

# **DISASTROUS WEATHER EVENTS 2004**

ISSUED BY  
NATIONAL CLIMATE CENTRE  
OFFICE OF THE  
ADDITIONAL DIRECTOR GENERAL OF METEOROLOGY (RESEARCH)  
PUNE 411 005



भारत सरकार  
GOVERNMENT OF INDIA

भारत मौसम विज्ञान विभाग  
INDIA METEOROLOGICAL DEPARTMENT

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## DISASTROUS WEATHER EVENTS OF 2004

The most striking disastrous weather events of 2004 were the following:

1. Cold wave conditions prevailed over Bihar, Uttar Pradesh, parts of Rajasthan, Haryana and adjoining Chandigarh; more than 400 human lives were lost apart from more than 40 casualties due to fog related accidents.
2. Occurrence of floods and heavy rains over various parts of the country especially, Assam, Bihar and Gujarat, claimed more than 1500 human lives apart from loss of property, agriculture and livestock.
3. Rainfall deficiency during June to September i.e. Summer monsoon season resulted in a moderate drought situation over the subdivisions of Himachal Pradesh, Punjab, West Rajasthan, West Uttar Pradesh, Vidarbha and Telangana; damaged the kharif crop over these parts of the country.

The summary of these natural hazards is based on press information and various reports of the India Meteorological Department. The areas affected by the adverse weather conditions are depicted seasonwise on four maps.

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S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
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**TABLE - I : SNOWFALL**

**CRITERIA**

*Moderate : 7.6 to 34.9 cm in 24 hrs*

*Heavy :  $\geq 35.0$  cm in 24 hrs*

1.	31 Jan.	Mandi (Himachal Pradesh)	Heavy	One person frozen to death.	
2.	30 Apr. – 2 May	Jammu & Kashmir (Upper reaches)	Heavy	11 persons died.	20,000 people reported stranded.
3.	11 Oct.	Lahaul & Spiti (Himachal Pradesh)	Heavy		Normal life completely paralysed due to road block by very heavy snowfall.

**TABLE - II : COLD WAVE**

**CRITERIA**

*(A) When; Normal minimum temperature is 10°C or more.*

*Cold wave : Night temperature 5°C to 6°C below normal.*

*Severe cold wave : Night temperature 7°C or more below normal.*

*(B) When; Normal minimum temperature is less than 10°C.*

*Cold wave : Night temperature 4°C to 5°C below normal.*

*Severe cold wave : Night temperature 6°C or more below normal*

1.	Jan. (1 <sup>st</sup> & 2 <sup>nd</sup> week)	Bihar and Uttar Pradesh	Severe cold wave (A or B as appropriate)	358 persons died.	
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<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
2.	Jan. (1 <sup>st</sup> week )	West Bengal	Severe cold wave (A or B as appropriate)	18 persons died	
3.	22 Jan.	Jaipur (Rajasthan)	Severe cold wave (B)	3 persons died.	
4.	3 Feb.	Jaipur (Rajasthan)	Severe cold wave (A)	One person died	
5.	14 Dec.	Bhilwara (Rajasthan)	Severe cold wave (B)	2 persons died.	
6.	18-22 Dec.	Vaishali (Bihar)	Cold wave (A)	4 persons died.	
7.	20 Dec.	Sonipat (Haryana)	Cold wave (B)	3 persons died and 48 injured in accidents due to dense fog.	
8.	20 & 21 Dec.	Alwar, Dholpur and Jaipur (Rajasthan)	Severe cold wave (B)	4 persons died.	
9.	Dec. (3 <sup>rd</sup> week)	Uttar Pradesh (Many parts)	Severe cold wave (A or B as appropriate)	i) 14 persons died due to severe cold. ii) 38 persons died and 27 other injured in road acci- dents due to thick fog.	Road/ rail/air traffic severely affected

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
10.	23 Dec.	Chandigarh ( UT)	Cold wave (B)	One person died and 4 other injured in accidents due to thick fog.	
11.	26 Dec.	Jaipur (Rajasthan)	Severe cold wave (B)	2 persons died.	
12.	Dec. (4 <sup>th</sup> week)	Gaya, Madhubani, Muzaffarpur, Sitamarhi and Vaishali (Bihar)	Severe cold wave (A)	12 persons died.	
13.	29 Dec.	Bardhaman (West Bengal)	Cold wave (A)	2 persons died.	

TABLE – III : HEAT WAVE

**CRITERIA**

(A) When; Normal maximum temperature is 40°C or less.  
Heat wave : Departure from normal is 5°C to 6°C.  
Severe heat wave : Departure from normal is 7°C or more.

(B) When; Normal maximum temperature is more than 40°C.  
Heat wave : Departure from normal is 4°C to 5°C.  
Severe heat wave : Departure from normal is 6°C or more.

1.	19 Apr.	Mayurbhanja (Orissa)	Severe heat wave (A)	Several birds perished at Baripada	
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<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
2.	23 Apr.	Nanded (Maharashtra)	Heat wave (B)	2 women died.	
3.	1-3 May	Nanded (Maharashtra)	Heat wave (B)	3 persons died.	
4.	5 May	Dahod and Vadodara (Gujarat)	Severe heat wave (A or B as appropriate)	3 persons died.	For keeping cold environment inside the cages; huge ice-sheets have been kept in the cages of the Vadodara zoo.
5.	1-31May	Orissa (16 districts)	Severe heat wave (A or B as appropriate)	39 persons died due to sun-stroke.	
6.	14-18 May	West Bengal ( Some parts)	Heat wave (A or B as appropriate)	9 persons died.	
7.	17 May	Bhatinda(Punjab)	Heat wave	3 persons died.	
8.	17-21 May	Uttar Pradesh (Many parts)	Severe heat wave (A or B as appropriate)	46 persons died.	
9.	20 May	Gwalior (Madhya Pradesh)	Heat wave (B)	4 persons died.	



<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
10	21 May	Amritsar (Punjab)	Heat wave (A)	One person died at Tam Taran.	
11	1 Jun.	Neemuch (Madhya Pradesh)	Heat wave (A)	One woman died	
12	2 Jun.	Rajasthan (Some parts)	Severe heat wave (A or B as appropriate)	One person died.	
13	3 Jun.	Hoshiarpur (Punjab)	Heat wave (B)	2 persons died.	
14	5 Jun.	Hoshiarpur(Punjab)	Heat wave (B)	2 persons died.	
15	9 Jun.	Jagatsinghpur (Orissa)	Severe heat wave (A)	One person died due to sun-stroke.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
<b>TABLE -IV : SQUALL</b>					
A sudden increase of wind speed by at least 29 kmph (16 kts), the speed rising to 40 kmph (22 kts) or more and lasting for at least one minute					
<b>CRITERIA</b>					
<i>Moderate : Surface wind speed (in gusts) upto 80 kmph.</i>					
<i>Severe : Surface wind speed (in gusts) &gt; 80 kmph.</i>					
1.	16 Mar.	Kamrup (Assam)	Moderate		Several trees uprooted and roof of dwelling houses blown away.
2.	27 Mar.	(a) Tinsukia (Assam)	Moderate	One woman died.	i) Several trees, electric and telephone poles uprooted. ii) Doomdooma electrical subdivision damaged.
		(b) Jorhat (Assam)	Moderate		Dwelling houses of 200 families destroyed and several trees uprooted.
3.	28 Mar.	Dhemaji, Dibrugarh, Lakhimpur, Sibsagar and Tinsukia (Assam)	Severe	2 persons died and one injured in separate incidents of house / tree collapse.	i) Many dwelling houses damaged.. ii) Several trees, electric and telephone poles uprooted. iii) Roof tops of several houses, schools and primary health centres blown away. iv) Agricultural products also destroyed.
4.	3 Apr.	Dhubri (Assam).	Severe		Several quarters, guest house and police barrack of 8 <sup>th</sup> Battalion of Assam police completely destroyed.

<b>S.N.</b>	<b>Date / Period</b>	<b>Area affected</b>	<b>Intensity</b>	<b>Casualties</b>	<b>Extent of damage</b>
5.	12 Apr.	Barpeta, Bongaigaon, Kamrup and Nagaon (Assam)	Severe		<ul style="list-style-type: none"> <li>i) Several trees uprooted.</li> <li>ii) Rabi crop badly affected.</li> <li>iii) About 50 families under Bijni subdivision rendered homeless.</li> <li>iv) Hundreds of dwelling houses destroyed.</li> </ul>
6.	13 Apr.	Bongaigaon (Assam)	Moderate		<ul style="list-style-type: none"> <li>i) Several dwelling houses destroyed.</li> <li>ii) Electric and telephone poles uprooted.</li> <li>iii) Family welfare centre, co-operative store and quarters of 8<sup>th</sup> Battalion of Assam Police badly affected.</li> </ul>
7.	14 Apr.	Cachar and Nagaon (Assam)	Severe	<ul style="list-style-type: none"> <li>i) 2 persons died due to house collapse.</li> <li>ii) Several passengers injured when a big tree fell on the bus.</li> </ul>	<ul style="list-style-type: none"> <li>i) Several dwelling houses destroyed.</li> <li>ii) Several trees and electric poles uprooted.</li> <li>iii) Heavy losses to agricultural crop reported.</li> </ul>
8.	17 Apr.	Kamrup and Nalbari (Assam)	Moderate	In Kamrup district, one person injured due to house collapse.	<ul style="list-style-type: none"> <li>i) Roofs of dwelling houses and schools blown off.</li> <li>ii) Many trees uprooted.</li> </ul>
9.	21 Apr.	Kamrup (Assam)	Moderate		<ul style="list-style-type: none"> <li>i) Roofs of dwelling houses, educational institutions blown away.</li> <li>ii) Several trees uprooted.</li> <li>iii) Pat Mug (Silk) industries badly affected.</li> </ul>
10.	22 Apr.	Bangalore and Gulbarga (Karnataka)	Moderate	One person injured under a fallen tree at Bangalore.	<ul style="list-style-type: none"> <li>i) Many electric poles, trees uprooted, water tank on the top of the house rolled down.</li> <li>ii) Roof tops blown away.</li> </ul>

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
11.	27 Apr.	Dharwad (Karnataka)	Moderate		In Hubli, many trees uprooted, large number of electric poles fallen and 10 transformers damaged.
12.	1 May	Golaghat, Jorhat, Kamrup, Sibsagar and Sonitpur (Assam)	Severe	2 persons died and 3 other injured due to tree collapse.	<ul style="list-style-type: none"> <li>i) 50 families of 40 villages under Morangi Mauza rendered homeless.</li> <li>ii) Roofs of several dwelling houses blown away.</li> <li>iii) Many trees uprooted.</li> </ul>
13.	2 May	Dhubri (Assam)	Moderate	3 persons injured.	40 families rendered homeless and a school completely destroyed at Piplibari village.
14.	11 May	Dhubri, Goalpara, Jorhat, Kamrup, Kokrajhar and Nalbari (Assam)	Moderate		<ul style="list-style-type: none"> <li>i) Hundreds of families of 10 villages badly affected in Kumarikata of Nalbari district.</li> <li>ii) Roofs of several dwelling houses and schools blown away.</li> <li>iii) Many trees uprooted.</li> <li>iv) Heavy damage to property as well as agriculture reported from many villages of Dhubri and Kokrajhar districts</li> </ul>
15	12 May	Amravati (Maharashtra)	Moderate	5 persons died in Achalpur / Dayapur	
16	14 May	Kamrup (Assam)	Moderate		<ul style="list-style-type: none"> <li>i) Roofs of several dwelling houses blown away.</li> <li>ii) Many trees uprooted.</li> <li>iii) Bodo crop damaged.</li> </ul>
17	17 May	Barpeta (Assam)	Moderate		Roof of a pavilion of Golia mini stadium blown away.

<b>S.N.</b>	<b>Date / Period</b>	<b>Area affected</b>	<b>Intensity</b>	<b>Casualties</b>	<b>Extent of damage</b>
18	28 May	Dhubri (Assam)	Moderate	6 persons injured.	i) 50 families rendered homeless. ii) Roof tops of school and mosque blown away.
19	30, 31 May	Bellary (Karnataka)	Severe	9 persons injured.	i) Roofs of many houses collapsed. Nearly 300 houses / huts damaged. ii) Around 60 electric poles and 10 transformers damaged.
20	3 Jun.	Bhind (Madhya Pradesh)	Severe	7 persons died and 32 injured.	i) Several electric poles uprooted. ii) Loss of property reported.
21	7 Oct.	Dhubri (Assam)	Moderate		i) The office of Sub-Registrar of Dhubri completely damaged under an uprooted tree. ii) Electrical power lines damaged.

**TABLE - V : GALE**

**CRITERIA**

*Strong : Wind speed  $\geq$  75 kmph*

1.	31 Mar.	Wayanad (Kerala)	Strong		A few houses damaged.
2.	4 Apr.	Wayanad (Kerala)	Strong		Thousands of plantations damaged.
3.	6 Apr.	Thiruvananthapuram (Kerala)	Strong		Many houses and thousands of plantations damaged.

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
4.	29 Apr.	Thiruvananthapuram (Kerala)	Strong		i) A few houses completely or partially damaged. ii) Thousands of rubber trees and plantations damaged. iii) Many trees uprooted.
5.	13 Jun.	Kozhikode and Thiruvananthapuram (Kerala)	Strong		i) Nearly 100 houses completely or partially damaged in Thiruvananthapuram district. ii) In Kozhikode district, trees uprooted and damage to agriculture also reported.
6.	13, 14 and 15 Jun.	Bangalore (Karnataka)	Strong	One person died and a boy injured under an uprooted tree.	
7.	14 Jun.	Kannur and Wayanad (Kerala)	Strong		i) Nearly 100 houses completely or partially damaged. ii) Damage to agriculture also reported.
8.	15 Jun.	Belgaum (Karnataka)	Strong	One person crushed to death under a big uprooted tree.	
9.	23 Jun.	Kanniyakumari (Tamil Nadu.)	Strong	2 fishermen died and one reported missing.	
10.	2 Jul.	Alappuzha (Kerala)	Strong	One fisherman died and 2 other injured.	
11.	10 Jul.	Kollam (Kerala)	Strong	One fisherman died	

<b>S.N.</b>	<b>Date / Period</b>	<b>Area affected</b>	<b>Intensity</b>	<b>Casualties</b>	<b>Extent of damage</b>
12.	11 Jul.	Ernakulam (Kerala)	Strong	One fisherman died and 9 other injured.	
13.	1 Aug.	Thiruvananthapuram (Kerala)	Strong	One fisherman died.	
14.	2 Aug.	Uttara Kannada (Karnataka)	Strong		i) Tinsheets of roof tops blown away. ii) Several trees and plants uprooted including arecanut and coconut trees.
15.	4 Aug.	Alappuzha, Kollam and Thiruvananthapuram (Kerala)	Strong	4 persons died, 25 injured and 5 fishermen reported missing.	A huge advertisement hoarding fallen.
16.	21 Aug.	Thiruvananthapuram (Kerala)	Strong	One fisherman died.	
17.	27 Aug.	Thiruvananthapuram (Kerala)	Strong	3 fishermen reported missing.	
18.	20 Sep.	Thiruvananthapuram (Kerala)	Strong	One fisherman died.	
19.	21 Sep.	Thiruvananthapuram (Kerala)	Strong	One fisherman died.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
20.	12 Nov.	Wayanad (Kerala)	Strong		Thousands of plantations damaged.

TABLE – VI : DUSTSTORM

CRITERIA

*Moderate : Wind speed between 39 to 74 kmph and horizontal visibility upto 500 metres*

*Severe : Wind speed  $\geq$  75 kmph and horizontal visibility upto 50 metres.*

1.	30 Apr.	Bahraich, Etah, Gonda, Hardoi, Lakhimpur Kheri and Sitapur (Uttar Pradesh)	Severe	38 persons died.	i) Heavy damage to crops including mango reported. ii) Several trees uprooted.
2.	12 May	Sawai Madhopur (Rajasthan)	Moderate	Many birds and cattleheads perished.	i) Hoardings and roofs blown away. ii) Electric and telephone poles uprooted.
3.	23 May	Ganganagar (Rajasthan)	Moderate		i) Many trees and hoardings uprooted. ii) Rail and road traffic disrupted.
4.	24 May	Lucknow (Uttar Pradesh)	Moderate		i) Trees and hoardings uprooted. ii) Road traffic disrupted.
5.	26 May	Alwar, Bikaner, Hanumanagarh, Jaipur, Karoli and Sawai Madhopur (Rajasthan)	Severe	2 persons died and another injured.	i) Many trees and electric poles uprooted. ii) Power lines cut off. iii) Tin sheds collapsed. iv) Advertisement hoardings fallen.



<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
6.	27 May	Bahraich, Barabanki, and Sitapur (Uttar Pradesh)	Severe	2 persons died due to tree collapse at Bahraich.	Heavy damage to mangoes reported.
7.	28 May	Azamgarh and Bagpat (Uttar Pradesh)	Severe	3 persons died and dozens injured due to house / tree collapse.	Widespread damage to property reported.
8.	8 Jun.	Lucknow (Uttar Pradesh)	Severe		Many trees and electric poles uprooted.
9.	14 Jun.	Sirohi (Rajasthan)	Severe	4 persons died and one injured.	
10.	15 Jun.	Banswara (Rajasthan)	Severe	5 children died.	

**TABLE – VII : LIGHTNING**

1.	21 Jan.	Baran (Rajasthan)		One person died.	
2.	25 Mar.	Hassan (Karnataka)		2 persons died and 6 seriously injured.	
3.	28 Mar.	Tinsukia (Assam)		One baby died at Digboi.	
4.	30 Mar.	Bangalore (Karnataka)		3 cattle perished.	
5.	2 Apr.	Kollam (Kerala)		One person died.	

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
6.	3 Apr.	Hassan (Karnataka)			Many electric goods burnt.
7.	4 Apr.	(a) Bagalkot and Belgaum (Karnataka)		i) 4 persons died in separate incidents. ii) A few live stock also perished.	
		(b) Kasaragode (Kerala)		One woman died.	
		(c) Nanded (Maharashtra)		One woman died.	
8.	5 Apr.	Idukki (Kerala)		2 persons died.	
9.	6 Apr.	Kottayam, Kozhikode, Malappuram and Thiruvananthapuram (Kerala)		5 persons died and many other injured.	
10.	12 Apr.	Kottayam and Pathanamthitta (Kerala)		3 persons died and one injured.	
11.	13 Apr.	Palakkad and Thiruvananthapuram (Kerala)		One person died.	
12.	17 Apr.	Thiruvananthapuram (Kerala)		2 persons died and 7 other injured.	
13.	19 Apr.	Malappuram (Kerala)		One person died and 5 other injured.	

<b>S.N.</b>	<b>Date / Period</b>	<b>Area affected</b>	<b>Intensity</b>	<b>Casualties</b>	<b>Extent of damage</b>
14.	20 Apr.	Kollam (Kerala)		One woman died and a boy injured at Pathanapuram.	
15.	21 Apr.	(a) Bangalore, Gulbarga, Kolar and Mysore (Karnataka)		i) 8 persons died and 10 injured in separate incidents. ii) Around a dozen live-stock lost.	
		(b) Wayanad (Kerala)		One woman died.	
16.	22 Apr.	(a) Etah (Uttar Pradesh)		3 farmers died.	
		(b) Hoshiarpur (Punjab)		One person died in Behrampur village.	Damage to crops reported.
17.	23 Apr.	(a) Hazaribagh (Jharkhand)		6 persons died and 2 injured in separate incidents of thunderbolt.	
		(b) Mandya (Karnataka)		2 persons died and one seriously injured.	
18.	25 Apr.	Thiruvananthapuram (Kerala)		One woman died at Varkala.	
19.	30 Apr.	Allahabad and Maharajganj (Uttar Pradesh)		2 persons died.	
20.	11 May	Nanded (Maharashtra)		One labour died.	

<b>S.N.</b>	<b>Date / Period</b>	<b>Area affected</b>	<b>Intensity</b>	<b>Casualties</b>	<b>Extent of damage</b>
21.	12 May	Jalgaon and Nashik (Maharashtra)		8 persons died and 13 other injured.	
22.	15 May	Latur, Nagpur, Nanded and Satara (Maharashtra)		10 persons died and 2 other injured in separate incidents.	
23.	19 May	Bardhaman, Hooghly and North 24 Parganas (West Bengal)		7 persons died and 4 other injured in separate incidents.	
24.	21 May	Medinipur (West Bengal)		One person died at Ghatal.	
25.	24 May	Medinipur and South 24 Parganas (West Bengal)		3 persons died and 2 injured in separate incidents.	
26.	25 May	Nellore (Andhra Pradesh)		5 persons died.	
27.	27 May	Ganganagar (Rajasthan)		One woman died.	
28.	30 May	Kolhapur (Maharashtra)		2 persons died and 3 injured.	
29.	1 Jun.	Davanagere (Karnataka)		i) One farmer injured. ii) 2 bullocks died.	
30.	2 Jun.	Kullu (Himachal Pradesh)		Nearly 300 sheep/goats perished.	
31.	3 Jun.	(a) Pune (Maharashtra)		One youth died.	

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
		(b) Bardhaman, Birbhum, Dakshin Dinajpur, Medinipur, and Nadia (West Bengal)		18 persons died and 8 other injured.	Indian Oil terminal at Panagarh caught fire.
32.	5 Jun.	Hassan and Tumkur (Karnataka)		4 persons died and 2 other injured in separate incidents.	
33.	6 Jun.	(a) Hingoli (Maharashtra)		One child died and another injured.	
		(b) Basti and Gonda (Uttar Pradesh)		25 persons died and 21 injured.	
34.	7 Jun.	Bhind and Dhar (Madhya Pradesh)		3 persons died and 6 other injured in separate incidents.	
35.	8 Jun.	Akola, Aurangabad, Beed, Hingoli, Jalna, Nanded, Parbhani and Thane (Maharashtra)		17 persons died and 7 other injured.	
36.	10 Jun.	(a) Allahabad (Uttar Pradesh)		4 children died and another injured in separate incidents.	
		(b) South 24 Parganas (West Bengal)		One person died at Patharpratima.	
37.	11 Jun.	Nagaon (Assam)		One person died and 2 seriously injured.	

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
38.	12 Jun.	Yavatmal (Maharashtra)		2 persons died.	
39.	13 Jun.	Chandrapur, Gondia, and Marathwada region (Maharashtra)		11 persons died and 22 other injured in separate incidents.	
40.	14 Jun.	Buldhana, Hingoli and Washim (Maharashtra)		i) 11 persons died and 13 injured. ii) 2 bullocks died in Buldhana district.	
41.	15 Jun.	(a) Yavatmal (Maharashtra)  (b) South 24 Parganas (West Bengal)		One person died.  One person died.	
42.	25 Jun.	Faridkot and Gurdaspur (Punjab)		2 persons died and 3 injured at Pathankot in Gurdaspur district.	Heavy losses reported in a cement factory at Faridkot.
43.	26 Jun.	Faridkot (Punjab)			Loss of Rs. 8 Lakh in a factory reported.
44.	28 Jun.	Nadia (West Bengal)		3 persons died and 3 other injured.	
45.	4 Jul.	Nandurbar (Maharashtra)		2 persons died and one injured in two separate incidents.	

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
46.	5 Jul.	(a) Basti, Deoria, Gorakhpur and Rai Bareilly (Uttar Pradesh)		i) 4 persons died, ii) In Basti, 6 cattleheads perished.	
		(b) Nagaon (Assam)		3 labourers died and 5 other seriously injured.	
47.	6 Jul.	Deoria (Uttar Pradesh)		2 women died.	
48.	11 Jul.	Thane (Maharashtra)		One farmer died.	
49.	21 Jul.	Thane (Maharashtra)		One farmer died and another seriously injured in Shahapur tehsil.	
50.	25 Jul.	Tikamgarh (Madhya Pradesh)		3 persons died.	
51.	26 Jul.	Nagpur (Maharashtra)		One person died.	
52.	30 Jul.	Raisen (Madhya Pradesh)		4 persons died.	
53.	2 Aug.	Ghazipur (Uttar Pradesh)		2 persons died.	
54.	4 Aug.	Chandrapur, Washim and Yavatmal (Maharashtra)		6 farm labourers died and 8 other injured.	
55.	5 Aug.	Raisen (Madhya Pradesh)		4 persons injured.	

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
56.	7 Aug.	(a) Morigaon (Assam)		One person died while working in a paddy field.	
		(b) Bundi and Dausa (Rajasthan)		2 persons died.	
57.	15 Aug.	Nalbari (Assam)		2 persons injured.	Damages to some dwelling houses reported.
58.	20 Aug.	Garhwa (Jharkhand)		6 persons died and 12 other injured.	
59.	21 Aug.	Sonitpur (Assam)		5 persons died in separate incidents while working in paddy field.	
60.	25 Aug.	Bardhaman and Birbhum (West Bengal)		5 persons died and one injured.	
61.	26 Aug.	Nagaon (Assam)		One person died and another injured while working in paddy field.	
62.	27 Aug.	Medinipur (West Bengal)		One person died at Sabang.	
63.	31 Aug.	Kolkata (West Bengal)		One person died and 2 other injured.	
64.	2 Sep.	Golaghat (Assam)			Electric circuits of inverter power line and other equipments damaged.



<b>S.N.</b>	<b>Date / Period</b>	<b>Area affected</b>	<b>Intensity</b>	<b>Casualties</b>	<b>Extent of damage</b>
65.	6 Sep.	Jalpaiguri (West Bengal)		3 persons died and 3 other injured.	
66.	9 Sep.	South 24 Parganas (West Bengal)		4 persons died and 2 children injured.	
67.	14 Sep.	(a) Murshidabad (West Bengal)		2 persons died and 2 other injured.	
		(b) Nagpur (Maharashtra)		One bull perished.	
68.	15 Sep.	Nagpur (Maharashtra)		i) 2 persons injured. ii) 7 goats perished.	
69.	19 Sep.	Medinipur and Murshidabad (West Bengal)		4 persons died.	
70.	24 Sep.	(a) Dhubri (Assam)		4 persons died and 6 other injured in separate incidents.	
		(b) Idukki (Kerala)		One person died.	
71.	25 Sep.	(a) Nagpur (Maharashtra)		One woman died.	
		(b) Dharwad (Karnataka)		One person died and 2 other injured while working in the field in Navaigunda tehsil.	

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
72.	26 Sep.	Kottayam and Kozhikode (Kerala)		2 persons died and 9 other injured.	
73.	28 Sep.	Vidarbha and Marathwada regions and Nashik district (Maharashtra)		31 persons died in separate incidents of thunderbolt.	
74.	29 Sep.	Gadchiroli, Nashik, Wardha, Washim and Yavatmal (Maharashtra)		18 persons died.	
75.	2 Oct.	Bidar and Gulbarga (Karnataka)		8 persons died and some injured.	The walls of a few houses cracked.
76.	14 Oct.	Coimbatore (Tamil Nadu)		2 children died and 16 other injured at Udumalpet.	
77.	17 Oct.	Coimbatore, Cuddalore, Kancheepuram, Karur, Perambalur, Thanjavur, Tiruchirappalli, and Villupuram (Tamil Nadu)		12 persons died.	
78.	18 Oct.	Kottayam and Thiruvananthapuram (Kerala)		Some people, including students, injured.	A school building damaged.
79.	19 Oct.	(a) Kancheepuram (Tamil Nadu)		2 persons died.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
		(b) Kollam and Malappuram (Kerala)		2 persons died.	
80.	25 Oct.	Alappuzha (Kerala)		One person died.	
81.	12 Nov.	Chennai (Tamil Nadu)		One person died.	
82.	13 Nov.	Kozhikode (Kerala)		One person died and 3 other injured.	

TABLE – VIII : THUNDERSTORM

**CRITERIA**

*Moderate : Loud peals of thunder with frequent lightning flashes, moderate to heavy rains and maximum wind speed 29 to 74 kmph.*

*Severe : Continuous thunder and lightning, heavy rains and maximum wind speed  $\geq$  75 kmph.*

1.	20 Mar.	Bankura (West Bengal)	Severe	One elephant died.	
2.	26 Mar.	Wayanad (Kerala)	Moderate		Thousands of plantains damaged.
3.	29 Mar.	Medinipur (West Bengal)	Moderate	One person died due to wall collapse.	

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
4.	31 Mar.	Bangalore and Mysore (Karnataka)	Moderate		<ul style="list-style-type: none"> <li>i) Roof tops of many houses collapsed.</li> <li>ii) Roadside trees/electric poles uprooted.</li> <li>iii) In Bangalore city, one autorickshaw got damaged.</li> </ul>
5.	4 Apr.	(a) Wayanad (Kerala)	Moderate		Thousands of plantains damaged in Kalpatta.
		(b) Bidar and Chikmagalur (Karnataka)	Moderate	One person died in Chikmagalur district.	Mango, onion, sunflower and vegetables damaged.
		(c) North 24 Parganas (West Bengal)	Moderate	One person died.	
6.	6 Apr.	West Bengal (Southern districts)	Severe	One person died.	Many houses damaged in Kolkata.
7.	18 Apr.	(a) Dhalai and North Tripura (Tripura)	Severe	6 persons died.	<ul style="list-style-type: none"> <li>i) Landslide reported.</li> <li>ii) Hundreds of dwellings damaged.</li> <li>iii) Damage to agriculture reported.</li> <li>iv) Rail traffic disrupted.</li> </ul>
		(b) Darjeeling and Murshidabad (West Bengal)	Severe	3 persons died and 2 injured.	<ul style="list-style-type: none"> <li>i) Many houses damaged.</li> <li>ii) Several trees uprooted.</li> </ul>
8.	20 Apr.	(a) Tripura	Severe	7 persons died in a landslide.	Landslide reported.
		(b) Mizoram (Some parts)	Severe	4 persons died.	Over 200 houses damaged.

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
9.	22 Apr.	(a) Farrukhabad and Rai Bareli (Uttar Pradesh)	Severe	2 persons died and several injured in separate incidents of wall/tree collapse.	Damage to property reported.
		(b) Bangalore (Karnataka)	Severe		i) A van reported damaged under a huge uprooted tree. ii) Many electric poles and hoardings uprooted.
		(c) Thiruvananthapuram (Kerala)	Moderate		i) Several houses damaged. ii) Many trees uprooted.
10.	23 Apr.	(a) Nadia (West Bengal)	Moderate	One person died and 6 other injured.	i) Many houses damaged, ii) Several trees uprooted.
		(b) Sitamarhi (Bihar)	Moderate	2 persons died.	
11.	24 Apr.	Bangalore (Karnataka)	Moderate	One woman died and 3 other injured under a huge uprooted tree.	Some vehicles damaged.
12.	25 Apr.	Osmanabad (Maharashtra)	Moderate		i) Roof tops of many houses blown away. ii) Trees uprooted at a few places.
13.	27 Apr.	Dharwad (Karnataka)	Moderate		Several trees/electric poles uprooted and around 10 transformers damaged in Hubli city.
14.	29 Apr.	Pune (Maharashtra)	Moderate	One person died and 7 other injured in separate incidents.	

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
15.	30 Apr.	West Champaran (Bihar)	Severe	8 persons died and more than 36 injured.	
16.	1 May	Agra (Uttar Pradesh)	Severe	5 persons died.	
17.	4 May	Pune (Maharashtra)	Moderate		In Indapur tehsil, i) Around 15 to 20 houses damaged. ii) Around 200 trees uprooted. iii) Heavy damage to stored onion reported and raw mangoes from many trees fallen down.
18.	9 May	Nashik (Maharashtra)	Severe		In Devlali tehsil, heavy losses to pomegranate, grapes and onion reported. In Sinnar tehsil too, heavy losses to onion reported.
19.	10 May	Jaigaon (Maharashtra)	Moderate	One person died and 5 other seriously injured when an old tree fell upon a jeep.	
20.	12 May	Dausa and Tonk (Rajasthan)	Moderate		i) Several tin-sheds, roof-tops and hoardings blown away. ii) Many trees/electric and telephone poles uprooted. iii) In Dausa, 28 under -construction shops razed to ground.
21.	16 May	Hassan (Karnataka)	Severe	4 children died.	
22.	21 May	South 24 Parganas (West Bengal)	Severe	3 persons died.	

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
23.	23 May	Chandigarh (UT) and Roop Nagar (Punjab)	Moderate	2 persons died in separate incidents.	Extensive damage to property reported.
24.	24 May	West Champaran (Bihar)	Severe	2 persons died.	Widespread damage reported.
25.	25 May	Bhatinda and Mansa (Punjab)	Moderate		i) Hundreds of trees uprooted. ii) Electric and telephone poles damaged.
26.	30 May	Bellary (Karnataka)	Moderate	9 persons injured in Siruguppa tehsil.	i) In Siruguppa tehsil, about 270 houses/huts damaged and roofs of many houses collapsed. ii) In Kudli and Hadagali tehsils, well grown paddy crops destroyed. iii) Some trees/electric poles either uprooted or damaged.
27.	31 May	Bangalore and Uttara Kannada (Karnataka)	Moderate	In Bangalore, one person washed away.	In Bangalore, i) Extensive damage to public/private property reported. ii) ITI factory compound collapsed. iii) Around 30 trees collapsed and some electric poles uprooted. and; iv) In Sirsi tehsil of Uttara Kannada district, damage to paddy fields reported.
28.	1 Jun.	Dharwad and Gadag (Karnataka)	Moderate	2 persons died in Gadag.	i) Roofs of many houses blown away. Bennehalla tank over flown. ii) 8 to 10 roads damaged. iii) Mud bunds of fields washed away. Seeds sown also washed away.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
29.	3 Jun.	Bangalore, Chikmagalur and Dakshina Kannada (Karnataka)	Severe	One person washed away.	<ul style="list-style-type: none"> <li>i) NH 17 breached at several places. Damage to other roads also reported.</li> <li>ii) Coffee and orange plantations washed away.</li> <li>iii) One drinking water tank breached.</li> <li>iv) In Mangalore tehsil of Dakshina Kannada district, 25 fishing boats tied and kept on the shore washed into the sea. 4 powered boats also lost. A few houses collapsed.</li> <li>v) In Bangalore district, several electric poles damaged due to uprooting of a huge tree.</li> </ul>
30.	4 Jun.	Basti and Gonda (Uttar Pradesh)	Severe	<ul style="list-style-type: none"> <li>i) 26 persons died and 6 other hospitalised.</li> <li>ii) No. of cattleheads lost.</li> </ul>	<ul style="list-style-type: none"> <li>i) Several houses flattened.</li> <li>ii) Many trees uprooted.</li> </ul>
31.	6 Jun.	(a) Ahmednagar, Latur, Nashik, Ratnagiri and Sangli (Maharashtra)	Severe	<ul style="list-style-type: none"> <li>i) 9 persons died and 2 seriously injured</li> <li>ii) 2 bullocks perished.</li> </ul>	
		(b) Ludhiana (Punjab)	Moderate	5 children died due to wall collapse.	
32.	7 Jun.	Jalgaon (Maharashtra)	Moderate	2 persons died due to roof collapse in Jamner tehsil.	
33.	14 Jun.	Nagpur (Maharashtra)	Moderate		<ul style="list-style-type: none"> <li>i) Many trees uprooted.</li> <li>ii) A house collapsed.</li> </ul>



<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
34.	17 Jun.	Lucknow (Uttar Pradesh)	Severe	3 persons washed away.	
35.	18 Jun.	Pali (Rajasthan)	Severe	2 persons died and 6 injured.	
36.	20 Jun.	Roop Nagar (Punjab)	Moderate	One person died at Mohali.	
37.	21 Jun.	(a) Chamba (Himachal Pradesh)	Severe	No. of livestock lost.	
		(b) Firozpur (Punjab)	Severe	One person died and another injured at Abohar.	In Abohar, crop in nearly 1000 acres damaged.
38.	22 Jun.	Kushinagar and Unnao (Uttar Pradesh)	Severe	In all 4 persons died.	
39.	7 Jul.	Nadia (West Bengal)	Moderate	One person died and another injured.	
40.	16 Jul.	Bankura (West Bengal)	Moderate	2 persons died.	
41.	19 Jul.	Medinipur (West Bengal)	Moderate	One person died.	
42.	23 Jul.	South 24 Parganas (West Bengal)	Moderate	One child died.	

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
43.	24 Jul.	Medinipur (West Bengal)	Moderate	2 persons died.	
44.	14 Sep.	Bangalore (Karnataka)	Severe	2 persons died and 5 injured in separate incidents of wall collapse/drowning.	<ul style="list-style-type: none"> <li>i) Nearly 150 houses and 100 huts collapsed.</li> <li>ii) Power lines snapped at several points.</li> <li>iii) RMC yard godowns inundated and hundreds of rice bags and other foodgrain drenched.</li> </ul>
45.	18 Sep.	Katihar (Bihar)	Severe	10 persons died.	
46.	5 Oct.	Barpeta (Assam)	Severe		<ul style="list-style-type: none"> <li>i) Some dwelling houses/schools destroyed.</li> <li>ii) Many trees/electric poles uprooted.</li> </ul>
47.	6 Oct.	North 24 Parganas (West Bengal)	Moderate	8 persons seriously injured.	<ul style="list-style-type: none"> <li>i) A few houses collapsed.</li> <li>ii) Many trees / electric and telephone poles uprooted.</li> </ul>
48.	2 Nov.	Wayanad (Kerala)	Severe		Thousands of plantains damaged.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
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TABLE – IX : HAILSTORM

CRITERIA

*Slight : Sparse, usually small size and often mixed with rain*

*Moderate : Fall abundant enough to whiten ground*

*Heavy : Includes at least a proportion of large stones*

1.	6 Jan.	Parts of Vidarbha region (Maharashtra)	Heavy		Standing rabi crop damaged.
2.	8 Jan.	Darrang (Assam)	Heavy		Standing rabi crops over vast areas of Mangaldoi badly affected.
3.	24 Jan.	(a) Bhandara, Chandrapur, Gondia, Nagpur, Wardha and Yavatmal (Maharashtra)	Heavy	i) Some school students injured in Gondia district. ii) Several birds and animals perished.	Orange, wheat, gram and tur badly damaged.
		(b) Barpeta (Assam)	Heavy	i) More than 50 people injured. ii) 2 cows and some birds perished.	Standing rabi crops in 10 villages badly damaged.
		(c) Raichur (Karnataka)	Heavy		In Raichur tehsil, standing crops like Sajja, jowar, paddy, sunflower and groundnut razed to the ground.

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
4.	28 Jan.	Akola, Bhandara, Buldhana, Chandrapur, Gadchiroli and Washim (Maharashtra)	Heavy		Extensive damage to agriculture reported.
5.	31 Jan.	Hoshiarpur (Punjab)	Heavy		Crops as well as kutcha houses damaged.
6.	10 Mar.	Bardhaman (West Bengal)	Moderate	More than 150 cattle died.	Hundreds of kutcha houses destroyed.
7.	25 Mar.	Mandya (Karnataka)	Moderate		In Srirangapatna and neighbouring villages, damages to vegetables reported.
8.	31 Mar.	Hassan (Karnataka)	Heavy		i) More than 200 houses damaged. ii) Many arecanut trees and electric poles uprooted. iii) Banana, tomato, cabbage, chillies and flower plants razed to ground. Damage to mango yield and vegetables also reported.
9.	4 Apr.	Uttara Kannada (Karnataka)	Moderate		i) Loss to vegetables reported. ii) Some trees uprooted.
10.	12 Apr.	Bongaigaon and Nagaon (Assam)	Heavy		i) Bodo and jute crop as well as summer vegetables badly damaged. ii) Many trees uprooted. iii) Hundreds of dwelling houses damaged.

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
11.	13 Apr.	Wayanad (Kerala)	Moderate		Damage to agriculture reported.
12.	14 Apr.	Cachar (Assam)	Heavy	i) 20 persons injured. ii) More than 50 animals perished.	About 250 families of 9 villages rendered homeless.
13.	17 Apr.	Cachar, Hailakandi and Karimganj (Assam)	Heavy	In Cachar district, 2 persons died and 3 seriously injured due to landslide.	i) Landslide reported In Cachar district. ii) Nearly 500 houses either partially or completely damaged. iii) Rail communication between Barak valley and Tripura, Manipur, Mizoram completely disrupted.
14.	18 Apr.	Goalpara (Assam)	Moderate		i) Damages to crops reported. ii) Many trees uprooted.
15.	22 Apr.	(a) Bangalore, Dharwad and Gulbarga (Karnataka)	Heavy		i) Many trees and electric poles uprooted and big branches fallen damaging many vehicles. ii) In Bangalore city, a big shamiana collapsed stranding nearly 200 visitors. iii) Some roof-tops also blown away and glass window panes broken. iv) Damage to crops also reported,
		(b) Hyderabad (Andhra Pradesh)	Moderate		Many electric poles in and around Kukatpally collapsed.
16.	23 Apr.	Davanagere (Karnataka)	Moderate		In Harihar tehsil, i) Standing paddy crop damaged. ii) Many houses damaged.

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
17.	24 Apr.	Adilabad, Chittoor, Guntur, Karimnagar, Medak and Ranga Reddy (Andhra Pradesh)	Heavy	8 persons died.	Damage to crops reported.
18.	28 Apr.	Kangra & Upper reaches (Himachal Pradesh)	Heavy		<ul style="list-style-type: none"> <li>i) Standing wheat crop damaged.</li> <li>ii) Many trees uprooted.</li> <li>iii) About 36 houses damaged in Baijnath (dist. Kangra).</li> </ul>
19.	1 May	Sibsagar (Assam)	Moderate		<ul style="list-style-type: none"> <li>i) Roofs of many dwelling houses blown away.</li> <li>ii) Some trees uprooted.</li> <li>iii) Telephone/electric poles uprooted.</li> <li>iv) Damages to agricultural products reported.</li> </ul>
20.	21 May	Bihar (Many parts)	Heavy	35 persons died.	<ul style="list-style-type: none"> <li>i) Nearly 1000 kutcha houses destroyed.</li> <li>ii) Overhead telephone and high tension power cables with poles damaged.</li> <li>iii) Mango, lichi and many vegetables damaged.</li> </ul>
21.	25 May	Kangra (Himachal Pradesh)	Moderate		<p>At Palampur,</p> <ul style="list-style-type: none"> <li>i) Mango, lichi, plum etc. badly damaged.</li> <li>ii) Window panes of some buildings broken.</li> <li>iii) Hailstones weighing about 100 gm. reported.</li> </ul>
22.	31 May	Pune (Maharashtra)	Heavy	6 animals injured	<p>In Baramati and Junnar tehsils,</p> <ul style="list-style-type: none"> <li>i) Roof tops of many houses blown away.</li> <li>ii) Some trees/electric poles uprooted.</li> <li>iii) Banana, onion, tomato, fodder and other vegetables damaged.</li> </ul>

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
23.	1 Jun.	(a) Ambala (Haryana)	Moderate		Damage to Airtel tower/Houses/Telephone poles reported.
		(b) Chitradurga and Koppal (Karnataka)	Moderate		Extensive damage to crop reported.
24.	14 Jun.	Hamirpur (Himachal Pradesh)	Moderate		Fruit crops including mango, guava etc. damaged.

**TABLE - X : DROUGHT**

**CRITERIA**

Moderate : When seasonal (SW monsoon) rainfall departure is between -26% and -50%.

Severe : When seasonal (SW monsoon) rainfall departure is less than -50%

<i>S.N.</i>	<i>Area affected (Subdivision)</i>	<i>Seasonal rainfall departure (%)</i>	<i>Intensity</i>
1.	Himachal Pradesh	-46	Moderate
2.	Punjab	-45	Moderate
3.	West Rajasthan	-39	Moderate
4.	West Uttar Pradesh	-35	Moderate
5.	Vidarbha	-30	Moderate
6.	Telangana	-26	Moderate

S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
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TABLE – XI : FLOODS AND HEAVY RAINS

STATES

ANDHRA PRADESH

1.	1 - 4 Aug.	Khammam, Krishna, East Godavari, West Godavari and Srikakulam	Heavy rains	10 persons died.	Paddy crop in thousands of hectares damaged.
2.	7 Nov.	Nellore	Heavy rains	4 persons died	Paddy crop in thousands of hectares damaged.

ARUNACHAL PRADESH

1.	22 Jun.	West Kameng	Heavy rains	i) 5 persons died. ii) More than 500 livestock lost.	Landslide reported.
2.	10-22 Jul.	6 districts	Severe flood	11 persons died.	i) 1.5 lakh people affected. ii) Many private / public buildings damaged. iii) Standing crop in hundreds of hectares washed away.
*	Whole year	0.164 m.ha.		i) 15 human lives lost. ii) 5579 cattle lost.	i) 0.305 million population affected. ii) Crops in 0.010 m.ha. damaged.



S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
<b>ASSAM</b>					
1.	13 Apr.	Jorhat	Flash flood		<ul style="list-style-type: none"> <li>i) Embankment of Bhogdoi washed away inundating vast acreage of agricultural land.</li> <li>ii) Ahu, bodo and rabi crops destroyed.</li> </ul>
2.	20 Apr.	Cachar	Flash flood (Barak, Dhaleswari and Kushiara)	5 persons died.	<ul style="list-style-type: none"> <li>i) Landslide reported.</li> <li>ii) Manipur-Silchar road blocked for traffic.</li> </ul>
3.	13 & 14 May	North Cachar Hills	Heavy rains		<ul style="list-style-type: none"> <li>i) Heavy landslides at several locations reported.</li> <li>ii) Some school buildings/dwelling houses completely damaged at Gilgul near Haflong</li> <li>iii) Haflong, the district HQrs completely cut off from other parts of the State.</li> </ul>
4.	15-17 May	Barpeta, Dhemaji, Dibrugarh, Lakhimpur, Nalbari and Sonitpur	Flash flood		<ul style="list-style-type: none"> <li>i) Due to breaches of embankment in Balam and Brahmanjan river, many villages under Gohpur subdivision inundated.</li> <li>ii) NH52 submerged at Brahmanjan disrupting vehicular traffic. Road communication also disrupted at several places.</li> <li>iii) In Dibrugarh city, several dwelling houses submerged.</li> <li>iv) Damage to bodo, paddy and rabi crops reported.</li> </ul>
5.	19 May	Kamrup	Heavy rains	2 persons died in a landslide in Guwahati city.	Landslide reported.

S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
6.	22 May	Nalbari	Flash flood		<ul style="list-style-type: none"> <li>i) Extensive damage to paddy crop reported.</li> <li>ii) Hundreds of families affected.</li> <li>iii) Damage to roads also reported.</li> </ul>
7.	28 May	Goalpara	Flash flood (Brahmaputra)		<ul style="list-style-type: none"> <li>i) Many roads submerged.</li> <li>ii) Hundreds of acres of paddy crop damaged.</li> </ul>
8.	21 Jun. to 7 Aug.	Entire state	Severe flood (Brahmaputra and its tributar- ies)	<ul style="list-style-type: none"> <li>i) 248 persons died.</li> <li>ii) 279 animals including 13 rhinos, one elephant, 150 deer and 80 wild pigs from Kaziranga and Orang National Parks, lost their lives.</li> <li>iii) About 4000 cattle and 5525 poultry washed away.</li> </ul>	<ul style="list-style-type: none"> <li>i) 1,22,97,568 people affected.</li> <li>ii) Standing crop in more than 12 lakh hectares damaged.</li> <li>iii) 5,22,820 houses fully / partially damaged.</li> <li>iv) Roads including NH 31,37, 44, 53 and 154 submerged at many points disrupting road links between upper and lower Assam.</li> <li>v) Rail track between Guwahati and Lumding severely damaged at different stretches from 19<sup>th</sup> July.</li> <li>vi) Kaziranga and Orang National Parks submerged.</li> <li>vii) Barpeta, Karimganj and Morigaon districts worst affected.</li> </ul>
9.	9 & 10 Sep.	Barpeta and Bongaigaon	Flash flood (Brahmaputra and its tributar- ies)	3 persons died.	2 bridges washed away.
10.	7-25 Oct.	Entire State	Severe flood (Brahmaputra and its tributar- ies)	<ul style="list-style-type: none"> <li>i) Nearly 200 persons died.</li> <li>ii) 2256 cattle lost.</li> </ul>	<ul style="list-style-type: none"> <li>i) A few incidents of landslide reported in Guwahati city during 7 &amp; 8 Oct.</li> <li>ii) A bridge washed away, NH-37 submerged at many points. Road communication between Lower and Upper Assam cut off.</li> <li>iii) Crops in more than 10,000 hectares damaged.</li> </ul>

S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
*	Whole year	2.851 m.ha.		251 human lives lost.	i) 12.298 million population affected. ii) 5,89,064 houses damaged.
<b>BIHAR</b>					
1.	22 Jun.	Many parts	Flash flood	30 persons died.	i) Many bridges damaged. ii) Massive loss to agriculture reported.
2.	Jul.	Entire State	Severe flood (Adhwara, Bagmati, Burhi Gandak, Gan- dak, Ganga, Ghaghra, Kamla Balan, Kosi, Kreh, Mahananda, Punpun and Sone)	i) 450 persons died. ii) 743 cattle perished.	Due to heavy rainfall in catchments of upstream of the rivers; i) Embankments of many rivers breached. ii) Crops in 44.71 lakh hectares affected. iii) 3,23,334 houses damaged. iv) Extensive damage to public as well as private property reported. v) Road and rail communication disrupted. vi) Darbhanga and Sitamarhi districts worst affected.
*	Whole year	4.986 m.ha.		i) 800 human lives lost. ii) 2673 cattle lost.	i) 21.251 million population affected. ii) 8,97,427 houses damaged. iii) Crops in 1.395 m.ha. damaged.

S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
<b>GOA</b>					
1.	4 Aug.	Entire State	Heavy rains	One woman died and 8 other injured in separate incidents of house collapse.	Around 200 trees uprooted.
*	<i>Whole year</i>			<i>One human live lost.</i>	<i>52 houses damaged.</i>
<b>GUJARAT</b>					
1.	Aug. (1 <sup>st</sup> and 2 <sup>nd</sup> week)	Entire State	Heavy rains	i) 184 persons died. ii) 637 livestock perished.	i) Valsad district worst affected. ii) Road/rail traffic disrupted. iii) 30,000 houses damaged.
*	<i>Whole year</i>			<i>165 human lives lost.</i>	
<b>HARYANA</b>					
1.	3 Aug.	Ambala	Heavy rains	2 persons died.	
2.	8 Aug.	Panchkula	Heavy rains	10 persons injured in an accident caused due to poor visibility.	

S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
		Entire State		i) Total 20 persons died. ii) Total 766 cattle lost.	Total 5000 houses damaged.
<b>HIMACHAL PRADESH</b>					
1.	5 & 6 Jun.	Chamba	Heavy rains (Cloud burst)	Large number of livestock lost.	i) Several dwelling houses damaged. ii) 90% of apple crop damaged at Bharmaur.
2.	7 & 8 Aug.	Kangra and Kullu	Heavy rains (Cloud burst)	40 labourers trapped in a tunnel of Parbati hydel power project due to land- slide near Barsani.	i) 7 bridges and some roads washed away. ii) Heavy loss to property reported.
3.	12 & 13 Aug.	Kullu	Heavy rains (Cloud burst)	2 persons died and 10 other injured in a landslide.	Landslide reported.
4.	16 Aug.	Kinnaur	Heavy rains (Cloud burst)		Balli bridge washed away.
5.	17 Aug.	Hamirpur	Heavy rains	One person died due to landslide.	Landslide reported.
*	Whole year			i) 8 human lives lost. ii) 103 cattle lost.	i) 0.022 million population affected. ii) 525 houses damaged.

S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
<b>KARNATAKA</b>					
1.	6 & 7 Jun.	Dakshina Kannada	Heavy rains	4 persons died.	
2.	11-16 Jun.	Bangalore, Belgaum, Chikmagalur, Dakshina Kannada, Hassan and Kodagu	Heavy rains	3 persons died, another injured and 2 missing in separate incidents of drowning / tree collapse.	<ul style="list-style-type: none"> <li>i) Many trees including coconut and arecanut either uprooted or broken.</li> <li>ii) Many electric poles also uprooted,</li> <li>iii) A few houses collapsed and some partially damaged.</li> <li>iv) A car and an auto rickshaw damaged under an uprooted tree.</li> <li>v) Green chillies and vegetables badly damaged.</li> <li>vi) A small bridge collapsed.</li> <li>vii) A chimney of a brick factory collapsed.</li> </ul>
3.	8-14 Jul.	Bangalore, Bangalore Rural and Gadag	Heavy rains	<ul style="list-style-type: none"> <li>i) 15 persons died and 14 other injured in different incidents of house collapse/ drowning / electrocution.</li> <li>ii) Some fowls perished.</li> </ul>	<ul style="list-style-type: none"> <li>i) Many trees uprooted.</li> <li>ii) Large number of houses / huts collapsed.</li> <li>iii) Cable lines snapped at some places.</li> <li>iv) Some vehicles damaged.</li> <li>v) Standing crop damaged.</li> <li>vi) Canals breached at some points.</li> <li>vii) Some portion of roads washed away affecting road transport.</li> </ul>
4.	2-8 Aug.	Belgaum, Bellary, Chikmagalur, Dakshina Kannada, Dharwad, Kodagu, Shimoga, Udupi and Uttara Kannada	Heavy rains	6 persons died, 5 injured and one reported missing in separate incidents of house collapse / drowning / electrocution.	<ul style="list-style-type: none"> <li>i) Many trees including that of arecanut and coconut uprooted. Electric poles also fell down.</li> <li>ii) Thungabhadra high level canal breached. Standing crops in 500 acres washed away.</li> <li>iii) Many houses damaged/ collapsed.</li> <li>iv) Several roads also reported damaged.</li> </ul>

S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
5.	14 Sep.	Mandya and Mysore	Heavy rains	One person died and 4 other injured.	Bhudanur tank breached and heavy loss to crops reported.
6.	20 Sep.	Belgaum	Heavy rains	3 members of a family died due to roof collapse in Khanapur tehsil.	
7.	1 Oct.	Bangalore	Heavy rains		A vehicle got damaged under an uprooted tree.
8.	19 & 20 Oct.	Bangalore	Heavy rains	3 persons died and 3 other injured.	Damage to public / private property reported.
<b>KERALA</b>					
1.	4-18 Jun.	Idukki, Kannur, Kollam, Kottayam, Kozhikode, Malappuram, Palakkad, Thiruvananthapuram, and Thrissur	Heavy rains	25 persons died, 3 injured and 2 reported missing in separate incidents of landslide/ drowning.	i) Landslide reported. ii) Wayanad mountain pass blocked. iii) Widespread damage to agriculture reported. iv) Many houses including a school building collapsed and many other damaged.
2.	4 Jul.	Kannur	Heavy rains		i) Landslide reported. ii) A few houses damaged. iii) 50 acres of agriculture damaged. iv) 5 bridges collapsed and a few roads damaged.
3.	7 & 9 Jul.	Thiruvananthapuram and Wayanad	Heavy rains	One person drowned in Thiruvananthapuram district.	i) Widespread damage to agriculture reported. ii) A few roads damaged.

S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
4.	19 Jul.	Thiruvananthapuram	Heavy rains		50 houses completely and 500 partially damaged.
5.	3-8 Aug.	Idukki, Kannur, Kasaragode, Kollam, Kozhikode, Malappuram, Palakkad and Wayanad	Heavy rains	31 persons died, 29 injured and 5 reported missing .	i) More than 2000 houses damaged/ destroyed. ii) Roads also damaged. iii) Damage to crops also reported. iv) Checkdam at Pothumattom in Idukki district, collapsed.
6.	4 oct.	Alappuzha, Ernakulam and Thrissur	Heavy rains	2 persons died	i) 64 houses partially damaged. ii) Thousands of acres of "Karippadom" submerged. Rice fields also submerged.
		Entire State		Total 139 persons died.	Total 15,788 houses damaged.
<b>MADHYA PRADESH</b>					
1.	3 Aug.	Jhabua	Heavy rains		A bridge damaged disrupting road communication.
2.	5 Aug.	Khandwa	Heavy rains	2 girls drowned.	
<b>MAHARASHTRA</b>					
1.	18 Jun.	Mumbai	Heavy rains	One person died and 10 other injured in separate incidents of house collapse.	i) A few houses collapsed. ii) More than 200 trees uprooted.
2.	3 Jul.	Akola	Heavy rains	2 women washed away.	



S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
3.	26 Jul. – 5 Aug.	Mumbai, Pune and Thane	Heavy rains	33 persons died and more than 50 injured in separate incidents of landslide / house collapse / drowning	<ul style="list-style-type: none"> <li>i) Landslide reported.</li> <li>ii) Low lying areas submerged.</li> <li>iii) Most of the roads washed away at many points.</li> <li>iv) Rail/Road communication affected.</li> <li>v) Trees uprooted in some areas.</li> <li>vi) Many houses damaged.</li> <li>vii) Most of the paddy fields in Mulshi and Paud tehsils of Pune district damaged.</li> </ul>
4.	11 & 12 Aug.	Mumbai, Pune and Satara	Heavy rains	3 persons died and one injured due to landslide in Mumbai	<ul style="list-style-type: none"> <li>i) Landslide reported.</li> <li>ii) Loss of agriculture and property reported in many villages of Patan tehsil in Satara district, along the banks of Koyna river.</li> <li>iii) 400 – year old construction of archeological importance razed to ground at Shivneri Fort in Pune district.</li> </ul>
5.	28 & 29 Sep.	Marathwada region	Heavy rains	14 persons died	
		Entire State		<ul style="list-style-type: none"> <li>i) 283 persons died.</li> <li>ii) Total 552 cattle lost</li> </ul>	Total 4468 houses damaged.
<b>MEGHALAYA</b>					
1.	14 Jul.	West Garo Hills	Flash flood (Noa Dihing, Digaru and Darrang)		<ul style="list-style-type: none"> <li>i) Landslide reported.</li> <li>ii) Thousands of people from 45 villages affected.</li> <li>iii) Large no. of houses badly damaged.</li> </ul>

S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
2.	8-10 Oct.	East Khasi Hills and West Garo Hills  Entire State	Flash flood	9 persons died.  i) Total 13 persons died. ii) Total 4,913 cattle lost.	i) Landslide reported. ii) Damage to public/private property reported.  Total 2,604 houses damaged.
<b>MIZORAM</b>					
1.	22 Jun.	Entire State	Heavy rains	Total 6 persons died.	i) Landslide reported. ii) 2 houses damaged.
<b>NAGALAND</b>					
1.	17 & 22 Jul.	Some parts	Heavy rains		i) Landslide reported. ii) Nearly 100 houses completely destroyed. iii) A huge area of cultivated paddy field affected. iv) Roads including NH 39 damaged at many places. v) A large portion of forests also affected.
<b>PUNJAB</b>					
1.	3 - 5 Aug.	Bhakhra-Nangal area and Patiala.  Entire State	Heavy rains	i) 20 persons reported drowned / washed away. ii) No. of cattleheads perished. Total 482 cattle lost.	Breaches at 4 places reported in Bhakhra main canal.  Total 12,438 houses damaged.

S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
<b>RAJASTHAN</b>					
1.	4 Jul.	Jaipur	Heavy rains	One person died due to wall collapse.	
2.	11 & 12 Aug.	Bhilwara and Jaipur	Heavy rains	6 persons died.	
3.	16 Aug.	Baran, Bundi, Jhalawar and Kota	Heavy rains	6 persons died.	Several houses collapsed in Baran district.
4.	22 Aug.	Kota	Heavy rains	3 persons drowned.	
<b>TAMIL NADU</b>					
1.	20 Sep.	Chennai	Heavy rains		At many places, trees uprooted.
2.	30 Oct.	Thanjavur, Thiruvarur and Villupuram	Heavy rains	5 persons died.	Samba crop in thousands of hectares inundated in Thanjavur and Thiruvarur districts.
3.	5 Nov.	Thiruvarur	Heavy rains		Samba crop submerged.
4.	9 Nov.	Chennai	Heavy rains	2 persons died due to house collapse.	
5.	23 Nov.	Nagapattinam	Heavy rains		Standing Samba crop submerged.

S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
<b>TRIPURA</b>					
1.	17-25 Jun.	Dhalai, South Tripura and West Tripura	Severe flood (Bijoy and Khowai)	4 persons died.	i) In South Tripura district, nearly 75,000 people displaced. ii) In Dhalai district, about one lakh people forced to leave their homes.
<b>UTTARANCHAL</b>					
1.	29 May	Bageshwar	Flash Flood (Cloud burst)	3 labours swept away near Lohar Khet	
2.	1 Jun.	Almora	Heavy rains (Cloud burst)	Several cattleheads washed away	Potato crop in 3,000 heactares damaged.
3.	6 Jul.	Chamoli	Heavy rains (Cloud burst)	31 pilgrims died and 28 other injured when 3 vehicles carrying them swamped into the Alaknanda river due to massive landslide triggered by a cloud burst.	i) Landslide reported. ii) 3 vehicles washed away. iii) More than 5000 pilgrims stranded as severe damage to road reported near Lambagar. iv) Bad weather hampered rescue and relief work.
4.	28 Jul.	Tehri Garhwal and Uttarkashi	Heavy rains	6 persons buried alive in a landslide.	Landslide reported.
5.	26 Aug.	Udhamsingh Nagar	Flash flood	8 persons lost their lives.	i) Breaches at zero point of Nanak Sagar dam caused heavy destruction. ii) Chikadghat bridge washed away.

S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
<b>UTTAR PRADESH</b>					
1.	8 & 9 Jul.	Ambedkarnagar, Kanpur and Rai Bareli	Heavy rains	8 persons died due to house collapse.	
2.	19 & 21 Aug.	Bahraich, Barabanki and Gonda	Heavy rains		85 houses damaged.
3.	21-23 Sep.	East Uttar Pradesh	Heavy rains (Cloud burst)	84 persons died.	i) Thousands of acres of crop inundated. ii) Hundreds of houses flattened.
<b>WEST BENGAL</b>					
1.	Jul. (2 <sup>nd</sup> week)	Northern parts	Moderate flood	5 persons died.	
2.	16 Aug.	Medinipur	Flash flood	One person reported missing at Ghatal.	
3.	Sep. (2 <sup>nd</sup> & 3 <sup>rd</sup> week)	Howrah, Jalpaiguri, Kolkata, Malda, Murshidabad, Nadia and North 24 Parganas	Heavy rains	17 persons died and 4 other injured.	i) 2700 houses damaged. ii) Nearly 500 acres of paddy field inundated iii) Railway line damaged
4.	1-19 Oct.	Entire State	Severe flood	18 persons died.	25,000 people marooned.
*	Whole year			i) 5 human lives lost. ii) 34 cattle lost.	i) 0.184 million population affected. ii) Crops in 0.001 m.ha. damaged. iii) 18,12,000 houses damaged.

S.N.	Date/ Period	Area affected	Intensity (Rivers)	Casualties	Extent of damage
<b>UNION TERRITORIES (UT)</b>					
<b>CHANDIGARH</b>					
1.	3 Aug.	Entire UT	Heavy rains	3 persons died.	
2.	17 Aug.	Entire UT	Heavy rains		Many houses damaged.

\* **Input from Central Water Commission and Ministry of Agriculture**

S. N.	Date/ Period	Area affected	Intensity	Casualties	Extent of damage
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TABLE – XII : CYCLONIC STORM

During the year, three severe cyclonic storms and one very severe cyclonic storm formed over the Arabian sea and the Bay of Bengal respectively. None of these systems crossed the Indian coastline. While the very severe cyclonic storm over Bay of Bengal crossed Myanmar coast, all the systems developing over the Arabian sea dissipated over the sea itself. However, one of the above mentioned storms which formed over the southeast Arabian Sea near north Kerala coast during pre-monsoon season caused damage in Kerala and Lakshadweep during its formative stage. The details of the same are given below :

ARABIAN SEA  
CYCLONE

1.	5-10 May	<p><b>Formation</b> Near Lat. 11.5°N / Long. 73.5°E in the Forenoon of 5<sup>th</sup> May</p> <p><b>Landfall</b> No landfall.</p> <p><b>Dissipation</b> Weakened into a Low Pressure Area (LPA) over sea areas off Gujarat coast on 10<sup>th</sup> evening.</p>	Severe Cyclonic Storm	9 persons died and 17 reported missing in Kerala.	<ul style="list-style-type: none"> <li>i) 35 boats and some small mechanized sailing cargo ships lost.</li> <li>ii) Communication between mainland and island cutoff.</li> <li>iii) Several houses in island damaged due to wind, falling of trees, sea waves and flood.</li> <li>iv) Sea erosion reported over Kerala.</li> <li>v) Total loss worth Rs. 30 Crores reported.</li> </ul>
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