

# Weather

## HOT WEATHER SEASON (MARCH-MAY 1987)\*

### 1. Introduction

During the pre-monsoon season Arunachal Pradesh received as much as 80 cm of rainfall. The other areas of dominant thundershower activities, where the normal rainfall for the season ranges from 50 cm to 65 cm, are Andaman & Nicobar Islands, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim and Kerala. Rainfall during the season, over Gangetic West Bengal, Himachal Pradesh, Jammu & Kashmir, coastal & south interior Karnataka and Lakshadweep is also significant (between 19 cm and 37 cm).

For the classification of rainfall distribution two norms have been adopted, one for describing the seasonal and the other for describing the monthly rainfall. This is because the limits for describing normal rainfall are generally decided on the basis of the variability or the standard deviation of the rainfall. As the period increases the standard deviation decreases and *vice versa*. Thus, in the case of seasonal rainfall, where the period is larger, the limits of  $\pm 10$  per cent departure from normal has been adopted for defining normal rainfall, whereas in describing monthly rainfall the limits of  $\pm 19$  per cent departure from the normal has been adopted for defining the same. The other norms adopted for defining the monthly rainfall distribution are excess, +20 per cent and above, deficient -20 to -59 per cent and scanty - 60 per cent or less.

### 2. Chief features

(i) Damage due to hailstorms in different parts of the country.

(ii) Snowfall in some parts of Western Himalayas during March, April and May.

(iii) Moderate heat wave conditions in Jammu in April.

(iv) Rainfall during the season was excess, largely in hills of west Uttar Pradesh, Haryana, Punjab, Himachal Pradesh and Rajasthan, moderately in Gangetic West Bengal, plains of west Uttar Pradesh and Jammu & Kashmir and slightly in Bihar plains, east Uttar Pradesh, coastal Andhra Pradesh and Telangana. It was normal in Orissa, Madhya Maharashtra and north interior Karnataka and was deficient, slightly in Arunachal Pradesh, Assam & Meghalaya, Nagaland,

Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim, Madhya Pradesh and Vidarbha and moderately in Bihar Plateau, Marathwada, Tamil Nadu, south interior Karnataka and Kerala. The rainfall was largely deficient over the rest of the country. Seasonal rainfall departures are shown in Fig. 1.

### 3. March

#### 3.1 Weather and associated synoptic features

During March ten western disturbances affected Western Himalayas and neighbourhood. A few of these western disturbances have been tracked from Afghanistan.

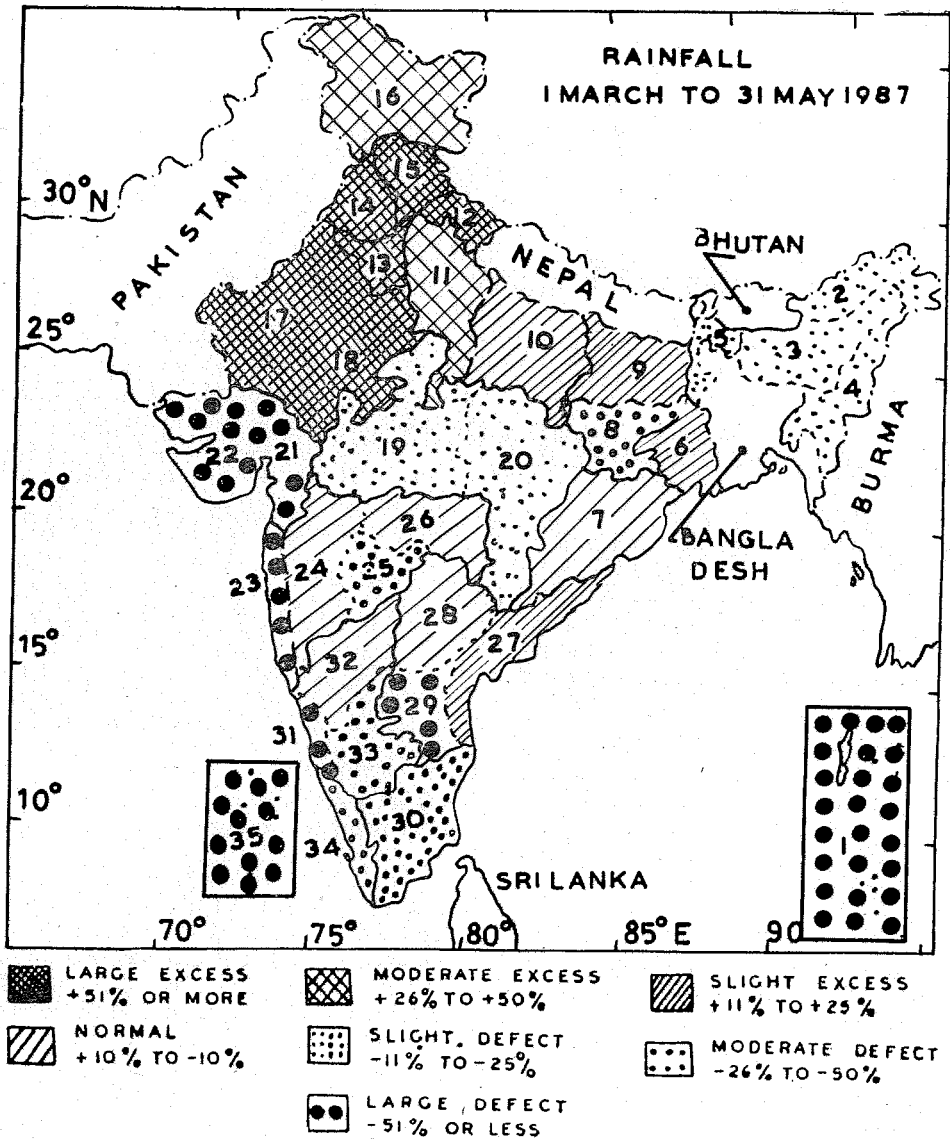
The other synoptic systems, which affected Indian sub-continent during March are given in Table 1.

There were two spells of snowfall during the month. During the first spell fairly widespread snowfall was reported from Himachal Pradesh on 22nd while during the second spell on 27th it was widespread over Himachal Pradesh and scattered over hills of west Uttar Pradesh. Generally widespread rain or thundershowers occurred on 9 to 10 days in Arunachal Pradesh, Assam & Meghalaya and Jammu & Kashmir and on 1 to 4 days over Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim, Haryana, Punjab, Himachal Pradesh, east Madhya Pradesh and coastal Andhra Pradesh during the month. They were scattered or isolated on 10 to 16 days in Assam & Meghalaya, West Bengal & Sikkim, Orissa, Punjab, Himachal Pradesh and Tamil Nadu; on 4 to 9 days in Andaman & Nicobar Islands, Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura, Bihar, west Uttar Pradesh, Haryana, Jammu & Kashmir, Rajasthan, east Madhya Pradesh, Vidarbha, Andhra Pradesh and Kerala and on 1 to 3 days over the rest of the country outside Gujarat region, Konkan & Goa, coastal Karnataka and Lakshadweep, where the weather was dry during March.

#### 3.2. Rainfall during March

Rainfall during the month was excess in Assam & Meghalaya, Sub-Himalayan West Bengal & Sikkim, Haryana, coastal Andhra Pradesh and Telangana; normal in Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura, Gangetic West Bengal, Orissa, west Rajasthan, Vidarbha, Rayalaseema, Tamil Nadu

\*Prepared by Nootan Das, M. R. M. Rao and N. C. Biswas, Meteorological Office, Pune



Sub-divisions	Depar. from normal	Sub-divisions	Depar. from normal
1. A. & N. Islands	-61	19. West M. P.	-23
2. Arunachal Pradesh	-12	20. East M. P.	-25
3. Assam & Megha.	-22	21. Gujarat Region	-62
4. N. M. M. & T.	-11	22. Saurashtra & Kutch	-93
5. S. H. W. B. & Sikkim	-19	23. Konkan & Goa	-55
6. G. West Bengal	24	24. Madhya Maha.	4
7. Orissa	-8	25. Marathwada	-34
8. Bihar Plateau	-26	26. Vidarbha	-10
9. Bihar Plains	13	27. Coastal A. P.	14
10. East U. P.	17	28. Telangana	7
11. Plains of W. U. P.	44	29. Rayalaseema	-53
12. Hills of W. U. P.	52	30. Tamil Nadu	-38
13. Haryana	152	31. Cot. Karnataka	-66
14. Punjab	167	32. N. I. Karnataka	-4
15. Himachal Pradesh	73	33. S. I. Karnataka	-38
16. Jammu & Kashmir	26	34. Kerala	-49
17. West Rajasthan	80	35. Lakshadweep	-65
18. East Rajasthan	61		

Fig. 1. Rainfall during 1 March to 31 May 1987

## WEATHER

TABLE 1  
Details of weather systems during March 1987

Period	Place of first location	Direction of movement	Place of dissipation
<b>Cyclonic circulations</b>			
<i>Lower trop. levels</i>			
3rd evening-5th evening	Bihar plateau and neighbourhood	—	<i>In situ</i>
6th-8th evening	Northwest Rajasthan and neighbourhood	Easterly	West Uttar Pradesh and neighbourhood
9th-10th	Bihar plains and neighbourhood	—	<i>In situ</i>
10th-12th	South Rajasthan and adjoining Gujarat Region	Easterly	Sotheast Rajasthan and adjoining Gujarat and west Madhya Pradesh
10th-11th	West Madhya Pradesh*	—	—
12th-16th	Central Pakistan	Easterly	Northwest Rajasthan and neighbourhood
12th-13th	Sub-Himalayan West Bengal & Sikkim	Easterly	Assam & Meghalaya
14th-16th	East central Arabian Sea off Karnataka-Goa-Maharashtra coast	Northerly	East central Arabian Sea off north Maharashtra coast
16th-19th	Madhya Maharashtra and neighbourhood	—	<i>In situ</i>
16th-19th	Sub-Himalayan West Bengal & Sikkim	Easterly	Assam & Meghalaya
<i>Lower levels</i>			
21st-23rd	Northwest Rajasthan	—	<i>In situ</i>
<i>Lower trop. levels</i>			
21st-22nd	Sub-Himalayan West Bengal & Sikkim	Easterly	Assam & Meghalaya
<i>Lower levels</i>			
22nd-23rd	East Rajasthan	—	<i>In situ</i>
<i>Lower trop. levels</i>			
23rd-25th	Bihar plains and neighbourhood	Quasi-stationary	Bihar plains and adjoining sub-Himalayan West Bengal & Sikkim
<i>Lower levels</i>			
25th-27th	Bangla Desh and adjoining Assam & Meghalaya	Easterly	Moved away
<i>Lower trop. levels</i>			
25th-27th evening	South Pakistan and adjoining southwest Rajasthan	Northeasterly	Punjab and neighbourhood
<i>Lower levels (Cyclonic circulation/ trough)</i>			
26th-28th	Bihar and adjoining West Bengal	Easterly	Assam & Meghalaya
<b>Troughs (lower levels)</b>			
30th-31st	Sub-Himalayan West Bengal & Sikkim to Assam	—	<i>In situ</i>

\*Merged on 11th with the cyclonic circulation of 9-10th over Bihar plains and neighbourhood

and south interior Karnataka; deficient in Andaman & Nicobar Islands, Bihar plains, Punjab, Himachal Pradesh, Jammu & Kashmir, east Madhya Pradesh and Madhya Maharashtra. It was scanty over the rest of the country outside Gujarat region, Konkan & Goa, coastal Karnataka and Lakshadweep where there was no rain.

Significant amounts (cm) of rainfall during the month were :

- 1st Kashinagar 5
- 2nd Anandpur 4, Nidadavole 3
- 4th Purulia 4
- 5th Cuttack 4, Long Island 3
- 7th Kupwara 3
- 8th Cherrapunji 9, Mahabaleshwar 6, Badgam & Jogindernagar 5 each, Gurdaspur 3
- 9th Cherrapunji 7, Agartala AP 6, Rangiya 3
- 10th Chandrapur & Cherrapunji 4 each, Cooch Behar & Rupsi 3 each
- 11th Cuttack & Vijayawada 5 each, Dibrugarh AP & Machilipatnam 4 each
- 12th Narsapur 9, Kumbakonam 6, Karimnagar, Parangipettai & Pondicherry 5 each, Mandla & Silchar AP 3 each
- 13th Batala 8, Kailashahar 5, Agartala AP & Dasuya 4 each, Gopalpur, Majbat & Visakhapatnam AP 3 each
- 14th Jogindernagar, Karimnagar & Ongole 4 each
- 15th Dindigul 7, Hyderabad AP 6, Pakala 5, Kallaikurichi 4, Baijnath 3
- 16th Bangalore AP 5, Chittor & Kupwara 4 each
- 17th Gauhati AP & Vayittri 3 each
- 18th Punalur 6, Tangla 5, Kallaikurichi & Silchar AP 4 each, Gangtok 3
- 19th Namakkal & Tezu 5 each, Pasighat 3
- 20th Banihal 4, Batote, Manali & Tezu 3 each
- 21st Rasipuram 7, Salem, Baripada (CFFD), Lumding & Tangla 3 each
- 22nd Batote & Tezpur 3 each
- 23rd Ropar 8, Batote 6, Nedumangad 5, Banihal, Dehra Dun, Dharampur & Mukteswar 4 each, Katra 3
- 27th Dalhousie & Gangtok 3 each
- 28th Pahalgam 3
- 31st Dibrugarh AP 4

### 3.3. Temperature

Day temperatures were markedly above normal ( $6^{\circ}\text{C}$  and above) in Arunachal Pradesh on 3rd and 31st, in hills of west Uttar Pradesh on 17th and 18th. They were appreciably ( $4^{\circ}\text{C}$  to  $5^{\circ}\text{C}$ ) above normal on 2 to 4 days in Arunachal Pradesh, Kashmir and Saurashtra & Kutch during the first week; on 4 to 5 days in hills of west Uttar Pradesh and Kashmir between 10th and 16th and on 2 to 3 days in Uttar Pradesh and Saurashtra & Kutch between 25th and 31st of the month. Appreciably to markedly below day temperatures prevailed on 7 to 13 days over Assam & adjacent States between 9th

and 23rd and on 1 to 2 days over Orissa, Bihar plains, Haryana, Punjab, Kashmir, east Rajasthan, east Madhya Pradesh, Madhya Maharashtra, Marathwada, Vidarbha and Telangana between 12th and 14th.

Night temperatures were generally below normal ( $-2^{\circ}\text{C}$  to  $-3^{\circ}\text{C}$ ) in south interior Karnataka during the month and were so in Jammu in the second fortnight being markedly below ( $-6^{\circ}\text{C}$  or less) on 21st. They were also below to appreciably below ( $-4^{\circ}\text{C}$  to  $-5^{\circ}\text{C}$ ) normal on 5 to 6 days in Nagaland, Manipur, Mizoram & Tripura, Himachal Pradesh, coastal and north interior Karnataka during first fortnight and on 3 to 5 days in Himachal Pradesh and Telangana between 21st and 31st. Night temperatures were generally above to appreciably above normal in Haryana, Kashmir, west Rajasthan and Gujarat region during the month.

### 3.4. Disastrous weather events and damages

Calcutta AP reported occurrence of hail of about 4 cm in diameter in the afternoon of 2nd. Severe thundersquall on 10th damaged 150 kuccha houses in three villages under Cooch Behar district. Hailstorms in some parts of Nellore district on 13th night damaged standing crops and about 200 houses. It also claimed 4 human lives and about 40 cattle heads. Loss due to damage was estimated to about rupees one crore.

## 4. April

### 4.1. Weather and associated synoptic features

During the month six western disturbances moved away eastwards across the Western Himalayas and neighbourhood, one of which appeared as a low pressure area over north Pakistan and adjoining Punjab and neighbourhood. The seventh western disturbance of the month lay over north Pakistan and neighbourhood on the last day of the month.

Peninsular India was affected by troughs in lower levels during the second fortnight of the month.

The other synoptic features of the month are given in Table 2.

There was a spell of snowfall over Himachal Pradesh on 9th and 10th with isolated heavy falls on 9th. Rain or thundershowers were generally widespread on 11 days in Arunachal Pradesh and on 4 to 8 days in Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim, Jammu & Kashmir and Kerala with isolated heavy falls on a day over some of these sub-divisions during the month. They were generally widespread on 1 to 3 days in Haryana, Punjab and Himachal Pradesh between 3rd and 5th and on 9th and in Gangetic West Bengal, Bihar and coastal Andhra Pradesh between 26th and 30th. Rain or thundershowers were also generally widespread over hills of west Uttar Pradesh on 9th and 30th of this month. Rainfall was of scattered or isolated nature on 14 to 18 days in Assam & Meghalaya, Sub-Himalayan West Bengal & Sikkim and Tamil Nadu; on 5 to 10 day, in Andaman & Nicobar Islands, Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura, Gangetic West Bengal, Orissa, Bihar plains east Uttar Pradesh, Himachal Pradesh, Jammu & Kashmir, Telangana, south interior Karnataka, Kerala & Lakshadweep and on 1 to 4 days over the rest of the country outside Gujarat where there was no rain.

TABLE 2  
Details of weather systems during April 1987

Period	Place of first location	Direction of movement	Place of dissipation
<b>Cyclonic circulations</b>			
<i>Lower trop. levels</i>			
3rd evening-5th	North Pakistan and neighbourhood	Easterly	Northwest Rajasthan and neighbourhood
8th-11th	Bihar plains and neighbourhood	—	<i>In situ</i>
11th-12th evening	Gangetic West Bengal and neighbourhood	—	Do.
13th-15th	Northeast Madhya Pradesh and adjoining Orissa	Easterly	North Orissa and adjoining Bihar Plateau
14th-16th	South Maharashtra coast	Easterly	North interior Karnataka
<i>Lower levels</i>			
15th-16th	Southeast Madhya Pradesh	—	<i>In situ</i>
<i>Lower trop. levels</i>			
17th-23rd	Southeast Uttar Pradesh and adjoining northeast Madhya Pradesh and Bihar	Quasi-stationary	Bihar Plateau and neighbourhood
<i>Lower levels</i>			
17th evening-19th	West Madhya Pradesh	Quasi-stationary	West Madhya Pradesh and adjoining Vidarbha
<i>Lower trop. levels</i>			
20th-21st	Bangla Desh and neighbourhood	—	<i>In situ</i>
<i>Lower levels</i>			
22nd-23rd	Interior Tamil Nadu and adjoining Kerala	Westerly	Kerala and adjoining Lakshadweep
<i>Lower trop. levels</i>			
24th-28th	West Uttar Pradesh and neighbourhood	Easterly	Bihar plains and neighbourhood
28th-30th	Bangla Desh and neighbourhood	—	<i>In situ</i>
<b>Troughs in westerlies</b>			
<i>Mid and upper trop. levels</i>			
2nd-4th	Axis roughly along Long. 62° E north of Lat. 25° N	Easterly	Pakistan and adjoining India
<i>Lower levels</i>			
3rd-7th	Sub-Himalayan West Bengal to north Bay	Quasi-stationary	Western parts of Assam to north Bay
9th-14th	Along the east coast of the country	Do.	Along the east coast
<i>Mid and upper trop. levels</i>			
18th-23rd	Central Tibet to north interior Karnataka	Easterly	Moved away eastwards
29th-1st May	Eastern Tibet to Tamil Nadu	Quasi-stationary	Became unimportant <i>in situ</i>

However, rainfall over west Madhya Pradesh and Konkan & Goa was very light.

#### 4.2. Rainfall during April

Rainfall during the month was excess in Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura, Gangetic West Bengal, Bihar plains, east Uttar Pradesh, Punjab, Jammu & Kashmir and coastal Andhra Pradesh; normal in Assam & Meghalaya, Orissa, Bihar Plateau, hills of west Uttar Pradesh, Haryana, Himachal Pradesh and Telangana and deficient in Andaman & Nicobar Islands, Sub-Himalayan West Bengal & Sikkim west Rajasthan and Kerala. It was scanty over the rest of the country outside Gujarat where there was no rain.

The significant amounts (cm) of rainfall were :

- 1st Cherrapunji, Darjeeling & Gauhati AP 3 each
- 2nd Cherrapunji 7
- 3rd Cherrapunji 11, Tezu 5, Jammu AP, Kupwara & Tangla 3 each
- 4th Cherrapunji 14, Silchar AP 10, Bhadarwah & Dibrugarh AP 3 each
- 5th Pasighat 6, Kandaghat 4, Baijnath, Kangra & Tezu 3 each
- 6th Cherrapunji 9, Pasighat 5
- 9th Jogindernagar 12, Bhuntar AP 7, Batote, Una & Uttarkashi 5 each, Kupwara 4, Chandigarh AP, Katra & Shimla 3 each
- 10th Kailashahar 10, Cherrapunji 6, Jogindernagar 5, Aijal, Dalhousie & Imphal 4 each, Agartala AP, Batore & Pasighat 3 each
- 11th Dibrugarh AP 4, North Lakhimpur 3
- 12th Silchar AP 6, Cherrapunji 5, Kondul 3
- 15th Dibrugarh AP 4
- 17th Satara 3
- 18th Thumba 4, Trivandrum AP 3
- 19th Nedumangad 5, Balasore 4, Palayamkottai & Trivandrum 3 each
- 20th Nedumangad 6, Trivandrum 4
- 21st Imphal AP 3
- 23rd Punalur 7, Kupwara 5, Bagati (Magra), Darjeeling, Gauhati AP, Kayamkulam & Madurai AP 3 each
- 24th Quazigund 8, Bhadarwah 7, Daporizo & Srinagar 4 each, Berhampore, Dalhousie, Kozhikode & Silchar AP 3 each
- 25th Bagati (Magra) 9, Agartala AP 7, Aijal & Chaparmukh 5 each, Cooch Behar & Mavelikara 4 each, Gauhati AP 3
- 26th Canning Town 14, Bagati (Magra) 8, Agartala AP & Calcutta 6 each, Sabour 4, Bhagalpur & Malda 3 each
- 27th Gopalpur, Kalingapatnam & Punalur 6 each, Bangalore, Calcutta AP, Kothagudam & Supaul 5 each, Salem 4, Chaibasa, Gorakhpur, Patna AP 3 each
- 28th Paradip 8, Sandheads 7, Rajghat 4, Contai, Krishnagar, K.R. Pet, Kavali & Tambaram 3 each

29th Agartala AP 8, Gauhati AP 7, Gopalpur, Kothagudam, Machilipatnam & Quilon 5 each, Bagamandala, Kanyakumari & Sagar Island 3 each

30th Yelandu 4, Bagamandala, Baghdogra AP, Dehra Dun & Motihari 3 each.

#### 4.3. Temperature

Moderate heat wave conditions ( $6^{\circ}\text{C}$  to  $7^{\circ}\text{C}$  above normal) prevailed at a few places in Jammu on 21st and 29th. Day temperatures were appreciably above normal on 5 to 9 days in hills of west Uttar Pradesh, coastal Andhra Pradesh and Tamil Nadu during the first fortnight and on 3 to 7 days in west Uttar Pradesh, Haryana, Punjab, Rajasthan and Gujarat during the second fortnight of the month. Ajmer, Naliya, Ongole, Porbandar and Veraval reported  $8^{\circ}\text{C}$  to  $9^{\circ}\text{C}$  above normal day temperatures on a couple of days during the month.

Appreciably or markedly below normal day temperatures prevailed on 1 to 3 days over Assam & adjacent States between 11th and 13th and on 2 to 5 days over northeast India, east Uttar Pradesh between 24th and 30th.

#### 4.4. Disastrous weather events and damages

According to press reports 33 people lost their lives and 50 were injured in Sitamari, Katihar and Nawada districts of Bihar in hailstorms of 30 April. Also, the T.V. installations at Jamshedpur were reported to have been damaged due to such storm.

#### 5. May

##### 5.1. Weather and associated synoptic features

Previous month's western disturbance over north Pakistan and neighbourhood moved away eastwards across Western Himalayas by 3rd. Besides that, seven more western disturbances affected Western Himalayas and neighbourhood during the month.

Between 1st and 6th an east-west trough in the lower levels extending from Rajasthan to Assam & neighbourhood was observed. Also wind discontinuity/trough in the lower levels was seen over the Peninsula during the first fortnight of the month.

A trough in mid and upper tropospheric westerlies affected northeast India between 4th and 8th.

The other synoptic features of the month are given in Table 3.

Generally widespread snowfall was reported from Himachal Pradesh on 2nd and 12th of this month. Rain or thundershowers were generally widespread on 9 to 14 days in Andaman & Nicobar Islands, Arunachal Pradesh, Assam & Meghalaya, Punjab, Himachal Pradesh and Jammu & Kashmir; on 4 to 8 days in Nagaland, Manipur, Mizoram & Tripura, Gangetic West Bengal, west Uttar Pradesh, Haryana, south interior Karnataka and Kerala and on 1 to 3 days in Sub-Himalayan West Bengal & Sikkim, Orissa, Bihar, east Uttar Pradesh, east Rajasthan, Madhya Maharashtra, Marathwada, coastal Andhra Pradesh, Telangana, coastal and north interior Karnataka and Lakshadweep. Isolated heavy falls were reported from south interior



TABLE 3  
Details of weather systems during May 1987

Period	Place of first location	Direction of movement	Place of dissipation
<b>Cyclonic circulations</b>			
<i>Lower trop. levels</i>			
1st-4th	Northwest Rajasthan and adjoining Punjab	Quasi-stationary	Northwest Rajasthan and adjoining Punjab and Haryana
4th-7th	Madhya Maharashtra and neighbourhood	Westerly	Coastal Karnataka and neighbourhood
6th-7th	Haryana and neighbourhood	—	<i>In situ</i>
7th-13th	East Uttar Pradesh and neighbourhood	Easterly	Sub-Himalayan West Bengal & Sikkim and neighbourhood
9th-10th	Northeast Rajasthan and adjoining Haryana	Easterly	North Uttar Pradesh and neighbourhood
10th-16th	West Madhya Pradesh	Quasi-stationary	Northwest Madhya Pradesh and neighbourhood
11th-14th	West Rajasthan and neighbourhood	Easterly	West Uttar Pradesh and neighbourhood
13th-15th	Northwest Rajasthan and neighbourhood	—	<i>In situ</i>
<i>Lower levels</i>			
13th-15th	Bihar and neighbourhood	—	<i>In situ</i>
14th evening-16th	Southeast Arabian Sea off north Kerala coast	—	<i>In situ</i>
<i>Lower trop. levels</i>			
16th-17th	South interior Karnataka and adjoining coastal Karnataka	—	<i>In situ</i>
18th-24th	Tamil Nadu and neighbourhood	Westerly	Lakshadweep area
21st-27th	East Uttar Pradesh and adjoining Bihar plains	Easterly	Bihar plains and neighbourhood (the system moved over Bihar plains and neighbourhood on 21st evening)
<i>Lower levels</i>			
23rd evening-25th	South interior Karnataka and neighbourhood	—	<i>In situ</i>
<i>Lower and mid trop. levels</i>			
25th-27th	Lakshadweep and adjoining southeast Arabian Sea	—	Do.
<i>Lower trop. levels</i>			
25th-27th	South Telangana and neighbourhood	—	Do.
<i>Lower levels</i>			
25th-28th	Southwest Rajasthan	Northeasterly	Northwest Rajasthan (Lay over Bihar plains and neighbourhood on 30th evening)
<i>Lower trop. levels</i>			
27th-30th evening	East Uttar Pradesh	Easterly	—
<i>Well marked low pressure area*</i>			
30th-31st	North Andaman and adjoining east central and southeast Bay	Westnorthwesterly	—

\*Lay as a well marked low pressure area over east central and adjoining WC & SE Bay on 31st

Karnataka on 20th and from Jammu & Kashmir on 23rd. Scattered or isolated rainfall occurred on 13 to 22 days in Andaman & Nicobar Islands, Assam & Meghalaya, Sub-Himalayan West Bengal & Sikkim Orissa, Rajasthan Madhya Pradesh, Madhya Maharashtra, Tamil Nadu, interior Karnataka and Kerala and on 3 to 12 days in Nagaland, Manipur, Mizoram & Tripura, Gangetic West Bengal, Bihar, Uttar Pradesh, Haryana, Punjab, Himachal Pradesh, Jammu & Kashmir, Konkan & Goa, Marathwada, Vidarbha, Andhra Pradesh, coastal Karnataka and Lakshadweep.

### 5.2. Rainfall during May

Rainfall during the month was excess in Uttar Pradesh, Haryana, Punjab, Himachal Pradesh, Jammu & Kashmir, Rajasthan, Madhya Pradesh, Madhya Maharashtra, Marathwada, Vidarbha and north interior Karnataka; normal in Gangetic West Bengal, Orissa and Bihar plains and deficient in Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim, Bihar Plateau, Gujarat region, Konkan & Goa, Andhra Pradesh, Tamil Nadu, south interior Karnataka and Kerala. It was scanty over the rest of the country.

The significant amounts (cm) of rainfall were :

- 1st Canning Town 8, Durgachak 6, Agartala AP 5, Chandbali, Nurgpur & Puri 4 each
- 2nd Bobbili 12, Kalpa 7, Gurgaon, Kapurthala & Manali 6 each, Bhadarwah & Darbhanga 5 each, Chaparmukh, Jammu, Muzaffarpur & Tumkur 4 each
- 3rd Kuppam 7, Kandaghat, Panagarh AP & Tibri 6 each, Minicoy & Srivilliputtur 5 each, Calcutta, Jharsuguda AP & Uluberia 4 each
- 4th Purnea 10, Sandheads 9, Kalingapatnam 6, Chandbali, Darjeeling, Gopalpur, Tadong & Tekkali 5 each, Dibrugarh AP & Gangtok 4 each
- 6th Jogindernagar 5, Balasore & Pasighat 4 each
- 7th Jogindernagar & Kalpa 6 each, Gauhati AP 4
- 8th Sandheads 8, Batote & Katra 5 each, Bhuntar AP, Jammu & Manali 4 each
- 9th Bagati (Magra) 8, Jogindernagar, Sandheads & Tadong 5 each, Kailashahar, Ropar & Shimla 4 each, Ajmer, Chandigarh AP, Jaipur AP & Jaisalmer 3 each
- 10th Gangtok & Katra 6 each, Dalhousie, Dharamsala & Tibri 5 each, Jammu AP, Moga & Udhampur AP 4 each
- 11th Tuni 6, Bagati (Magra), Digha & Kapurthala 5 each
- 12th Kalpa 5
- 13th Kayamkulam 9, Batote & Raichur 7 each, Honavar 6, Alathur, Jalandhar & Mavelikara 5 each
- 14th Belgaum 6, Agumbe & Udgir 5 each
- 15th Alleppey & Tadong 4 each
- 16th Bhira, Kayamkulam & Pamban 7 each, Belthangady & Uthagamandalam 4 each

- 17th Aruppukottai 9, Gangtok 8, Coonoor 6, Kayamkulam 5, Belthangadi 4
- 18th Cherrapunji 10, Trivandrum 6, Bidar AP 5, Kayamkulam & Suni 4 each
- 19th Cherrapunji & Pasighat 12 each, North Lakhimpur 5, Hosnagara, Port Blair & Tadong 4 each
- 20th Bangalore AP & Pasighat 8 each, Polavaram & Sangareddy 5 each, Hasan & Lunding 4 each
- 21st Gulmarg 6, Nedumangad & Minicoy 5 each, Trivandrum AP 4
- 22nd Kayamkulam 7, Cooch Behar & Karad 5 each, Silchar AP 4
- 23rd Gulmarg 11, Banihal, Srinagar & Trichur 7 each, Namakkal 6, Malavalli, Pamban & Puttur 4 each
- 24th Trivandrum AP 8, Kodaikanal & Fazilka 5 each
- 25th Bagati (Magra) 6, Majbat 5, Uthagamandalam 4
- 26th North Lakhimpur 7, Gangtok 5, Sangli & Tadong 4 each
- 27th Kurnool 6, Car Nicobar & Kayamkulam 5 each, Kasargode & Srivilliputtur 4 each
- 28th Agumbe 10, Belthangady & Nilambur 6 each, Alleppey, Malegaon & Tezpur 3 each
- 29th Madurai AP 7, Chitradurga 3
- 30th Tirupattur 7, Shillong 5, Chamba 4
- 31st Sirsi 8, Cooch Behar 6, Chandbali & Balasore 5 each, Digha & Maya Bandar 4 each

### 5.3. Temperature

Day temperatures were appreciably to markedly below normal on most days of the month in Haryana, Punjab, Himachal Pradesh and Jammu & Kashmir and were so during the first fortnight in Bihar, Uttar Pradesh, and Rajasthan. Temperatures at a few places in some of these sub-divisions were as much as 10°C to 16°C below normal on a number of days.

They were generally above normal in Kerala during the month and were so in Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, West Bengal & Sikkim, Orissa, Bihar, east Uttar Pradesh, Gujarat region and Karnataka during the second fortnight being appreciably to markedly above normal on a few days.

### 5.4. Disastrous weather events and damages

As per press reports, thunderstorms claimed 11 lives in Ghazipur district of Uttar Pradesh and injured about 20 people in the second week of May. It also damaged about 5000 kuccha houses in the district. On 17th of this month five persons died at Khanapura village in Bidar district of Karnataka, when they were struck by lightning. In the last week of May, flash flood claimed 15 lives in Jammu & Kashmir. Several villages in Poonch district were cut off with the district head-quarter following floods in *Nullah Betar* and *Poonch* rivers.