वरूप दूसरे सप्ताह में आसाम और पश्चिम बंगाल के हिमालय के निकटवर्ती क्षेत्रों में बहुत भारी वर्षा हुई और आसाम व उत्तरी बिहार में बाढ़ें आईं। तारीख 22 और 25 के बीच बिहार राज्य में और उसके आसपास के क्षेत्र में एक ऊपरी वायु का संचार हुआ जिसके कारण आसाम और पश्चिम बंगाल में दूसरी बार दूर-दूर तक भारी वर्षा का दौर रहा। फलस्वरूप आसाम में बाढ़ की स्थिति और भी गंभीर हो गई।

दूसरे और चौथे सप्ताहों में पश्चिमी घाट पर मानसून के दो जोरदार दौर आए। इस अवधि में बम्बई (कोलाबा) में 9 ता० को 20 सें० मी० पानी रिकार्ड किया गया। ऊपरी वायु की एक क्षीण दृफ बंगाल की खाड़ी के पश्चिम-मध्य से पश्चिम की ओर प्रायद्वीप में धीरे-धीरे चली और तीसरे सप्ताह के अंत में मानसून को इससे पुनर्जीवन-सा मिल गया। तारीख 18 को मानसून गुजरात राज्य में बढ़ा और धीरे-धीरे एक क्षीण धारा के रूप में उत्तर की ओर इस तरह बढ़ चला कि वह 25 तारीख तक सारे देश में फैल गया।

गोपालपुर के निकट समुद्रतट पार किया। आरम्भ में पश्चिमउत्तरपश्चिम की ओर तथा बाद में उत्तर की ओर चलते हुए 21 तारीख की शाम तक यह पंजाब (भा०) में पहुंच गया। उसके बाद यह कमजोर पड़ गया और 23 तारीख तक समुद्री निम्नदाब में मिल गया। उसके कारण प्रायद्वीप के उत्तरी भागों, देश के मध्यवर्ती भागों और पंजाब (भा०) में बहुत भारी वर्षा हुई। तारीख 21 को रतलाम और अम्बाला में क्रमशः 27 सें० मी० और 20 सें० मी० वर्षा हुई। प्रेस समाचारों के अनुसार इस भारी वर्षा से पंजाब (भा०) और दिल्ली के इलाके में बहुत जोरों की बाढ़ आई। मूसी नदी में भयंकर बाढ़ आ जाने के कारण हैदराबाद और सिकंदराबाद नगरों के 40,000 लोगों पर असर पड़ा।

तारीख 20 को एक अबदाब पूरब से उत्तरी बंगाल की खाड़ी की ओर चला और धनीभूत होकर उसने एक चक्रवाती तूफान का रूप ले लिया। तारीख 21 की सुबह तक उसने सुन्दरवन समुद्रतट पार कर लिया। इसके बाद वह उत्तरपश्चिम की ओर चला और 23 तारीख तक कमजोर होकर पूर्वी उत्तरप्रदेश में एक अबदाब के रूप में रह गया। वहां कुछ देर रहा और धीरे-धीरे कमजोर हो गया और 26 तारीख तक जाकर निष्क्रिय हो गया। इस विक्षोभ के साथ जो वर्षा हुई उसके कारण पश्चिम बंगाल और पूर्वी उत्तरप्रदेश में बाढ़ आई। डाल्टनगंज में 23 तारीख को 39 सें० मी० वर्षा हुई।

जैसा कि ऊपर बताया जा चुका है, पछुआ हवाओं की दो गहरी द्रोणिकायें (ट्रफस) और गहन अबदाब पंजाब (भा०) की ओर चले जिनकी वजह से उत्तरपश्चिमी भारत में सितम्बर 7 से वर्षा का एक दौर आया।

तारीख 27 तक पछुआ हवायें पूरी तरह छा गईं और धीरे-धीरे तेज होती गईं। फलस्वरूप 29 तारीख तक उत्तर भारत के अधिकांश भागों और देश के मध्यवर्ती भागों से मानसून जल्दी चला गया।

चित्र 1 (पृष्ठ 92) में यह दिखाया गया है कि इस साल 1 जून से 30 सितम्बर तक की अवधि में जो कुल वर्षा हुई, वह किस सीमा तक सामान्य वर्षा से कम-ज्यादा थी। चित्र 2 (पृष्ठ 93) में भारत के विभिन्न उपविभागों पर मानसून वर्षा की मासिक प्रगति दिखाई गई है।