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Weather

HOT WEATHER SEASON (MARCH-MAY 1978)

Chief Features

The hot weather season of 1978 was marked by three tornadoes and several hailstorms in north India.

(1) The passage of western disturbances over northwest India and Uttar Pradesh was most marked in March and the second half of April. This provided normal to excess rainfall in northwest India and Uttar Pradesh for the season as a whole, except Rajasthan where the rainfall was in slight to moderately in defect. Rajasthan did not get any rainfall in May. There were widespread hailstorms over many parts of northwest India and Uttar Pradesh in March, which caused considerable damage to crops. The nothern parts of Delhi were hit by a tornado on the evening of 17 March. There were several casualties due to the tornado.

(2) There was good thundershower activity in Gangetic West Bengal, Orissa and Bihar State in March and the second half of April and in Nagaland, Manipur, Mizoram and Tripura in May. This led to normal or excess rainfall over these areas for the season as a whole. The rainfall was in moderately deficient in Arunachal Pradesh, Assam and Meghalaya. A tornado struck some parts of Cuttack and Keonjhar districts in Orissa on the afternoon of 16 April killing 150 persons. Another tornado struck Karimpur in Nadia district in West Bengal on the 18 April killing 12 persons.

(3) Many parts of the Peninsula and the central parts of the country received normal or excess rainfall during the season, except Gujarat and coastal Andhra Pradesh where the rainfall was largely deficient. Gujarat did not receive any rainfall during May. The rainfall for the season over the entire country is shown in Fig. 2.

(4) A cyclonic storm developed over the Bay of Bengal and moved towards Burma in the third week of May. The track of this storm is shown in Fig. 1.

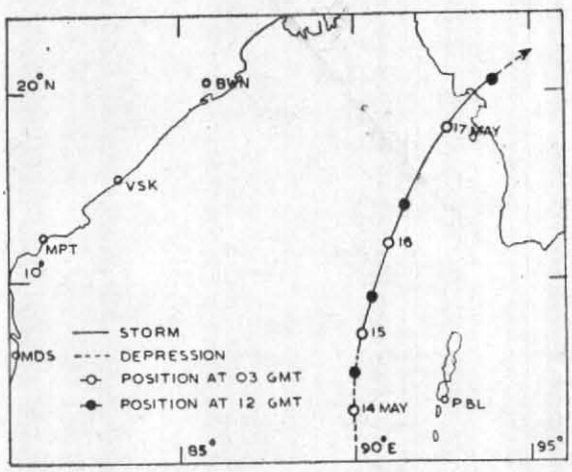

Fig. 1. Track of storm/depression during March to May 1978

This storm helped the onset of the southwest monsoon over south Andaman Sea and the extreme southern parts of the Bay by the middle of May. It also caused a temporary advance of the monsoon into Kerala during the third week of May. The monsoon revived over Kerala on 28 May and advanced into coastal Karnataka on the 29th. This was a little earlier than normal.

(5) Due to relatively poor thundershower activity, May was a very hot month over north and central India. The maximum temperatures were appreciably above normal on many days. Coastal Anhdra Pradesh experienced a moderate to severe heat wave between 17 and 23 May and Orissa on 30 May.

Western Disturbances

In all, 20 western disturbances and 7 induced circulations moved across northwest India and Uttar Pradesh during the season. The western disturbance which moved across Punjab and Jammu & Kashmir between 16 and 19 March attained the intensity of a depression on the

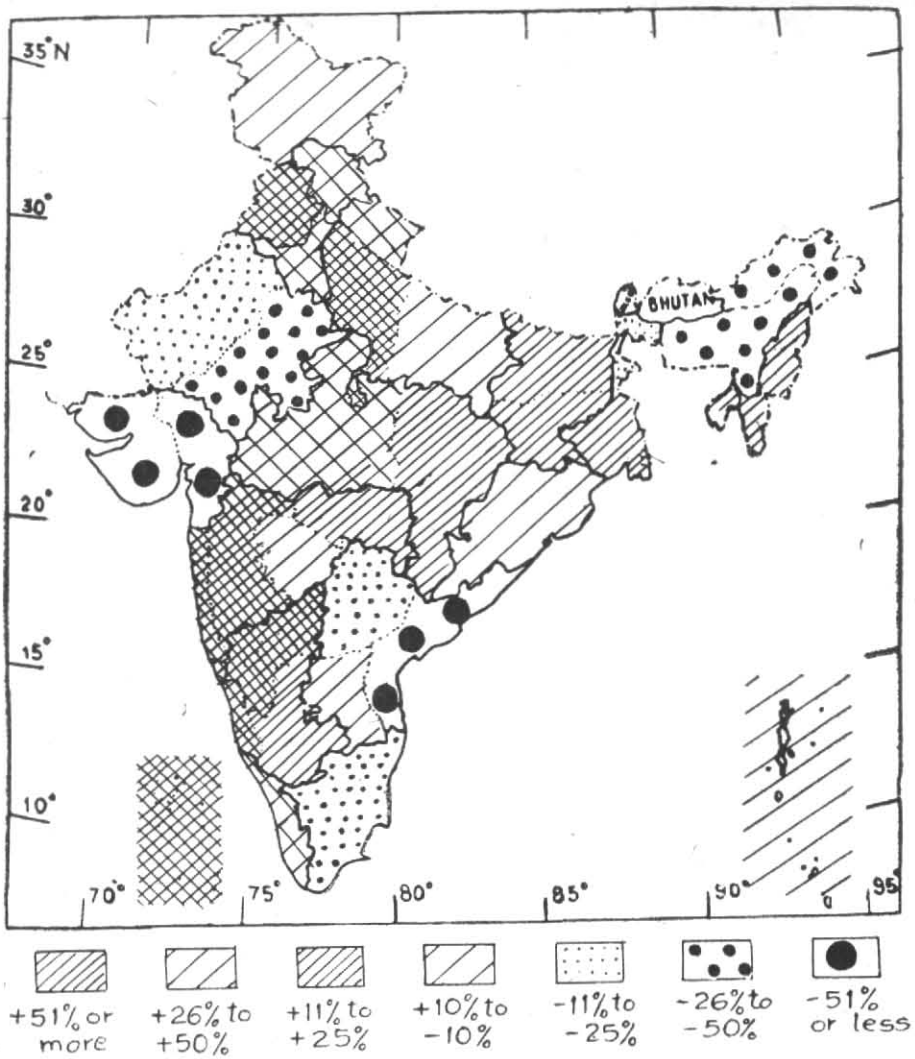

Fig. 2. Rainfall for the period 1 March to 31 May 1978
(Percentage departure from normal)

17th. The distribution was as follows :

	March	*April*	*May*
Western disturbances	8	7	5
Induced lows/circulations	3	4	0

Their activity, in terms of rainfall, was pronounced during March and the second half of April, but it was much below normal in May. In association with western disturbances, northwest India and Uttar Pradesh received scattered to fairly widespread thundershowers on many days in the first three weeks of March, and in some days in the second half of April. This led to a large excess of rainfall over these areas for March and normal to excess rainfall for the season as a whole, although the rainfall over these areas was scanty in May due to few western disturbances. Jammu & Kashmir and Himachal Pradesh had heavy rain on a few days in March. There were widespread hailstorms in Haryana, Uttar Pradesh and some parts of Rajasthan and Western Himalayas during March, resulting in considerable damage to crops.

Cyclonic storms/depressions

Only one cyclonic storm formed over the Bay of Bengal in May.

A trough persisted over the Andaman Sea from 9 to 12 May. It moved to southeast Bay as a well marked low on the 13th. Later, it concentrated into a deep depression on the morning of 14th, with its

TABLE 1

Severe storms during March-May 1978

Weather events	Date of occurrence	Area affected	Nature of damage	Estimation of loss and remarks
Squall	11 March	Sadar, sub-division of Dhenkanal district (Orissa)	34 villages affected, 2500 houses damaged, 300 acres of crops affected, 6 persons died and 150 persons injured	Loss of property about 3 lakhs
Tornado	17 March	Northern parts of Delhi	30 people killed	More than one crore
Do.	16 April	(*i*) Anandpur sub-division of Keonjhar district (*ii*) Jaipur sub-division of Cuttack district (Orissa)	400 housed totally damaged, 150 people killed. A few hundred heads of cattle perished	More than 50 lakhs
Do.	18 April	Karimpur and neighbouring villages in Nadia district (West Bengal)	Many houses damaged; trees uprooted. 12 persons killed	
Severe squall with hail	19 April	Daltonganj (Bihar)	Damages to houses, uprooting trees	
Hailstorms	Between 27 and 30 April	Kamrup district	Damages to crops and houses	
Thundersqualls	25 April	Banki and Dampada blocks of Cuttack Distt.	2500 houses damaged, 70 livestock killed. Trees uprooted and telecom. system disrupted	
Hailstorm and severe squall	7 May	Mogra (Bagati), West Bengal	Damage to crops	
Severe thundersqualls	11-12 May	Parts of Patna, Vaishali and adjoining Saran district and Bhagalpur	Trees uprooted and disruption to power supply. Banana, Lichee and mango fruits damaged. About a dozen person killed	A few lakhs

centre near 11·5°N, 90°E. Moving in a northnortheasterly direction and intensifying into a cyclonic storm on the 15th. it crossed the coast of Burma between Kyaukpyu and Akyab on the 17th evening and weakened thereafter. It caused widespread rainfall in Andaman and Nicobar Islands from 11 to 17 May, with a few heavy falls on 14th and 17th.

Thunderstorms over northeast India

Thundershower over West Bengal, Orissa and Bihar State were much more marked in March when compared to April or May. In Assam and adjacent States, it was more marked in May. Very heavy rain occurred at a few places in Assam and adjacent States, Sub-Himalayan West Bengal and Sikkim between 19 and 22 May. Silchar AP reported 15 cm of rain on 19th; Agartala AP 15 cm on 20th; Tezu 18 cm, Gangtok 13 cm on 21st; Gangtok 14 cm on 22nd.

Some places in northeast India experienced tornados, squall and hailstorm. Their details as reported by the press, are shown in Table 1.

During March one low pressure area and three low level cyclonic circulations moved eastwards across northeast India. A large amplitude westerly trough in the middle and upper troposphere also moved eastwards across this area during the second week of March. During April and May, an east-west trough in the low levels was present over northeast India on many days extending from Bihar to Assam.

Thunderstorms over Peninsula

The thunderstorm activity in the Peninsula during March, April and the first half of May was mainly in association with the north-south wind discontinuity/trough in the low levels over the Peninsula extending from Madhya Pradesh to Tamil Nadu. Low pressure areas/circulations also moved westwards across extreme south Peninsula — two in the first week of March, two in the last week of March, one in the second week of April and one in

the last week of April. The thunderstorms in the Peninsula, particularly the western part, in the second half of May were mainly in association with the advancing phase of the monsoon as well as a trough of low which lay off Kerala-Karnataka-Maharashtra coasts from 20th to 31st. Scattered to fairly widespread thundershowers occurred in Maharashtra during the second week of March, second and last weeks of April and last week of May in Karnataka during the second and last weeks of April, 11 to 16 May and again in the last 10 days of May and in Kerala during the last week of March, from 6 to 9 and 21 to 25 April and on many days in May.

Coonoor (Tamil Nadu) recorded heavy rain of 17 cm and 8 cm on 8th and 9th respectively.

According to press reports a hailstorm hit a village near Nagpur on the evening of 23 April and caused some damage to property.

Advance of southwest monsoon

Under the influence of the Bay cyclonic storm, the southwest monsoon advanced into south Andaman Sea, the extreme southern parts of the Bay and Comorin-Maldive area by 16 May. The monsoon also advanced temporarily into Kerala and Lakshadweep during the third week when generally widespread rain occurred over these areas with heavy to very heavy falls in Kerala on 4 or 5 days. The monsoon retreated from Kerala and Lakshadweep by 22nd. It revived over Kerala and Laskshadweep on 28 May and advanced into coastal Karnataka on 29th under the influence of a mid-tropospheric cyclonic circulation which moved from Comorin and adjoining Sri Lanka to off Karnataka coast from 24th to 27th and persisted there till the end of the month. A trough of low was also present off Karnataka-south Maharashtra coasts from 28 to 31 May. The southwest monsoon also advanced into north Andaman Sea on 28 May in association with a trough of low which formed over that area on 28th and persisted till the end of the month over north Andaman Sea and east central Bay off Arakan coast. Andaman and Nicobar Islands experienced generally widespread rain from 28th to 31st with isolated heavy to very heavy falls on 29th and 31st. The northern limit of the monsoon passed through Karwar, Madras and Rangoon on 31 May.

The following stations recorded very heavy rain mainly in association with the monsoon : Kottayam 17 cm, Mancompu, Cochin & Calicut 14 cm on 15th, Kottayam 17 cm, Thumba 16 cm, Cochin AP 14 cm on 20th ; Karwar 19 cm on 28th ; Hut Bay 14 cm on 31st.

Temperature

March — Both day and night temperatures were appreciably below normal over northwest India and Uttar Pradesh on many days and in West Bengal, Orissa and Bihar on a few days. Moderate cold wave conditions prevailed over Bihar, West Bengal and Sikkim on 14th and in southwest Rajasthan on 18th and 19th.

April — Moderate heat wave conditions prevailed in some parts of Punjab and West Rajasthan between 14th and 16th. Day temperatures were generally above normal in many parts of the Peninsula, during the first three weeks, in Assam and adjacent States in the second week, in Uttar Pradesh, Madhya Pradesh and northwest India between 10th and 17th, being appreciably so in Rajasthan on many days between 10th and 17th, in the rest of northwest India and Madhya Pradesh between 14th and 17th, in interior Maharashtra on 15th and 16th and in Andhra Pradesh between 15th and 19th.

May — Moderate to severe heat wave conditions prevailed over coastal Andhra Pradesh between 17th and 23rd and in Orissa on 30th. Visakhapatnam and Calingapatnam recorded all time record temperatures for the month of May, Visakhapatnam reporting 44·7°C on 18th and Calingapatnam 47·0°C on 19th. According to press reports, about 70 persons were killed due to heat wave mostly in central and northern districts of coastal Andhra Pradesh and Khammam district.

Day temperatures were appreciable above normal in northwest India on many days of the month, in coastal Andhra Pradesh and Orissa on many days in the second half of the month, in Uttar Pradesh and east Madhya Pradesh between 17th and 23rd, in the west Madhya Pradesh on a few days in the second week and in Bihar on a few days in the third week, being markedly so in Orissa, east Uttar Pradesh, Punjab and Jammu & Kashmir on a few days.