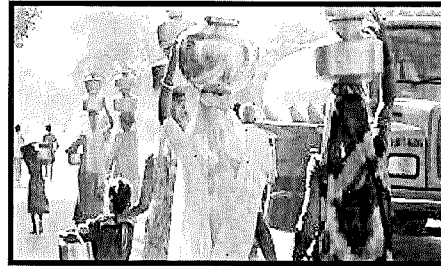
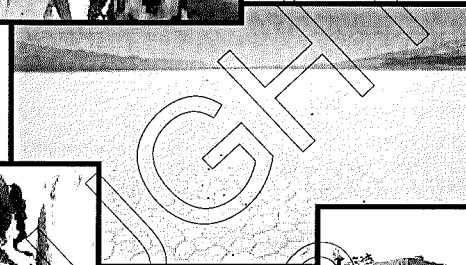


DISASTROUS WEATHER EVENTS.



2002



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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

DISASTROUS WEATHER EVENTS 2002

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DISASTROUS WEATHER EVENTS OF 2002

The most striking disastrous weather events of 2002 were the following :

- (i) Severe heat wave conditions prevailed over different parts of the country during April to July. Heat wave was more severe in Andhra Pradesh, Rajasthan, West Bengal and Orissa. These took a toll of more than 800 human lives out of which approximately 600 deaths were reported from Andhra Pradesh alone.
- (ii) Based on seasonal (SW monsoon) rainfall departure, 12 out of 36 subdivisions of the country came under the grip of moderate to severe drought. This year was the first all India drought year after 1987. This year was also characterized by record deficit rainfall in the month of July (-51%).

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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<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
TABLE – I : SNOWFALL					
CRITERIA					
<i>Moderate : 7.6 to 34.9 cm in 24 hrs</i>					
<i>Heavy : ≥ 35.0 cm in 24 hrs</i>					
1.	7 Feb.	Kashmir Valley	Heavy		i) Roads and electric poles covered with thick snow affecting road traffic, disrupting power supply. ii) Communication with other parts of the country affected.
2.	11 Feb.	Kinnaur	Heavy	One person died.	
3.	2 Mar.	Himachal Pradesh	Heavy		Road traffic, telecommunication and power supply affected especially in higher reaches of the state.
4.	7 Sep.	Chamba, Kinnaur and Lahaul and Spiti	Moderate	4 persons died.	
5.	19 Dec.	Jammu & Kashmir and Himachal Pradesh	Heavy		i) Jammu-Kashmir National Highway closed down for traffic. ii) Temperatures lowered from 0 to –20°C in different areas.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
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TABLE – II : COLD WAVE

CRITERIA

(A) Where; Normal minimum temperature is 10°C or more.
Moderate cold wave : Night temperature 5°C to 6°C below normal.
Severe cold wave : Night temperature 7°C or more below normal.

(B) Where; Normal minimum temperature is less than 10°C.
Cold wave : Night temperature 3°C to 4°C below normal.
Severe cold wave : Night temperature 5°C or more below normal.

1.	1-3 Jan.	(a) Gaya, Patna and Vaishali	Severe cold wave (Both A and B as appropriate)	28 persons, including 13 children, died.
		(b) Uttar Pradesh (Many parts)	Severe cold wave (B)	31 persons died in different parts.
2.	3 Jan.	(a) Hingoli and Nanded	Severe cold wave (A)	2 persons died.
		(b) South 24 Parganas	Severe cold wave (A)	2 persons died in Barasat.
		(c) Dausa	Severe cold wave (A)	One person died.
3.	10 Jan.	Kapurthala	Severe cold wave (B)	4 persons died in a road accident at Phagwara due to dense fog.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
4.	15 & 16 Jan.	Bankura	Moderate cold wave (A)	Due to dense fog, 2 buses col- lided (near Burjora) and 30 pas- sengers injured.	Flights suspended.
5.	27-29 Jan.	Darjeeling	Severe cold wave (B)		Dense fog caused poor visibility, vehicular traffic disrupted.
6.	8-10 Feb.	Himachal Pradesh	Severe cold wave (B)	One person died in Kinnaur dis- trict.	Most of the water reservoirs frozen, day-to-day life disrupted.
7.	10-16 Feb.	Jaipur, Kota and Nagaur	Severe cold wave (Both A and B as ap- propriate)	i) 3 persons died. ii) More than 100 cows per- ished.	
8.	19-29 Dec.	Bhojpur, Madhubani, Patna, Saharsa, Samastipur and Sa- ran	Severe Cold wave (A)	18 persons died.	
9.	28 & 29 Dec.	Delhi, Haryana, Punjab and Uttar Pradesh	Severe cold wave (B)	17 persons died in Uttar Pradesh.	Railway and air services came to a standstill as Delhi city and entire Ganga valley was covered under thick fog.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
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TABLE - III : HEAT WAVE

CRITERIA

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

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

1.	10 Apr.	Balasore	Heat wave (A)	One person died.
2.	Apr. (3 rd and 4 th week)	Bhadrak, Cuttack, Jajpur, Jharsuguda and Puri	Severe heat wave (Both A and B as appropriate)	8 persons died.
3.	21 Apr.	Tonk	Severe heat wave (A)	One person died in Nurpur.
4.	1-9 May	Ahmednagar, Chandrapur and Nagpur	Severe heat wave (Both A and B as appropriate)	i) 7 persons died. ii) 60 grey herons perished in Shrigonda.
5.	7 & 8 May	Ajmer, Bundi, Jaipur and Jhalawar	Severe heat wave (Both A and B as appropriate)	8 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>
6.	9 May	Sangrur	Severe heat wave (Both A and B as appropriate)	2 children in a family died in Maier Kotla.	
7.	9 & 10 May	Bolangir, Cuttack and Dhenkanal	Severe heat wave (Both A and B as appropriate)	3 persons died.	
8.	9-15 May	Andhra Pradesh (Coastal Andhra Pradesh and North Telangana regions)	Severe heat wave (Both A and B as appropriate)	600 persons died.	
9.	10 May	Saurashtra region (Gujarat)	Severe heat wave (Both A and B as appropriate)	3 persons died in Amreli.	
10.	12 & 13 May	Bathinda	Severe heat wave (B)	3 persons died.	Damage to cotton crop reported.
11.	12-14 May	Cuttack, Ganjam and Sundargarh	Severe heat wave (Both A and B as appropriate)	4 persons died.	
12.	12-24 May	Ajmer, Alwar, Baran, Bhilwara, Bundi, Chittorgarh, Churu, Dausa, Jaipur, Jaisalmer, Jhalawar, Jodhpur, Karoli, Kota, Sawai Madhopur, Tonk and Udaipur	Severe heat wave (Both A and B as appropriate)	65 persons died.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
13.	16-18 May	(a) Amritsar, Jalandhar and Roopnagar	Severe heat wave (Both A and B as appropriate)	10 persons died.	
		(b) Rohtak and Sirsa	Severe heat wave (B)	7 persons died.	
		(c) Chandigarh	Severe heat wave (A)	One person died.	
14.	17 May	Nagpur	Severe heat wave (B)	5 persons died in Nagpur city.	
15.	20-22 May	Bardhaman, Dakshin Dinajpur, Hooghly, Howrah, Kolkata, Nadia and North & South 24 Parganas	Severe heat wave (A)	43 persons died.	
16.	21 May	Jhansi, Kanpur and Mainpuri	Severe heat wave (B)	13 persons died.	
17.	26 May	Cuttack	Severe heat wave (A)	6 deer in Bhitarkanika National Park at Kendrapara died and many animals fell sick.	
18.	6 Jun.	Baran	Severe heat wave (B)	One person died.	
19.	8 Jun.	Dholpur	Severe heat wave (B)	5 persons, including 3 girls died.	
20.	12-16 Jun.	Ajmer, Bhilwara, Bundi, Chittorgarh, Jaipur and Tonk	Severe heat wave (Both A and B as appropriate)	14 persons died.	
21.	2 & 3 Jul.	Bathinda and Ludhiana	Severe heat wave (A)	3 persons died.	

TABLE – IV : 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%.**

S.N.	Date/Period	Area affected (Subdivision)	Intensity	Seasonal rainfall de- parture (%)
1.	June-Sep.	West Rajasthan	Severe	-71
2.	June-Sep.	East Rajasthan	Severe	-60
3.	June-Sep.	Tamil Nadu and Pondicherry	Moderate	-46
4.	June-Sep.	Lakshadweep	Moderate	-45
5.	June-Sep.	South Interior Kamataka	Moderate	-44
6.	June-Sep.	Haryana, Chandigarh and Delhi	Moderate	-38
7.	June-Sep.	Kerala	Moderate	-33
8.	June-Sep.	Rayalaseema	Moderate	-33
9.	June-Sep.	North Interior Kamataka	Moderate	-31
10.	June-Sep.	Coastal Kamataka	Moderate	-30
11.	June-Sep.	Punjab	Moderate	-27
12.	June-Sep.	Coastal Andhra Pradesh	Moderate	-25

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
TABLE - V : SQUALL					
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					
CRITERIA					
<i>Moderate : Surface wind speed (in gusts) upto 80 kmph.</i>					
<i>Severe : Surface wind speed (in gusts) > 80 kmph.</i>					
1.	28 Jan.	Medinipur	Moderate		In Kanthi, i) 50 houses completely collapsed and a few others partially damaged. ii) Many trees uprooted.
2.	22 Mar.	Kamrup	Moderate		Several houses, standing crops damaged and many trees uprooted in Rangia subdivision.
3.	27 Mar.	Darrang	Moderate		Several houses and crops damaged, many trees also uprooted in Sipajhar subdivision.
4.	29 Mar.	Kolar	Moderate		Roof tops blown off, houses damaged and many trees uprooted in Chitamini.
5.	2 Apr.	Morigaon	Moderate	3 persons injured.	More than 500 houses damaged, many trees uprooted in Morigaon city and neighbourhood.
6.	9 Apr.	Nagaon	Moderate		In Lumding and neighbourhood, many houses damaged, trees uprooted disrupting power supply.
7.	18 Apr.	Barpeta	Moderate		Several houses damaged and many trees uprooted disrupting power supply,
8.	26 Apr.	Barpeta, Bongaigaon, Dhubri, Kamrup and Sonitpur	Severe	One person died and 5 injured.	850 houses damaged, many trees uprooted disrupting power supply.
9.	3 May	Bongaigaon	Moderate		Several houses damaged and many trees uprooted in North Sal-mara.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
10.	4 May	Barpeta	Moderate		Several houses and standing crop damaged in Sorbhog and neighbourhood.
11.	7 May	Chandrapur	Moderate	One person died.	Many houses collapsed in Rajura.
12.	20 May	Kamrup, Nagaon and Sibsagar	Severe	One person injured.	Several houses damaged, trees uprooted and power supply disrupted.
13.	21 May	Dhubri, Jorhat, Kokrajhar, Nagaon, Lakhimpur and Sibsagar	Severe	3 persons died and 9 other injured.	More than 500 houses damaged.
14.	23 May	East & West Khasi Hills	Severe	3 persons died in house collapse.	Several trees uprooted.
15.	25 May	Dibrugarh and neighbourhood	Moderate		Several houses damaged and many trees uprooted disrupting power supply.
16.	24 Aug.	Dhemaji	Severe	8 persons injured.	More than 300 houses damaged in Gogamukh subdivision.
17.	21 Sep.	Dibrugarh and Tinsukia	Moderate		Many trees uprooted.

TABLE – VI : GALE

CRITERIA

Strong : Wind speed \geq 75 kmph

1.	5 Apr.	Alappuzha and Ernakulam	Strong		Widespread damage to property reported from Puchakkal and Perumbavur.
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S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
TABLE – VII : DUSTSTORM					
CRITERIA					
<i>Moderate : Wind speed between 39 to 74 kmph and horizontal visibility upto 500 metres</i>					
<i>Severe : Wind speed \geq 75 kmph and horizontal visibility upto 50 metres.</i>					
1.	7 Apr.	Jaipur and Sirohi	Severe	2 persons died.	
2.	8 Apr.	Bikaner, Dausa and Pali	Severe	3 persons died.	
3.	6 May	(a) Balrampur, Bahraich and Meerut	Severe	3 persons, including 2 children, died and several other injured due to wall collapse.	
		(b) Karnal and Sonipat	Severe	i) 5 persons died. ii) 50 cattle lost.	Around 55 houses burnt in a fire in Sonipat district due to dust-storm.
4.	15 May	Seoni	Severe	2 persons died and 105 injured in Keolari when Nainpur-Nagpur train derailed due to duststorm.	
5.	24 May	Panipat	Severe	One person died.	
6.	25 May	Alwar	Moderate	2 persons died due to wall collapse.	
7.	27 May	Kapurthala and Mansa	Severe	5 persons died and 10 injured due to wall collapse.	
8.	30 May	Jaipur	Moderate	One person died.	
9.	6 Jun.	Balija, Lucknow and Mau	Severe	5 persons died.	
10.	8 Jun.	Agra and Mainpuri	Severe	5 persons died and 50 other injured.	Large number. of electric poles and trees uprooted.
11.	9 Jun.	Kanpur	Severe	2 persons died.	
12.	17 Jun.	Alwar	Severe		Several trees / electric poles uprooted.

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
13.	18 Jun.	Bundi	Severe	One person died.	
14.	19 Jun.	Azamgarh	Severe	6 persons died due to wall collapse and related electrocution.	

TABLE – VIII : LIGHTNING

1.	12 Feb.	(a) Azamgarh (b) Bareilly (c) Hamirpur (d) Jaunpur		3 persons died. One person died. 2 persons died. 2 persons died.	
2.	15 Mar.	Kollam and Kottayam		2 persons died.	
3.	16 Mar.	Pathanamthitta		3 persons died and 3 other injured.	
4.	30 Mar.	Hooghly, Nadia and North 24 Parganas		5 police officials injured as lightning struck the Police Station.	Telecommunication system of the affected Police Station became unserviceable.
5.	5 Apr.	(a) Kollam (b) Pathanamthitta (c) Shimoga		One person died. One person died. 2 persons died.	
6.	7 Apr.	Thiruvananthapuram		2 persons died.	
7.	12 Apr.	(a) Alappuzha (b) Idukki (c) Kollam (d) Kottayam		2 persons died. 3 persons died. 2 persons died. One person died.	
8.	20 Apr.	Udaipur		One person died.	
9.	21 Apr.	(a) Kollam (b) Thiruvananthapuram		2 persons died. 2 persons died and 9 injured,	
10.	22 Apr.	Shimoga		One woman died in Shikaripur.	

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
11.	23 Apr.	(a) Kannur (b) Kasaragode (c) Kozhikode		A woman died. One person died. One person died.	
12.	2 May	(a) Kollam (b) Coochbehar		One person died in Thodiyoor village. One woman died in Mathabhanga.	
13.	3 May	Dhubri and Kokrajhar		3 persons died and another 3 injured in Golokganj and Tamarhat.	
14.	5 May	Nanded		One person died in the field and another 4 injured in Kuntoor.	
15.	8 May	(a) Kozhikode (b) Mysore (c) Raichur		One person died in Quilandy. One person died in Periapatna tehsil. One person died in Kavithala village.	
16.	15 May	Cuttack		One person died.	
17.	18 May	(a) Kollam (b) Kozhikode (c) Malappuram		One person died in Ezhukon. One person died. One person died in Tirur.	
18.	22 May	Wayanad		4 persons died in Sultanbattary.	
19.	25 May	Mandi		3 children died.	
20.	26 May	Jaipur		230 sheep/goats burnt alive.	
21.	28 May	Kangra		i) 2 persons died. ii) 15 goats perished.	
22.	29 May	Medinipur		2 persons died in Khejuri.	
23.	30 May	(a) Belgaum		3 persons died and 3 injured at Hiremanoly in Khanapur tehsil.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
24.	1 Jun.	(b) South 24 Parganas Bangalore		One person died in Kakdweep. In Magadi town, i) One Shepherd died and 3 other injured. ii) A goat perished.	
25.	4 Jun.	Jajpur and Mayurbhanj		6 persons died.	
26.	5 Jun.	Nayagarh		One person died.	
27.	7 Jun.	Bardhaman and Malda		4 persons died in Satgachhia and Pirpara.	
28.	8 Jun.	Nadia		One person died in Gaeshpur.	
29.	9 Jun.	(a) Latur and Osmanabad		2 persons died and a boy in- jured.	
		(b) Pune		3 family members died in Sas- wad.	
		(c) Puri		One person died.	
		(d) Kolkata and North 24 Parganas		3 persons died.	
30.	11 Jun	(a) Bangalore		One woman died in Vidyan- yapura in Bangalore city.	
		(b) Lakhimpur		One person died and a girl seriously injured in Narayan- pur.	
		(c) Sundargarh		One person died.	
31.	12 Jun.	(a) Puri		One person died.	
		(b) South 24 Parganas		One person died in Kakdweep.	
32.	14 Jun.	Mayurbhanj		One person died.	
33.	15 Jun.	(a) Amravati and Buldhana		8 persons died.	
		(b) Hissar		2 persons died in Gorakhpur village..	
34.	16 Jun.	Banswara		3 persons died.	
35.	17 Jun.	Banswara and Dungarpur		3 persons died.	
36.	18 Jun.	Rajsamand		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>
37.	19 Jun.	(a) Bankura		One person died and 2 other injured.	
		(b) Nawarangpur and Nayagarh		4 persons died.	
38.	20 Jun.	Khurda and Puri		2 persons died.	
39.	21 Jun.	Nagpur		One student died in Nagpur city.	
40.	22 Jun.	Nagpur		One person died and 2 other injured in Nagpur city.	
41.	22 Jun.	Nawarangpur and Sundargarh		2 persons died.	
42.	24 Jun.	Cuttack		One person died.	
43.	27 Jun.	(a) Amreli		One person died.	
		(b) Bhavnagar		One person died.	
		(c) Jamnagar		One person died.	
		(d) Narmada		One person died.	
		(e) Sabarkantha		One person died.	
		(f) Surat		One person died.	
		(g) Surendranagar		3 persons died.	
44.	29 Jun.	Khurda		One person died.	
45.	11 Jul.	Sundargarh		One person died.	
46.	12 Jul.	Cuttack		One person died.	
47.	13 Jul.	Bankura and Murshidabad		6 persons, including 2 children died.	
48.	14 Jul.	Jajpur		One person died.	
49.	15 Jul.	Jajpur		One person died.	
50.	16 Jul.	Cuttack		2 persons died.	
51.	20 Jul.	Jajpur		2 persons died.	
52.	27 Jul.	Medinipur		2 persons died in Sarida Tam-luk.	
53.	29 Jul.	Hooghly		One person died in Chinsurah.	
54.	3 Aug.	Birbhum		2 persons died in Banipur.	

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
55.	5 Aug.	(a) Nagpur (b) Samastipur		3 women injured in Ramtek. One child died and 3 other injured in Morwa.	
56.	6 Aug.	Sonbhadra		3 persons, including 2 women died.	
57.	7 Aug.	Mirzapur		i) 3 persons died. ii) 2 bullocks lost.	Telephone exchange burnt in Rajgarh.
58.	8 Aug.	Dhubri		3 persons died and one injured in Manulapura village.	
59.	11 Aug.	Patna		One person died in Noubatpur.	
60.	27 Aug.	Tirunelveli		2 persons died.	
61.	29 Aug.	Yamuna Nagar		3 persons died in Begumpara.	
62.	6 Sep.	Banda		4 persons died and 4 other injured.	
63.	7 Sep.	Fatehpur		7 persons died.	
64.	8 Sep.	Rai Bareli		2 persons died.	
65.	15 Sep.	(a) Hooghly (b) Nagaon		One person died and 2 injured in Makaipur. One person died and 2 injured in Jamunamukh.	
66.	22 Sep.	Goalpara		2 persons died and one injured in Solmari.	
67.	2 Oct.	(a) Dakshina Kannada (b) Sonitpur		A boy died in Jamugurihat.	Paintings on historical chapel along with the cross damaged in Mangalore city.
68.	7 Oct.	Kozhikode, Malappuram, Pathanamthitta and Thrissur		10 persons died.	
69.	8 Oct.	Medinipur		4 persons died.	
70.	15 Oct.	Dakshina Kannada			i) A few houses damaged. ii) Electric wires, TV sets and a few trees including bamboo plantations burnt.
71.	11 Nov.	Nashik		In Hiswal (Malegaon tehsil), one person died and two bullocks perished.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
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TABLE – IX : 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.	11 Feb.	Patna	Moderate		Several trees and electricity poles uprooted causing power failure.
2.	24 Feb.	Ambala, Jind and Sirsa	Severe	7 persons died.	
3.	22 Mar.	Darjeeling and Jalpaiguri,	Severe		i) In Jalpaiguri, 700 hutments damaged. ii) Large number of trees uprooted disrupting power supply and telephone lines.
4.	24 Mar.	Barpeta	Severe	One person died and 2 other injured.	
5.	26 Mar.	Bankura, Bardhaman, Birbhum, Medinipur and Murshidabad	Severe	7 persons injured when a poultry farm collapsed in Bankura district.	Several houses damaged, roofs of many tin / tiled sheds blown off and trees uprooted.
*6.	27 Mar.	Kamrup	Severe	4 persons died due to landslide in Guwahati city.	Landslides reported.
7.	3 Apr.	Nadia	Severe	9 persons died and 20 injured.	Many houses razed to the ground.
8.	8 Apr.	(a) Ahmednagar, Nanded, Nasik, Pune, Satara and Solapur	Severe	10 persons died in different incidences.	i) Power supply in Pune and neighbouring urban areas disrupted. ii) Damage to onion, tomato, wheat, gram and grape reported. Grapes under the process of making raisins destroyed. Mangoes in Pathrdi (Ahmednagar district) destroyed.
		(b) Bardhaman, Jalpaiguri, Malda, Murshidabad and Nadia	Severe	8 persons died.	325 houses damaged and 700 families affected.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
		(c) Darbhanga	Severe	2 persons died and many injured.	i) Damage to crops and houses reported. ii) Riga Sugar Mill near Sitamarhi destroyed.
9.	10 Apr.	Hooghly and Nadia	Severe	26 persons injured.	70 houses damaged.
10.	11 Apr.	(a) Uttar Dinajpur (b) Pune	Severe Moderate	5 persons injured. Gray and Purple herons injured in Bhigwan and Ujani dam area.	500 houses damaged in Raigunj.
11.	12 Apr.	(a) Nagaon (b) Howrah and Kolkata	Severe Moderate	One person died and another injured.	i) In Howrah and Sealdah, overhead wires cut off, train services disrupted. ii) Trees uprooted disrupting road traffic in Kolkata city.
		(c) Uttara Kannada	Severe		i) Many big trees of coconut, mango and jackfruit uprooted. ii) Roof tops of several houses blown off and many houses collapsed in Karwar taluka.
12.	21 Apr.	(a) Malda (b) Uttar Dinajpur	Severe Severe	12 people injured and 2 other reported missing. A 12-yr. old boy died under a broken tree.	A large area was ransacked due to house collapse. Around 400 houses collapsed.
13.	22 Apr.	(a) Bardhaman (b) Chitradurga	Severe Severe	15 persons injured. One person died.	A few houses razed to the ground. Thousands of areca nut trees razed to the ground and many electric poles uprooted.
14.	26 Apr.	(c) Shimoga Bardhaman, Birbhum, Darjeeling, Jalpaiguri, Malda, Murshidabad and Uttar Dinajpur	Severe Severe	One person died. 16 persons died and 14 other injured.	Several trees / electric and telephone poles uprooted. Several trees uprooted and electric supply cut off.
15.	27 Apr.	Bagalkot	Moderate		In Bagalkot city, several trees uprooted due to which power cable snapped off cutting of power supply.
16.	28 Apr.	Coochbehar	Moderate	One person died.	
17.	29 Apr.	Bardhaman	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>
18.	2 May	Coochbehar, Medinipur and South 24 Parganas	Severe	11 persons, including a woman died.	Large no. of earthen houses collapsed.
19.	3 May	(a) Kolkata	Severe	2 persons injured due to wall collapse.	
		(b) Pune	Moderate		i) Railway track between Kasarwadi and Pimpri closed down for 2 hours due to uprooting of trees. ii) Power supply disrupted. A large number of houses collapsed.
20.	5 May	Different parts of Sikkim	Severe	2 persons died.	
21.	7 May	(a) Hassan	Moderate	2 girls injured in a roof collapse.	
		(b) Mysore	Moderate	One person died under a fallen branch of a tree.	At few places, trees uprooted.
		(c) Shimoga	Severe	One buffalo, a calf and a few hens perished.	i) A few houses collapsed. ii) Several trees including arecanut and coconut trees uprooted.
		(d) Uttar Kannada	Severe	One person died under an uprooted big banyan tree in Honavar tehsil.	
22.	8 May	Hassan	Severe	Deaths of livestock reported.	i) Thousands of banana and coconut trees collapsed. ii) Nearly 2 lakh under manufacture bricks damaged. iii) Roofs of many houses blown away.
23.	9 May	(a) Kolkata	Moderate		38 houses collapsed.
		(b) Satara	Severe	One person died.	i) Many trees uprooted. ii) Power supply and telecommunication link disrupted.
24.	10 May	Ahmednagar	Moderate		In Malthan and Pabal areas, i) Electric poles and big babool trees uprooted causing the closer of road traffic. ii) Covers of the poly-houses torn, green mangoes fell down.
	15 May	Gulbarga	Moderate		At Aland, many tees uprooted and sheets of house roofs blown away.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
25.	16 May	Beed, Latur, Nanded, Parbhani, Pune and Solapur	Severe	2 persons died and 3 injured.	<ul style="list-style-type: none"> i) Many trees uprooted and power supply cut off, mangoes also destroyed. ii) Several houses damaged. iii) Poly houses for rose and other flowers in Maval tehsil of Pune district damaged extensively affecting the export business.
26.	19 May	Bangalore	Moderate	Thousands of migratory birds (Painted Storks) perished at Veerapura near Bangalore.	
27.	25 May	(a) Bangalore (b) Chandigarh (c) Nawan Shehar and Patiala (d) Allahabad, Amethi, Kannauj, Kanpur, Pratapgarh, Rai Bareli and Sultanpur	Severe Severe Severe Severe	5 persons died. 7 persons died. 3 persons died. 13 persons died.	<ul style="list-style-type: none"> Roofs of tin houses blown off. Wheat crop badly damaged in Rai Bareli.
28.	27 May	(a) Ambala, Bhiwani, Jind, Rewari and Sonipat (b) Kolkata (c) New Delhi	Severe Moderate Moderate		<ul style="list-style-type: none"> Thousands of trees uprooted. Roof tops of several houses blown off. In south Kolkata, <ul style="list-style-type: none"> i) Many houses damaged. ii) Several trees uprooted. i) Many big trees uprooted and electric wires snapped off disrupting traffic and power supply. ii) Railway and air services also affected.
29.	28 May	Etawah and Orraiya	Severe	21 persons died and 70 other injured.	
30.	3 Jun.	(a) Barpeta (b) Koppal	Severe Moderate	5 persons died. A few cattleheads washed away in Bisaralli village.	A tank along Bisaralli – Bettageri road breached inundating nearby area and the houses.
31.	5 Jun.	Sehore	Severe	More than 25 cows perished.	Several trees uprooted and 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>
32.	14 Jun.	(a) Hooghly	Moderate		i) Roof tops of many houses blown away. ii) Loss to agricultural products reported.
		(b) Roop Nagar	Severe	2 persons died in Kharar sub-division.	
33.	1 Jul.	Bankura and South 24 Parganas	Severe	2 persons including a child died in Bishnupur.	
34.	2 Jul.	North and South 24 Parganas	Severe		Telecommunication system damaged at Alipore.
35.	20 Jul.	Dakshin Dinajpur	Severe	3 persons died.	
36.	30 Aug.	Barpeta	Moderate	One person died in Sarna village.	
37.	31 Aug.	Kamrup	Severe	5 persons died.	
38.	9 Sep.	Goalpara, Morigaon and Nagaon	Severe	5 persons injured.	i) A large no. of houses damaged. ii) Many trees / electric poles uprooted, causing disruption to road traffic. Traffic on NH-37 also disrupted. A Maruti van damaged under an uprooted tree.
39.	10-13 Oct.	Uttara Kannada	Moderate		i) Thunderstorm occurred in Honavar tehsil of the district during night for consecutive 4 days. ii) A few houses at Karki collapsed. iii) A road to Balegodde Majir collapsed upto 60 feet disrupting road traffic.
40.	15 Oct.	Dakshina Kannada	Moderate		i) In Belthangady tehsil, several areca nut and coconut trees uprooted. Roofs of a few houses / a school blown away. ii) In Mangalore tehsil, standing paddy crop in nearly 250 acres destroyed.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
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TABLE - X : 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.	5 Jan.	Bidar	Heavy	A cow died and another seriously injured in Basavakalyan tehsil.	<ul style="list-style-type: none"> i) Cereals,pulses,sunflower and sugarcane damaged. ii) Electric poles uprooted iii) Tin roofs of many houses blown away.
2.	6 Jan.	Hassan and Raichur	Heavy		<ul style="list-style-type: none"> i) Damage to harvested paddy reported in Hassan district ii) Jowar, tur, sunflower and cotton in Raichur district damaged. iii) 50 villages in Raichur district affected.
3.	7 Jan.	(a) Pune	Moderate	Deaths of sheep reported from different places.	<ul style="list-style-type: none"> i) Wheat, sugarcane, gram, onion crops and pomegranate, watermelon mainly in Daund and Haveli tehsils severely damaged. ii) Damage to Tube-rose farms also reported.
		(b) Chitradurga	Heavy		<ul style="list-style-type: none"> i) Damages to areca nut and coconut reported. ii) Many huts collapsed and roof tops of several houses blown away. iii) Electric poles uprooted.
		(c) Raichur	Heavy		Widespread damage to sunflower and cotton crops reported.
		(d) Tumkur	Heavy		<ul style="list-style-type: none"> i) Thousands of areca nut, coconut, jackfruit, tamarind and mango trees razed to the ground. ii) Kakada flowers in hundreds of hectares 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.	8 Jan.	(a) Latur and Nanded	Severe	2 persons died and 25 injured.	In Degloor tehsil, i) Many trees uprooted. 150 electric and telephone poles also uprooted. ii) Closure of road traffic for more than an hour in 15 villages of Latur district reported. iii) Roof tops of several houses blown off. iv) Damage to crops also reported.
		(b) Tumkur	Heavy		i) Extensive damage to several areca nut, coconut and tamarind trees reported. ii) A few houses razed to the ground. iii) Sunflower in 15 acres damaged. Standing kharif crop destroyed.
5.	15 Jan.	Gulbarga	Heavy		Damage to crops reported in Sheopur.
6.	16 Jan.	Morena	Moderate		Mustard crop extensively damaged.
7.	20 Jan.	Rewari	Moderate		Standing rabi crop (wheat, maize, Bengal gram, sunflower, cotton and chilly) in 35 villages damaged.
8.	6 Feb.	Dharwad	Heavy		Wheat, jowar, tur, gram crops in Yeldari, Murumkhed, Hivarkheda etc. destroyed
9.	7 Feb.	(a) Parbhani	Moderate		Damage to crops reported.
10.	8 Feb.	(b) Panna, Rewa and Vidisha	Heavy	2 persons died.	i) Wheat, Bengal gram and white jowar disrupted. ii) Mango flowering badly damaged.
		(a) Bijapur	Moderate		i) Jowar in more than 200 acres destroyed. ii) Nearly 500 brick kilns destroyed.
		(b) Chitradurga	Moderate		In Davanagere city, some houses collapsed and electric poles uprooted.
		(c) Davanagere	Moderate		i) Roofs of many houses damaged. ii) Telephone lines and power supply affected. iii) Damage to crops reported.
11.	9 Feb.	(a) Bhopal, Guna, Sagar and Vidisha	Heavy		Areca nut, banana and coconut plantations and maize crop destroyed.
		(b) Davanagere	Moderate	A 10-yr. old girl died due to house collapse in Tippunagar.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
12.	10 Feb.	Ahmednagar, Aurangabad, Dhule, Jalgaon and Jalna	Heavy	2 persons died due to roof collapse.	i) Wheat, gram, jowar, mango, grapes, onion, chilly and tur crops extensively damaged. ii) Jaggery production affected due to lemon size hailstones. iii) Standing rabi crop destroyed.
13.	11Feb.	(a) Kanpur	Heavy	2 persons died and many injured.	Damage to crops reported.
		(b) Lucknow	Heavy	3 persons died.	
		(c) Nagpur	Moderate		Heavy loss to crops reported from Nagpur and neighbourhood,
14.	12 Feb.	(a) Akola	Heavy	Hundreds of animals and birds died in Balapur and Telhara tehsils.	
		(b) Kanpur	Heavy	5 persons died.	
		(c) Mau	Heavy	3 children died under an up-rooted tree.	
15.	19 Feb.	Kota	Heavy		Damage to wheat, onion and coriander reported.
16.	7 Mar.	Jaipur and Sirohi	Heavy		Wheat and barley crops damaged.
17.	9 Mar.	Muktsar	Heavy		Wheat crop damaged.
18.	2 Apr.	Darbhanga, Khagaria, Nalanda, and Sitamarhi	Moderate		i) Damage to rabi crop reported. ii) Kutcha houses damaged.
19.	3 Apr.	Begusarai, Darbhanga, Jamui, and Purnea	Heavy	3 persons died and many other injured in Darbhanga district.	i) Damage to rabi crop reported. ii) Lichi and mango orchards damaged in Begusarai, Jamui and Purnea districts.
20.	11Apr.	Dhubri, Kamrup and Nalbari	Heavy		Standing crops and houses damaged.
21.	21 Apr.	Barpeta, Jorhat, Lakhimpur, Nalbari, Sibsagar and Sonitpur	Heavy	4 persons died and more than a hundred injured.	i) Many houses damaged rendering thousands of people homeless. ii) Several trees uprooted and power supply disrupted. iii) Standing crops also damaged
22.	22 Apr.	Dhubri	Heavy	One person died.	Many houses and standing crops damaged.
23.	24 Apr.	Hamirpur, Kangra and Lahaul and Spiti	Heavy		Harvested crops, flowers and fruits damaged.
24.	26 Apr.	(a) Gurdaspur, Hoshiarpur, Ludhiana, and Roop Nagar	Heavy		Standing and harvested crops damaged.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
		(b) Howrah	Heavy		i) Crops and agricultural products destroyed.. ii) Nearly 15,000 population affected.
		(c) Bidar	Heavy	One shepherd died in the field in Budhere village.	
25.	29 Apr.	Goalpara, Morigaon and Nagaon	Heavy	One person died.	i) Standing crop and 200 houses damaged. ii) Many trees uprooted.
26.	30 Apr.	Muzaffarpur and Sheikhpura	Heavy		Lichi, mango and rabi crops destroyed.
27.	1 May	Nalbari	Moderate		i) Standing crop damaged. ii) Houses collapsed and power supply disrupted in Nalbari town and neighbourhood.
28.	2 May	(a) Garo Hills	Moderate		i) Many houses damaged. ii) Several trees uprooted affecting road traffic.
		(b) Kamrup	Moderate		i) Many houses damaged. ii) Several trees uprooted affecting road traffic.
29.	8 May	Raichur	Heavy	A bullock perished.	Banana plantation in a few acres destroyed.
30.	27 May	Bhind and Rajgarh	Heavy	19 persons died.	Around 250 electric poles uprooted.
31.	28 May	(a) Jaipur and Sikar	Heavy	8 persons died.	Several trees uprooted and roof tops blown off.
		(b) Nadia	Heavy		Heavy agricultural losses reported in Karimpur and neighbourhood.
32.	31 May	Bidar	Moderate		Widespread damage to property reported from Basavkalyan.
33.	3 Jun.	Nadia	Heavy		Agricultural products in 3000 acres damaged.
34.	12 Oct.	(a) Bathinda, Fatehgarh Sahib, Kapurthala and Roop Nagar	Heavy		Loss of crops reported from different parts.
		(b) Shimla	Heavy	2 persons swept away in a nullah.	Dozens of vehicles damaged in Trilokpuri river bank.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
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TABLE – XI : FLOODS AND HEAVY RAINS

STATES
ANDHRA PRADESH

1.	23-27 Aug.	Adilabad, Karimnagar and Khammam	Heavy rains	4 persons died.	i) River Godavari in full spate, damage to crops reported. ii) 800 houses damaged.
2.	26 & 27 Oct.	Chittoor, Cuddapah, Nellore and Prakasam	Heavy rains	3 persons died in Nellore district.	i) Damage to crops reported. ii) Road communication disrupted.

ARUNACHAL PRADESH

1.	4 Aug.	Tawang and West Kameng	Flash flood (Jia Bhareli)	8 persons washed away.	i) 2 iron bridges and 4 vehicles damaged. ii) Tawang cut off from rest of the country.
**	Whole year.	0.037 m.ha.		i) 15 persons died. ii) 1,089 cattle lost.	i) 0.020 million population affected. ii) Crops in 0.037 m.ha. damaged. iii) 77 houses damaged.

ASSAM

1.	8 May	Nagaon	Flash flood (Barnai)		Bodo paddy in 25 villages submerged and damaged in Jarabari Mouza.
2.	26 May	Karimganj	Flash flood (Singla)	5 persons drowned.	
3.	16-22 Jun.	Barpeta, Dhemaji, Dibrugarh, Goalpara, Kamrup, Lakhimpur, Morigaon and Tinsukia	Severe flood (Brahmaputra and its tributaries like Jiadhal, Krisnai and Kapili)		i) Communication on NH-52 disrupted at Samarajan in Dhemaji district. ii) Embankment of river Krisnai (Goalpara dist.) breached at several places. iii) Vast cropland and paddy fields submerged causing extensive damage. iv) The largest river island of Majuli (East Assam) and Kaziranga National Park under threat as Brahmaputra levels reported above danger mark.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
*4.	1 Jul.to 19 Aug.	Entire State	Severe flood (Brahmaputra & its tributaries)	41 persons died. 482 cattle perished.	<ul style="list-style-type: none"> i) 800 metres of embankment washed away, another two breaches at Arne Chapari & Rekha Chapari widened, submerging the vast areas and affecting 10 lakh people,. Help from Army and Red Cross Society sought to rescue people and provide them with relief materials like tarpaulins, water purification tablets, saline bottles etc. ii) NH 52 also breached at Kekuri and Samarajan cutting off Dhemaji from the other districts. iii) Landslides reported from Noonmati on Guwahati-Shillong road, disrupting the road communication. iv) In Silchar, HQrs of Cachar district, 250 metres of railway track washed away cutting off rail link between Lumding and Badarpur. v) More than 3.30 lakh hectares of cropland affected. vi) Nearly 20,000 houses damaged.
**	Whole year	0.837 m. ha		<ul style="list-style-type: none"> i) 41 human lives lost ii) 482 cattle lost 	<ul style="list-style-type: none"> iii) 5.708 million population affected iv) Crops in 0.330 m. ha. Damaged. v) 19,827 houses damaged.
BIHAR & JHARKHAND					
1.	3 Jul.	Muzaffarpur, Sheohar and Sitamarhi	Flash flood	One person drowned in Si- tamarhi.	60 villages in Muzaffarpur and 12 villages in Sheohar inundated.
2.	25 Jul. – 21 Aug.	Araria, Darbhanga, East and West Champaran, Gopal- ganj, Katihar, Khagaria, Kishanganj, Madhepura, Madhubani, Muzaffar- pur, Purnea, Saharsa, Samastipur, Saran, Sheohar, Sitamarhi, Siwan and Supaul	Severe flood (Adhwara, Burhi Gandak, Gan- dak, Kosi and Pun Pun)	<ul style="list-style-type: none"> i) 321 persons died. ii) Hundreds of cattle per- ished. 	<ul style="list-style-type: none"> i) 15 million people from 8500 villages affected. ii) Thousands of houses damaged. iii) Extensive damage to crops reported.
3.	24 & 25 Sep.	Bhagalpur	Heavy rains		Railway track in Sahebganj-Barharwa section damaged.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
**	Whole year	In Bihar, 1.845 m.ha.		In Bihar, i) 451 persons died. ii) 1405 cattle lost.	In Bihar, i) 15.818 million population affected. ii) Crops in 0.810 m.ha. damaged. iii) About 400,000 houses damaged.
GUJARAT					
1.	25-29 Jun.	Amreli, Bharuch, Bhavnagar, Dang, Jamnagar, Junagadh, Kheda, Nar- mada, Navsari, Porbandar, Rajkot, Surat and Valsad	Heavy rains	i) 58 persons died due to drowning/ house collapse. ii) More than 800 cattle per- ished..	i) Thousands of people shifted to safer places. ii) Extensive damage to public / private property reported. iii) Mumbai bound trains cancelled as tracks over flown.
2.	22-28 Aug.	Northern parts	Heavy rains	17 persons died.	
3.	4 & 5 Sep.	Anand, Bharuch, Dang, Narmada, Navsari, Sabarkantha, Surat and Vadodara	Flash flood (Narmada and Tapi)	28 persons died in different incidents of drowning / house collapse. i) 134 human lives lost. ii) 1152 cattle lost.	i) Low lying areas inundated. ii) Thousands of people shifted to safer places. iii) Many houses washed away. About 2,800 houses damaged.
**	Whole year	6.5 Lakh ha.			
HARYANA					
1.	14 Aug.	(a) Ambala (b) Panchkula	Heavy rains Heavy rains	3 persons washed away 2 persons buried under roof collapse.	
2.	15 Aug.	Yamunanagar	Heavy rains		Mandewala, an under construction bund, heavily damaged.
3.	13 Sep.	(a) Faridabad (b) Yamunanagar	Heavy rains Heavy rains	3 persons died in house col- lapse. 3 persons washed away in swollen Yamuna.	

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
4.	15 Sep.	Panipat	Heavy rains		<ul style="list-style-type: none"> i) Breach in the Yamuna embankment reported near Bilaspur village. ii) Standing kharif crops over vast areas in Bilaspur, Hathwala and Rakash Hera villages of Samalkha subdivision submerged. iii) Many low lying areas inundated.
HIMACHAL PRADESH					
*1.	26 Jun.	Dharamsala	Heavy rains	5 persons, mostly children buried and 16 other children injured as Govt. Primary School collapsed due to landslide.	Landslides reported.
2.	3 Aug.	Hamirpur	Flash flood	3 persons drowned.	5 tractors and a truck washed away.
3.	4 Aug.	Chamba	Heavy rains (Cloud burst)	2 bullocks washed away.	<ul style="list-style-type: none"> i) Cloud burst reported in Sarangani village. ii) A few houses washed away.
4.	12 Aug.	Hamirpur	Flash flood	More than 200 cattle heads drowned.	<ul style="list-style-type: none"> i) Crops washed away. ii) Damage to public / private property reported.
5.	15 Aug.	Kangra and Sirmaur	Heavy rains	4 persons died.	<ul style="list-style-type: none"> i) Landslides reported. ii) Nearly a dozen shops and a few vehicles (two-wheelers) buried under the debris. iii) Damage to roads and property reported.
*6.	11 Sep.	Shimla	Heavy rains		<ul style="list-style-type: none"> i) Landslides reported. ii) Nearly a dozen shops and a few vehicles (two-wheelers) buried under the debris. iii) Damage to roads and property reported.
*7.	13 Sep.	Chamba and Kinnaur	Heavy rains	6 persons died in different incidents of landslides.	Landslides reported.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
KARNATAKA					
1.	15 Jun.	Uttara and Dakshina Kannada	Heavy rains		A few houses collapsed in Karwar and Mangalore tehsils.
2.	18 Jun.	Bangalore	Heavy rains	One person drowned in Vrishabhavathi river on Mysore road.	
3.	9-13 Oct.	Kodagu	Heavy rains		Bhagmandala-Nopoklu road damaged and cut off for traffic. Mu- randu, Konnangeri and Siddapura road partially collapsed. Potato crop in Chikkaballapur damaged.
4.	13 Oct.	Kolar	Heavy rains		
5.	14-16 Oct.	Bagalkot, Bijapur, Chitradurga and Raichur	Heavy rains	9 persons died in different places.	
KERALA					
1.	11-13 Jun.	Kollam, Kozhikode and Thrissur	Heavy rains	2 persons died.	Damages to several houses reported.
*2.	12 Jul.	Kannur	Heavy rains	One person died due to land- slide.	i) Landslides reported. ii) Widespread damage to property and agriculture reported.
3.	16 Aug.	Kottayam, Kozhikode and Palakkad	Heavy rains	3 persons died.	Widespread damage to crops and property reported.
4.	12 & 13 Oct.	Kasaragode	Heavy rains	2 persons died and 2 reported missing.	Damage to property reported at Kumbala.
*5.	13-16 Oct.	Kannur, Kasaragode, Kozhikode and Thiruvananthapuram	Heavy rains	11 persons died.	i) Nearly half-a-dozen landslides reported in Kannur. ii) Hundreds of houses damaged. iii) Thousands of people marooned. 3000 families shifted to safer places. iv) Widespread damages to agriculture also reported.
**	Whole year	0.23 Lakh ha.		21 persons died.	2,335 houses damaged.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
MADHYA PRADESH & CHHATISGARH					
1.	27 Jun.	Khandwa, Khargone and Malwa region	Heavy rains	6 persons died.	Many houses collapsed / damaged.
2.	18-25 Aug.	Balaghat, Betul, Damoh, Dhar, Hoshangabad, Jabalpur, Jhabua, and Khargone	Severe flood (Tapi)	i) 25 persons died. ii) Several animals also perished.	i) Road links in Balaghat, Betul, Dhar, Jhabua, and rail services in Jabalpur disrupted. ii) Many buildings collapsed.
MAHARASHTRA					
1.	8 Jun.	Pune	Heavy rains		i) Several trees in the Pune city and outskirts uprooted disrupting power supply and road traffic. Services of fire-brigade called for to clear the roads. Power cables cut off, conductors and insulators damaged resulting in power cut in various areas. ii) 2 scooters and 5 cycles swayed away in a swollen nullah. Wall collapse of the houses reported.
2.	Jun. (4 th week)	Amravati, Bhandara, Buldhana, Dhule, Jalgaon, Mumbai, Nagpur, Nashik, Pune and Thane	Heavy rains	i) 94 persons died. ii) 500 animals perished.	i) Bhiwandi, Dahanu and Palghar tehsils in Thane district worst affected. ii) Many houses collapsed. iii) Irrigation bund at Pargaon near Daund breached. iv) Long distance trains departing from Mumbai Central and Western railways cancelled, routes of many trains like Amritsar-Mumbai, Jaipur-Mumbai etc. diverted. v) Railway bridge between Palghar and Bhoisar (Thane) damaged completely. vi) Tomato crop in various tehsils like Junnar, Umbraj and Narayangaon infested with fungal growths causing heavy losses.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
*3.	5-7 Aug.	Mumbai	Heavy rains	i) 8 persons died and many injured due to landslide from hill in Kurla. ii) 2 persons also died in different incidents.	i) Road traffic, train services, and domestic and international flights affected badly. ii) Around 40 trees uprooted in Mumbai city.
*4.	9 Aug.	Pune	Heavy rains		Landslide happened from the hilly regions on the road passing by near Mulshi dam near village Nive (the road connecting Konkan area). Traffic closed, tourists stranded.
5.	7-10 Aug.	Ratnagiri and Sindhudurg	Heavy rains		i) Fondaghat closed down for traffic. Traffic on the roads leading to Kolhapur also affected. ii) Market places in Rajapur inundated.
6.	11 Aug.	Mumbai	Heavy rains		Tidal waves of the height of 20 ft. reported, due to which snack-stalls washed away.
7.	22-24 Aug.	Marathwada, Uttar Maharashtra and Vidarbha regions	Heavy rains	15 persons died and 4 injured.	i) Moong, tur, blackgram and chillies destroyed. ii) Bridge on the river Khadakpurna (Buldhana district) submerged under 5 ft. of water.
8.	1 & 2 Sep.	Jalgaon	Heavy rains	One person swept away at Pachora.	Urad and moong crops damaged.
9.	1-4 Sep.	(a) Marathwada and Vidarbha regions	Severe floods (Kayadhu and Painganga)	i) 35 persons died. ii) Hundreds of animals washed away.	i) Moong, urad, soyabean and cotton destroyed. ii) Marooned people rescued with the help of helicopters.
10.	4 Sep.	(b) Nandurbar	Heavy rains		A few houses damaged.
11.	15 Sep.	Nashik	Heavy rains	5 persons died.	Around 38 houses damaged.
**	Whole year	Pune	Heavy rains		At Takli Haji (Shirur tehsil), harvested bajra fully drenched and onion saplings also damaged. 6,466 houses damaged.
				i) 94 human lives lost. ii) 615 cattle lost.	

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
MANIPUR					
1.	14-20 Aug.	Bishunpur, Imphal East and Imphal West and Thoubal	Moderate flood (Imphal, Iril, Nambul, Thoubal and Wangiing)	3 persons died.	i) River embankment breached at 22 places, damaging the crops and cropland. ii) About 7 lakh population affected.
**	Whole year			3 persons died.	i) Crops in 0.49 lakh ha. damaged. ii) About 30,000 houses damaged.
MEGHALAYA					
*1.	20 Jun.	West Garo Hills	Flash flood		i) 17 road links between Dawki, Shillong, Tura and Guwahati disrupted due to landslide. ii) Low lying areas submerged. iii) Standing crops damaged.
2.	1 Jul.	West Garo Hills	Flash flood (Jinjiram and Rangai)	One person died.	Large areas inundated, damaging the crops.
**	Whole year	0.011 m.ha.			i) 0.11 million population affected. ii) Crops in 0.011 m.ha. damaged. iii) About 1500 houses damaged.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
MIZORAM					
*1.	21 Aug.	Aizawl	Heavy rains		i) Landslides reported. ii) Mizoram cut off from rest of the country as National Highway linking Aizawl and Silchar, which is the life-line of Mizoram, blocked.
PUNJAB					
1.	14 & 15 Sep.	Sangrur	Heavy rains	2 persons died due to house collapse in Preet Nagar.	Goods worth lakhs of rupees destroyed as the basement of the market flooded in Bamala.
SIKKIM					
*1.	2 Aug.	West Sikkim	Heavy rains	4 persons died due to landslide in remote areas.	Landslides reported.
TAMIL NADU					
1.	31 Jan.- 2 Feb.	Cuddalore, Nagapattinam, Pudukottai, Ramanathpuram, Thanjavur, Thiruvarur and Tirunelveli	Heavy rains	11 persons died due to house collapse / electrocution.	i) Samba paddy crop over 20,000 hectares damaged. ii) Rail track between Tiruthurai poondi and Karaikudi breached disrupting train services. iii) Extensive damage to plantain crop in Tirunelveli district reported.
2.	27-31 Oct.	Many parts	Heavy rains	20 persons died due to different house collapse incidents.	i) Several trees uprooted, many roads damaged disrupting the traffic. ii) Suburban train services suspended as tracks over flown. iii) Marooned people in Ramnagar-Velacherry rescued by fire service personnel by using a fiber boat.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
3.	1-11Nov.	Chennai, Coimbatore, Namakkal, Perambalur, Pudukottai, Thanjavur, Theni, Thiruvallur, Tirunelveli and Tiruvannamalai	Heavy rains	i) 20 persons died due to wall collapse. ii) 50 cattleheads perished.	i) Long stretches of roads water logged. ii) More than 100 huts partially damaged and more than 100 dwellings completely damaged.
UTTAR PRADESH & UTTARANCHAL					
1.	12 Feb.	Azamgarh, Bareilly, Hamirpur, Jaunpur and Kanpur	Heavy rains	16 persons died in different incidents of wall/tree collapse.	
*2.	11 Aug.	Tehri Garhwal and Uttarkashi (Uttaranchal)	Heavy rains (Cloud burst)	i) 33 persons died due to landslide. ii) Several cattle heads perished.	i) Landslides reported. ii) Large number of houses damaged. iii) Army employed for rescue work. iv) Rescue work hampered due to rains and bad light.
3.	20-22 Aug.	(a) Allahabad	Heavy rains	3 persons died.	
4.	7-13 Sep.	(b) Lucknow Bijnor, Jyotiba Phule Nagar, Kanpur, Lucknow, Meerut, Muzaffarnagar and Unnao	Heavy rains Moderate flood (Ganga, Yamuna and Sohali)	One child died. 10 persons died and dozens of other injured due to house collapse in different places.	i) Vast areas in Bijnor, Meerut and Muzaffarnagar districts inundated. ii) A few houses collapsed in Kanpur.
5.	12 Sep.	Hardwar and Nainital (Uttaranchal)	Heavy rains		Many houses collapsed.
6.	14 Sep.	Bareilly, Kheri and Shahjahanpur	Heavy rains	11 persons died due to house collapse.	
**	Whole year	<i>In Uttar Pradesh, 0.11 m.ha.</i>		<i>In Uttar Pradesh,</i> i) 33 human lives lost. ii) 36 cattle lost.	<i>In Uttar Pradesh,</i> i) 0.380 million population affected. ii) Crops in 0.052 m.ha. damaged. iii) About 4000 houses damaged.
**	Whole year	<i>In Uttaranchal, 0.03 lakh ha.</i>		<i>In Uttaranchal,</i> i) 33 human lives lost. ii) 87 cattle lost.	<i>In Uttaranchal,</i> 541 houses damaged.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
WEST BENGAL					
1.	25 Jun.	Medinipur	Heavy rains	One person died and 12 reported missing in Ghatal.	
2.	2 Jul.	Jalpaiguri	Heavy rains		<ul style="list-style-type: none"> i) One bridge at Oodlabari on Gheesh river washed away cutting off the link on NH 31, connecting north-east India and rest of the country. ii) Rail track between Siliguri and Malbazar damaged. iii) Nearly 20,000 people affected.
3.	22 Jul.	Coochbehar and Darjeeling	Heavy rains	One child died in Toofanganj (Coochbehar district).	<ul style="list-style-type: none"> i) Darjeeling-Siliguri road link cut off. ii) Nearly one lakh population affected.
4.	20 Sep.	Kolkata	Heavy rains		Water logging in some areas reported. Trees uprooted affecting vehicular traffic.
**	Whole year	0.026 m.ha.		<ul style="list-style-type: none"> i) 6 human lives lost. ii) 20 cattle lost. 	<ul style="list-style-type: none"> i) 0.375 million population affected. ii) Crops in 0.026 m.ha. damaged. iii) About 18,000 houses damaged.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
UNION TERRITORIES					
CHANDIGARH					
1.	14 Aug.	Chandigarh	Heavy rains		Many houses in Vikasnagar and Charansingh colony damaged.
DELHI					
1.	13 Aug.	Delhi	Heavy rains	2 children died under house collapse in Shahera.	

* Landslides reported.

** Input from Central Water Commission and Ministry of Agriculture

S. No.	Date/ Period	Area affected	Intensity	Casualties	Extent of damage
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TABLE – XII : CYCLONIC STORM

There were 4 cyclonic storms which formed over either the Arabian sea or the Bay of Bengal during 2002. Out of these, 3 were formed over the Bay of Bengal and one over the Arabian sea. Only one storm which formed over the Bay of Bengal had crossed the Indian coast and caused some damage. Details of the same are given below :

BAY CYCLONE

1.	10-12 Nov.	<p>Formation Near Lat. 16.0°N/ Long. 84.5°E at 1200 UTC of 11th</p> <p>Landfall South of Kolkata near Sagar Island around 0900 UTC of 12th (prior to landfall, system weakened into a Cyclonic Storm)</p> <p>Dissipation As a Low Pressure Area (LPA) at 0300 UTC of 13th and lay over Bangladesh and neighbourhood.</p>	Severe Cyclonic Storm (Landfall at cyclonic stage)	<p>(A) In West Bengal, 2 persons died while 72 persons reported missing in Howrah and North and South 24 Parganas districts.</p> <p>(B) In Orissa, (i) Two trawlers collided head to head due to cyclonic storm and 18 inmates of the trawlers died and their dead bodies were seen floating near Dhampa port in Bhadrak district. (ii) 11 crew reported missing as a fishing trawler capsized near Paradip on 12th.</p>	<p>(A) In West Bengal, 11 trawlers/boats reported to have capsized off the coastal areas.</p> <p>(B) In Orissa, Two trawlers reported missing.</p>
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