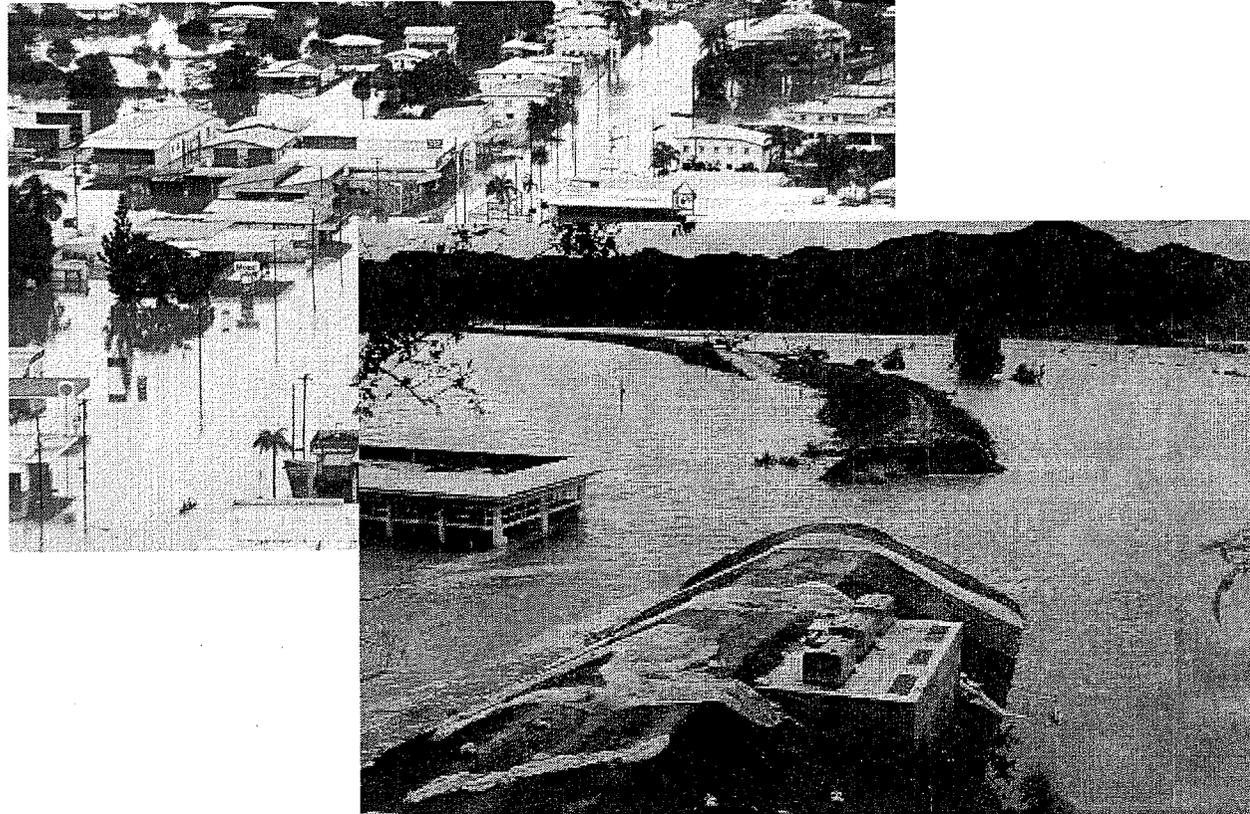


# DISASTROUS WEATHER EVENTS

2007



ISSUED BY  
NATIONAL CLIMATE CENTRE  
OFFICE OF THE  
ADDITIONAL DIRECTOR GENERAL OF METEOROLOGY (RESEARCH)  
PUNE 411005



भारत सरकार  
GOVERNMENT OF INDIA

भारत मौसम विज्ञान विभाग  
INDIA METEOROLOGICAL DEPARTMENT

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## DISASTROUS WEATHER EVENTS OF 2001

The most striking disastrous weather events of 2001 were the following :

- (i) Moderate to severe floods occurred mainly over the states of Bihar, Orissa, and Uttar Pradesh causing serious damage to agriculture and property. It also claimed more than 500 human lives and plenty of live stock.
- (ii) A cyclonic storm formed in the Bay of Bengal during 14-17 October, crossed north Tamil Nadu-south Andhra coast and took a toll of 108 human lives and approximately 1000 live stock. System also caused damage to crops, property and roads. Breaching of more than 1500 tanks were also reported.
- (iii) Severe cold wave conditions prevailed over most parts of Bihar and adjoining parts of Orissa during December which claimed around 300 human lives.

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

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<b>S.N.</b>	<b>Date / Period</b>	<b>Area affected</b>	<b>Intensity</b>	<b>Casualties</b>	<b>Extent of damage</b>
<b>TABLE - I : SNOWFALL</b>					
<b>CRITERIA</b>					
<i>Moderate : 7.6 to 34.9 cm in 24 hrs</i>					
<i>Heavy : <math>\geq 35.0</math> cm in 24 hrs</i>					
1.	29 Mar.	Kinnaur	Heavy	4 persons died and 2 seriously injured in a landslide near Nathpa.	
2.	2-3 Nov.	Srinagar	Heavy		i) Stretch of 434 km. of Srinagar-Leh road closed down due to heavy snowfall. ii) Snowfall of 1'-2' height reported in Gulmarg, Khilanmarg, Yusmarg, Pahalgam, Aharabal, Deksam, Sonmarg, Jozhilla pass and Amarnath caves.
3.	8 Nov.	Lahaul and Spiti	Heavy	2 persons died in Keylong.	Many people stranded at various places.

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° 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° to 4°C below normal.  
Severe cold wave : Night temperature 5°C or more below normal.

1.	4 Jan.	Delhi	Severe cold wave (B)	7 persons died.
2.	Jan. (1 <sup>st</sup> week)	Bihar	Severe cold wave (B)	70 persons died.
3.	Jan. (1 <sup>st</sup> & 2 <sup>nd</sup> week)	(a) Punjab, Haryana and Chandigarh	Severe cold wave (Both A and B as appropriate)	10 persons died.
		(b) Rajasthan	Severe cold wave (B)	16 persons died.
		(c) Uttar Pradesh	Severe cold wave (A)	44 persons died.
4.	Jan. (2 <sup>nd</sup> week)	Bhojpur, Patna, Rohtas, and Vaishali (Bihar) and Sonepur (Orissa)	Severe cold wave (B)	i) 14 persons died. ii) One elephant died in Rohtas.
5.	Dec. (2 <sup>nd</sup> week)	Uttar Pradesh	Severe cold wave (Both A and B as appropriate)	15 persons died.

<b>S.N.</b>	<b>Date / Period</b>	<b>Area affected</b>	<b>Intensity</b>	<b>Casualties</b>	<b>Extent of damage</b>
6.	Dec. (2 <sup>nd</sup> to 4 <sup>th</sup> week)	Begusarai, Bhagalpur, Darbhanga, East Champaran, Gaya, Katihar, Madhubani, Nalanda, Nawada, Purnea and Saran (Bihar) and Kandhamal (Orissa)	Severe cold wave (Both A and B as appropriate)	290 persons died.	
7.	Dec. (4 <sup>th</sup> week)	Bundi, Dungarpur and Jaipur	Severe cold wave (B)	10 persons died.	
8.	26 & 27 Dec.	Firozpur and Jind	Severe cold wave (B)	6 persons died and 8 injured in an accident due to thick fog.	
9.	29 Dec.	Gurdaspur	Severe cold wave (B)	3 persons died.	
10.	30 Dec.	Fatehabad and Hoshiarpur	Severe cold wave (B)	5 persons died.	

**TABLE - III : HEAT WAVE**

**CRITERIA**

(A) Where; Normal maximum temperature is 40°C or less.  
Moderate heat wave : Day temperature 5° 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 3° to 4°C above normal.  
Severe heat wave : Day temperature 5°C or more above normal.

1.	24 Apr.	Jalgaon	Severe heat wave (A)	2 women died and many persons reported hospitalized in Dharangaon.	
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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.	29 Apr.	Bijapur	Moderate heat wave (A)	One person died in Bables-wara.	
3.	29-30 Apr.	Banda, Fatehpur, Gonda, Hardoi, Kanpur, Lalitpur and Lucknow	Severe heat wave (A)	12 persons died.	
4.	May (1 <sup>st</sup> and 2 <sup>nd</sup> week)	Alwar, Bikaner, Bundi, Jaipur, Jhalawar, Jodhpur, Kota, Pali, Tonk and Udaipur	Severe heat wave (Both A and B as appropriate)	i) 27 persons died. ii) 18 peacocks died near Heerapura power grid sub-station in Jaipur city. iii) 2 tiger cubs in the zoo died in Kota.	
5.	2 May	(a) Guna and Gwalior (b) Nalanda	Heat wave (B) Moderate heat wave (A)	2 persons died. 3 persons died in village Bardhi.	
6.	10 May	Azamgarh, Etah and Lucknow	Severe heat wave (B)	5 persons died.	
7.	May (3 <sup>rd</sup> week)	Chennai	Severe heat wave (A)	4 persons died.	
8.	May	Orissa	Severe heat wave (B)	14 persons died.	

**TABLE - IV : DROUGHT**

Period : June - September 2001

*Subdivision*

*Seasonal rainfall departure (%)*

Arunachal Pradesh

- 29

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
<b>TABLE – V : 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.	21 Feb.	Kolkata	Moderate		Train services disrupted by uprooted trees on the tracks and also due to snapped off overhead wires in Kolkata and neighbourhood.
2.	22 Feb.	Nagaon and Sonitpur	Moderate		i) In Tezpur and Nagaon city, several houses damaged, trees and electric poles uprooted. ii) Crops damaged.
3.	26 Feb.	Ri-Bhoi	Moderate		Several houses damaged and many trees uprooted.
4.	22 Mar.	Barpeta	Moderate		Standing crop damaged, several trees, electric and telephone poles uprooted in Bajali subdivision.
5.	27 Mar.	Golaghat	Moderate		Standing crop, many houses damaged. Many trees, electric and telephone poles uprooted in Golaghat city and neighbourhood.
6.	28 Mar.	Jorhat	Moderate		Standing crops, many houses damaged. Many trees, electric and telephone poles uprooted in Titabar subdivision.
7.	29 Mar.	Panchkula	Moderate		Damage to crops reported at Kalka.
8.	2 Apr.	(a) Itanagar	Moderate		i) Standing crops damaged. ii) Several houses damaged, power supply and telephone services disrupted.
		(b) Lakhimpur	Moderate		i) Standing crops damaged. ii) Several houses damaged, power supply and telephone services disrupted.
9.	17 Apr.	Barpeta	Moderate		In Bajali subdivision, i) Damage to several houses and crops reported. ii) Many trees uprooted.

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
10.	18. Apr.	Goalpara	Moderate		In Jalah subdivision, i) Damage to several houses and standing crops reported. ii) Power supply disrupted.
11.	19 Apr.	Kamrup	Moderate		In Palasbari subdivision, i) Damage to many houses and standing crops reported. ii) Power supply disrupted.
12.	1 May	Murshidabad	Severe	2 persons died and 4 injured due to house collapse.	
13.	3 May	Patna	Moderate		Telephone poles bent down.
14.	5 May	Sonitpur	Moderate		Several houses and standing crops in 20 villages damaged.
15.	10 May	Mizoram	Moderate		Many houses and standing crops in 44 villages damaged.
16.	20 May	Murshidabad	Severe	2 persons died and 15 injured in house collapse.	Many trees and electric poles uprooted.
17.	21 May	Kolkata, Murshidabad and North 24 Parganas	Severe	6 persons died and 7 injured.	Many houses collapsed.
18.	7 Jun.	Thiruvananthapuram	Severe	A woman died.	
19.	9 Aug.	Guwahati	Moderate		Many trees uprooted disrupting power supply.
20.	28 Aug.	Morigaon	Moderate		Many trees uprooted disrupting power supply in Ahatguri subdivision.
21.	4 Nov.	Sonitpur	Severe	One person died due to tree fall.	In Tezpur city and other parts of Sonitpur, many houses damaged, many trees and electric poles uprooted and a large number of signboards blown away.

**TABLE – VI : GALE**

**CRITERIA**

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

1.	13 Apr.	Sonepat	Strong		Several trees uprooted and many signboards blown away.
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S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
<b>TABLE – VII : DUSTSTORM</b>					
<b>CRITERIA</b>					
<i>Moderate : Wind speed between 39 to 74 kmph and horizontal visibility upto 500 metres</i>					
<i>Severe : Wind speed <math>\geq</math> 75 kmph and horizontal visibility upto 50 metres.</i>					
1.	16 Apr.	Ganganagar	Moderate	One person died in Padampura under an uprooted tree.	
2.	19 Apr.	Dholpur	Moderate	3 persons died and one injured when a trawler fell in Chambal.	
3.	29 Apr.	Dholpur	Moderate	One woman died due to roof-collapse.	
4.	1 May	Barabanki,, Faizabad, and Lucknow	Severe	6 persons died.	i) Many trees, electricity poles uprooted. ii) A few houses collapsed.
5.	3 May	Barabanki, Gorakhpur and Lucknow		7 persons died and 5 injured	At various places many trees and electricity poles uprooted disrupting traffic and power supply.
6.	13 May	Lucknow	Severe	One person died due to tree fall.	Many trees and poles uprooted.
7.	26 May	Lucknow	Moderate		At many places power cables cut off, trees and poles uprooted disrupting power supply and telephone links.
8.	28 May	Jodhpur	Moderate	One person electrocuted due to broken live wire.	

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
<b>TABLE – VIII : LIGHTNING</b>					
1.	15 Feb.	Lucknow		One child died and one woman badly injured.	
2.	25 Mar.	Cuttack		2 persons died, 5 injured in village Ragadi.	
3.	29 Mar.	Shimla		2 children died in tehsil Theog.	
4.	1 Apr.	Murshidabad		3 persons died in village Nadai-Berhumpore.	
5.	4 Apr.	(a) Amravati		One person died and another injured in Daryabad-Achalpur tehsil.	
		(b) Nanded		2 persons died in tehsil Babhali and Barad and 2 women injured.	
		(c) Pune		One woman died in Palasdeo-Indapur tehsil.	
6.	5 Apr.	Kasaragode, Kottayam, Pathanamthitta and Thiruvananthapuram		6 persons and one child died and 2 persons injured.	
7.	11 Apr.	Ahmadabad		One 18-year old youth died in Meghaninagar area.	
8.	13 Apr.	(a) Sonapat		One youth died in village Mudlana.	
		(b) Ramanathapuram		2 persons died.	
9.	14 Apr.	(a) Bathinda		2 persons died in Raike village.	
		(b) Bundi and Chittorgarh		2 persons died in Hindoli and Damakhera.	
10.	15 Apr.	Chandigarh		One boy died on the spot.	
11.	16 Apr.	Ganganagar		One person died in village Gudia.	
12.	17 Apr.	Jaisalmer		One person died.	
13.	18 Apr.	Ganganagar		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>
14.	19 Apr.	(a) Bastar (b) Sikar		One person died at Halidah. 5 children died in Sikrai.	
15.	22 Apr.	Uttara Kannada		2 persons hospitalized in Kay- eegudde-tehsil Sirsi.	
16.	28 Apr.	Kancheepuram		3 persons died.	
17.	3 May	(a) Farrukhabad (b) Lakhimpur Kheri (c) Rohtak		6 persons died.	One house caught fire.
18.	14 May	Gurdaspur		One person died in Gohana and 3 women in the field re- ceived burn injuries.	3 houses damaged.
19.	15 May	Patiala		12 persons injured in Lahroon village near Pathankot.	Some houses in Barwala and Kharad damaged.
20.	16 May	(a) Mandi		One person injured at Dera Bassi.	
21.	19 May	(b) Jaipur		Jersey cows in a cow-shed killed in village Sagncharhar in Jogindarnagar block.	i) Cow-shed reduced to ashes. ii) A big tree torn vertically into two pieces. iii) Several electronic gadgets damaged.
22.	21 May	North 24 Parganas		2 youths died. One child died in village Dudu.	
23.	27 May	(a) Birbhum		One person died in Diamond harbour and 4 others in Gaighata.	
24.	28 May	(b) Jhalawar Chhindwara		One person died in Singi, Bolpur. One youth died. One woman died and one per- son injured. 4 animals died.	
25.	3 Jun.	Bardhaman		One man died in Gopalpur.	One grocery shop and five houses caught fire in Bhor tehsil.
26.	8 Jun.	Pune			
27.	9 Jun.	(a) Rajkot		One man injured in village Jin- jan-Sardargarh.	
		(b) Thane		2 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>
28.	10 Jun.	Nashik		2 children sleeping in the home died when lightning entered through a hole in the wall and 2 others injured badly in village Patpimpri, tehsil Sinnar.	More than 20 television sets damaged in Malegaon camp area.
29.	13 Jun.	(a) Nashik (b) Wardha		One person died and 2 women injured in Dindori. 3 girls and one person died and one person got burnt in Aashti village when they took shelter under a tree.	
30.	15 Jun.	(a) Amreli (b) Jamnagar		3 persons died in Nana Nadiad. 2 persons died in village Dabia.	
31.	2 Jul.	Hamirpur (Himachal Pradesh)		2 persons died and one seriously injured.	
32.	10 Jul.	Nagpur		2 persons died in Nagpur city.	
33.	31 Jul.	Dharwad		One woman died in Chennur village, Haveri tehsil.	
34.	6 Aug.	Dewas		2 persons died in village Nandan.	
35.	10 Aug.	Bhandara		2 persons died in Chikhli.	
36.	11 Aug.	Valsad		5 cattle died in Nagana village of Dharampur tehsil.	
37.	13 Aug.	Kurukshetra		One person died in village Peedal.	
38.	16 Sep.	Bidar		2 persons died in Aurad tehsil under a tamarind tree.	
39.	19 Sep.	Thiruvananthapuram		One person died and another injured.	
40.	20 Sep.	Gulbarga		6 persons, including 3 women, died.	

<i>N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
41.	22 Sep.	Gulbarga		One woman died in Sedam tehsil.	
42.	26 Sep.	Ahmednagar		2 youths died in Sangamner tehsil.	
43.	1 Oct.	(a) Hissar (b) Parbhani		5 persons died and 3 injured. 2 persons died in Takli.	
44.	4 Oct.	(a) Jalgaon  (b) Medinipur		4 persons died at different places. A woman and her son died in Barakalankia.	
45.	5 Oct.	(a) Bardhaman (b) Murshidabad		One boy died in Bankathi. 2 persons died and 13 injured in Kandi subdivision.	
46.	12 Oct.	Different parts of Rajasthan		One person died and a few cattle perished.	
47.	13 Oct.	Gulbarga		One person died in Ragunala village.	
48.	5 Nov.	Mysore		One girl died at Jayapura – Ramnagar tehsil.	
49.	15,16 Nov.	Idukki and Thiruvananthapuram		One person died and 8 other injured.	
50.	6 Dec.	Thiruvananthapuram		3 persons injured.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
<b>TABLE - IX : THUNDERSTORM</b>					
<b>CRITERIA</b>					
<i>Moderate : Loud peals of thunder with frequent lightning flashes, moderate to heavy rains and maximum wind speed 29 to 74 kmph.</i>					
<i>Severe : Continuous thunder and lightning, heavy rains and maximum wind speed <math>\geq 75</math> kmph.</i>					
1.	14 Feb.	Shimla and Several parts of Himachal Pradesh	Severe		Roots of many houses and hoardings blown off, many trees uprooted.
2.	21 Feb.	Bhadrak	Severe (Tornado)	2 women and 9 cattle died due to fire caused by strong wind.	i) Tehri block lashed by Tornado. ii) More than 100 thatched houses destroyed. iii) Trees uprooted and telephone and electricity lines disrupted.
3.	23 Mar.	South 24 Parganas	Moderate		i) Many kutcha houses damaged. ii) Train services disrupted.
4.	29 Mar.	Chandigarh	Moderate		Power supply disrupted.
5.	1 Apr.	Medinipur, Murshidabad and Uttar Dinajpur	Severe	11 persons died and 100 injured in Durgachala, Berhampur and Goalpukur.	Thousands of people became homeless.
6.	4 Apr.	(a) Amravati	Moderate	One person died under a tree in Poornanagar near Aasegaon.	
		(b) Solapur	Moderate		i) Damage to mango, grape, and water-melon reported ii) Power supply disrupted in Barshi, Kurduwadi, Modneemb and Mohol. iii) Baked bricks damaged.
		(c) Nanded and Osmanabad	Moderate		Stored jowar, sugar and standing wheat crop damaged.

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
		(d) Satara	Moderate		<ul style="list-style-type: none"> <li>i) 50,000 bags of sugar in Someshwar Sugar Factory got drenched.</li> <li>ii) Damage to the factory office also reported.</li> <li>iii) Damage to tomato and wheat crop reported.</li> </ul>
7.	6 Apr.	(a) Kolhapur	Severe	One person died.	Crops damaged and trees uprooted.
8.	7 Apr.	(b) Nanded Bardhaman	Severe Moderate	3 persons died. One person died.	<ul style="list-style-type: none"> <li>i) Telephone and electricity lines cut off.</li> <li>ii) More than one hundred villages affected.</li> </ul>
9.	12 Apr.	Ahmadabad	Moderate		Mango and tomato plantations damaged.
10.	13 Apr.	Jind	Moderate		Standing wheat crop in Hebatpur, Ikkas, Kandela, Radhana etc. severely damaged.
11.	14 Apr.	Fatehabad	Moderate		Standing wheat crop in Bhatta, Jakhal, Ratia and Tohana severely damaged.
12.	18 Apr.	Bathinda, Fatehgarh Sahib, Firozpur, Hoshiarpur, Mansa and Patiala	Severe		<ul style="list-style-type: none"> <li>i) Wheat crop in thousands of hectares destroyed.</li> <li>ii) Wheat stored in grain market also destroyed.</li> </ul>
13.	26-28 Apr.	Meghalaya (Various parts)	Severe	3 persons died.	<ul style="list-style-type: none"> <li>i) Standing crops damaged.</li> <li>ii) Many trees uprooted.</li> <li>iii) 3000 persons in East Khasi Hills and Jaintia Hills became homeless.</li> </ul>
14.	27 Apr.	(a) Barpeta and Kamrup	Severe	One person died at Mansheri in Barpeta district.	<ul style="list-style-type: none"> <li>i) Several houses damaged and many trees uprooted disrupting power supply.</li> <li>ii) Several areas around Guwahati city water logged.</li> </ul>
15.	29 Apr.	(b) Imphal Dharwad and Hubli	Moderate Severe	2 persons died in Dharwad city and one woman died in Halyala (Hubli).	Several houses damaged and many trees uprooted.
16.	3 May	Haryana (Some parts)	Moderate		<ul style="list-style-type: none"> <li>i) Many trees uprooted.</li> <li>ii) Wheat stored in a granary weighing 1.20 lakh quintal got damaged.</li> </ul>

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
17.	7 May	(a) Banka	Severe	4 persons died and 2 injured in Galianpur.	
		(b) Hamirpur (Himachal Pradesh)	Severe		i) Many trees at several places uprooted disrupting the road traffic. ii) Extensive damage to crops.
		(c) Karnal	Severe	2 mazdoors died and 2 injured due to roof collapse.	Hundreds of trees uprooted affecting traffic, telecom services and drinking water supply.
		(d) Bathinda	Severe	One person died due to tree fall.	Road traffic on Bathinda-Gunanagar and many other cities jammed.
18.	10 May	Darbhanga, Motihari and Saharsa	Severe	11 persons died.	
19.	16 May	Buxar	Severe	4 persons died and 9 injured in Bhabhwar.	
20.	18 May	Nagaon	Severe	6 persons died and one injured.	i) Several houses damaged in Bebejia. ii) Power supply and telephone services disrupted.
21.	22 May	Jamui	Severe	2 children died in Lagma.	
22.	26 May	Bareilly, Kanpur and Unnao	Severe	16 persons died and 12 injured at various places.	
23.	27 May	Jind	Severe	One youth died when a big board fell in Khedi Bullon.	
24.	2 Jun.	Bhiwani (Haryana), Chandigarh and parts of Punjab	Severe	2 persons died due to house collapse in Chandigarh.	Many cases of wall collapse and uprooting of trees reported from Barsana, Doodiwala, Kamod, Nilawal and Samaspur (Bhiwani) resulting in disruption of traffic.
25.	3 Jun.	Kolkata	Moderate		Water logging in Kolkata city and suburbs reported, affecting normal life.
26.	7 Jun.	Lucknow	Moderate	One calf electrocuted in Alam-bag – Lucknow city.	Many trees uprooted disrupting power supply.
27.	9 Jun.	Rohtas	Severe	3 persons died and one injured in Rajandih.	
28.	11 Jun.	Jalgaon	Severe	6 persons died.	
29.	14 Jun.	Dakshina Kannada	Severe	A cow died due to electrocution in Nidamballi.	i) Work of the Belur village bridge in Kundapur tehsil held up. ii) Bus shelter, cow shelter and a few houses collapsed.

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
10.	18 Jun.	Dakshina Kannada	Moderate		i) In Edarukanjadi village, 60 arecanut and some coconut trees uprooted. ii) In Hirgana village, roof tops blown off.
11.	27 Jun.	Samastipur	Severe	One person died in Kishnaranayanpur.	
12.	2 Jul.	Saharsa	Moderate	One woman died in Jeevarchpur.	
13.	3 Jul.	Nagaon	Severe	3 persons died and 4 injured in village Urukata.	
14.	16 Jul.	Hooghly	Moderate	One person died in Haripal.	
15.	23 Jul.	Bankura	Severe	4 persons died and 7 injured in Nutanpally.	
16.	29 Jul.	North 24 Parganas	Severe		Overhead wires snapped off disrupting train services in Gobardanja.
17.	30 Jul.	Nalbari	Severe	One person died in Kumarkata.	
18.	1 Aug.	Bardhaman	Severe	2 persons died and 8 injured in village Shewlee.	
19.	4 Aug.	North 24 Parganas	Severe	2 women died in Bashirhat.	
20.	5 Aug.	Murshidabad	Severe		T.V. Centre in Berhampore damaged.
21.	7 Aug.	Bardhaman	Moderate	One person died in Barul village.	
22.	9 Aug.	Bardhaman	Moderate	A youth died in Shibpur village.	
23.	23 Aug.	Supaul	Severe	2 persons died in village Taffrasa.	
24.	30 & 31 Aug.	Barpeta, Nagaon and Sonitpur	Severe	3 persons in Kathalguri (Barpeta), one each in Nagaon and Sonitpur died; 4 others injured.	
25.	1 Sep.	Morigaon	Severe	2 persons died in Mairabari.	
26.	7 & 8 Sep.	Nadia	Moderate	One woman died in Karimpur, Krishnagar.	Temple at Bagula village damaged.

<i>N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
7.	16 Sep.	(a) Dakshin Dinajpur	Moderate	2 women died in Nanahara near Balurghat due to house fire.	
		(b) Bokaro	Severe	5 persons died.	
18.	18 Sep.	Mumbai	Moderate		Road and rail traffic disrupted due to water logging.
19.	22 Sep.	Pune	Severe		Roof tops blown off, many trees uprooted and wires snapped off in Loni and Dhamni.
50.	25, 26 & 28 Sep.	Beed, Jalgaon, Latur, Nashik and Solapur	Moderate	One student in Sinnar died and other students injured when roof top of the school blown off.	i) Many trees, electric and telephone poles bent and uprooted. ii) Big hoardings fell disrupting traffic. iii) Vegetables destroyed and sugarcane crop damaged.
51.	4 Oct.	Kodarma	Severe	5 persons died and 25 injured.	
52.	18 Oct.	Darbhanga	Moderate	2 persons died.	A few kutcha houses damaged.

**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.	18 Feb.	Nagaon	Heavy	One person injured and one cow died.	In Nagaon city and neighbourhood, many trees and electric poles uprooted and standing crops damaged.
2.	21 Feb.	North 24 Parganas	Heavy	In Bashirhat, 200 persons injured, 400 cows, many goats and cattle injured due to very heavy hail.	i) About thousand houses and tiled sheds damaged. ii) Standing crops and vegetables destroyed at Deganga.

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
3.	5 Mar.	Akola	Heavy	i) Large number of crows, sparrows, wood-peckers and herons dwelling on trees died. ii) A few pigs perished and many animals injured.	i) Wheat, gram, mango, orange etc. in Risod, Washim, Mangrupir etc. badly damaged. ii) Hoardings blown off, trees uprooted, power supply disrupted and vehicles damaged.
4.	8 Mar.	Sambalpur	Moderate		Damage to crops reported from Bhatli block.
5.	13 Mar.	Chittorgarh and Rajasmand	Moderate		Damage to standing crop reported.
6.	28 Mar.	(a) Hamirpur and Shimla (H.P.) and Hoshiarpur (Punjab)	Heavy		i) Many trees uprooted. ii) Widespread damage to crops reported. iii) In Kufri, Naldehra and Theog villages extensive damage to fruit crop reported.
		(b) Rohtak and Sonapat	Heavy	7 milk giving cattle died.	i) Standing wheat and mustard crop destroyed. ii) 35 villages in Rohtak and more than 50 in Sonapat worst affected.
7.	29 Mar.	(a) Bathinda and Mansa	Heavy		Considerable damage to wheat, mustard, barley and gram crop reported.
		(b) Ambala, Jind, Panipat and Rohtak	Moderate		Wheat crop badly damaged.
		(c) Solan (H.P.) and Panchkula (Harayana)	Heavy		i) Damage to wheat and other crops reported. ii) Normal life disrupted in Kalka.
8.	9 Apr.	Dhemaji and Dibrugarh	Moderate		Standing crops and more than 500 houses damaged.
9.	15 Apr.	Hissar, Kurukshetra, Chandigarh and neighbourhood	Moderate		Standing wheat, mustard crop in Mirzapur, Bhiwani, Kheda etc. and grape vines damaged.
10.	16 Apr.	Dhubri, Golaghat, Kamrup, Nagaon and Sonitpur	Heavy	One person died and another injured.	i) Standing crop damaged. ii) Many trees uprooted disrupting road traffic and power supply for several hours. iii) About 300 families became homeless.
11.	18 Apr.	Alwar	Heavy	One shepherd and 41 sheep died.	Damage to crops reported.
12.	19 Apr.	(a) Karnal (b) Kurukshetra (c) Nashik	Heavy Heavy Moderate		Standing as well as harvested crop destroyed. Huge stocks of piled up wheat destroyed. Damage to crops reported from Satana.

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
13.	3 May	Kurukshetra	Moderate		Standing crop in Ladwa damaged.
14.	7 May	Kangra	Heavy		i) Hails heavy enough to break and damage the plastic covers of storage water tanks in Palampur and neighbourhood reported. ii) Wheat crop damaged severely.
15.	9 May	(a) Begusarai (b) Darbhanga (c) Sithamarhi	Heavy Heavy Heavy	One girl died in Raghunathpur. 2 persons died and 20 injured. 14 persons died	Many kutcha houses damaged. Many kutcha houses damaged. Many kutcha houses damaged.
16.	11 May	Sonitpur	Moderate		In Gohpur subdivision, standing crops damaged, many trees uprooted disrupting power supply and telephone services.
17.	18 May	Sawai Madhopur	Heavy	20 goats died in Shivad.	
18.	26 Sep.	Akola	Moderate		Many trees uprooted and crops damaged.
19.	6 Nov.	Lucknow	Heavy		Crops damaged, number of trees and hoardings uprooted and displaced disrupting traffic at various places.

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

**ARUNACHAL PRADESH**

1.	Jul. & Aug.	Lohit, Tawang, Upper Subansiri and West Siang	Moderate flood (Lohit and Di-garu)	i) One human life lost. ii) 5 cattle perished.	i) Road links with Tezu disrupted as both the rivers in full spate and landslides from many places. ii) 41 houses damaged.
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**ASSAM**

1.	25 May	Kamrup and Nalbari	Flash flood (Pagaladia)		i) Bamboo bridge at Barbhag washed away disrupting the road communication. ii) Many areas in Guwahati flooded disrupting the links.
2.	1 Jun.	Kamrup	Heavy rains	5 persons died and 2 badly injured due to landslides in Guwahati city.	i) Landslides reported. ii) Thousands of people marooned due to water logging and disrupted road links.
3.	Jun. (2 <sup>nd</sup> and 3 <sup>rd</sup> week)	Cachar, Dhubri, Goalpara, Hailakandi, Kamrup, Karimganj and Nagaon	Moderate flood (Barpani)	12 persons died and one injured in landslides.	i) Landslide reported from east Gotanagar of Guwahati city. ii) 3.5 lakh population affected. iii) Vast areas flooded damaging the standing crop. iv) Road links with Mizoram and Tripura cut off for a week.
4.	Jul. (1 <sup>st</sup> week)	Dhemaji and Jorhat	Moderate flood (Brahmaputra, Gai and Jiabhareli)		i) Railway bridge near Gogamukh washed away. ii) Road between Garmur and Kamlabari submerged disrupting the traffic. iii) Vast crop land flooded damaging the crops. iv) About 10 lakh people affected.

S.No.	Date/Period	Area affected	Intensity (River)	Casualties	Extent of damage
5.	Jul. (3 <sup>rd</sup> week) to Aug. (1 <sup>st</sup> week)	Barpeta, Bongaigaon, Darrang, Dhemaji, Dhubri, Jorhat, Kamrup, Lakhimpur, Nalbari and Sonitpur	Severe flood (Brahmaputra, Kuija and Pahumara)		<ul style="list-style-type: none"> <li>i) Communication on NH31 and other roads, also railway links with Goalpara disrupted. Similarly, rail/road links with Dhemaji, Darrang affected</li> <li>ii) Large area of Pathsala subdivision in Barpeta flooded due to Pahumara.</li> <li>iii) In Bongaigaon, 4,500 families affected by flood waters of Kuija.</li> <li>iv) More than 40,000 hectares of crop land flooded.</li> </ul>
6.	Aug. (3 <sup>rd</sup> week)	Dhemaji, Goalpara, Morigaon and Sonitpur	Moderate flood (Brahmaputra and Jiadhal)		<ul style="list-style-type: none"> <li>i) Embankment of river Brahmaputra under Lakhimpur subdivision breached damaging crops in West Goalpara, Morigaon and Sonitpur.</li> <li>ii) 40 families in Dhemaji washed away in the floods of Jiadhal.</li> <li>iii) Road traffic on NH52 disrupted.</li> </ul>
7.	Sep. (2 <sup>nd</sup> and 3 <sup>rd</sup> week)	Dhemaji, Goalpara, Morigaon and Nalbari	Moderate flood (Brahmaputra, Jiadhal, Gai and Pagaladiya)	One person died.	<ul style="list-style-type: none"> <li>i) Vast crop land flooded.</li> <li>ii) More than one lakh people affected.</li> </ul>
8.	Sep. (4 <sup>th</sup> week) to Oct. (1 <sup>st</sup> week)	Goalpara	Moderate flood (Brahmaputra)		In western parts only 10-15% of land remained for cultivation.
*	Whole year	0.086 m.ha.			<ul style="list-style-type: none"> <li>i) 0.194 million population affected.</li> <li>ii) Crops in 0.013 m.ha. damaged.</li> </ul>

#### **BIHAR & JHARKHAND**

1.	Sep. (1 <sup>st</sup> and 2 <sup>nd</sup> week)	Begusarai, Darbhanga, East Champaran, Gopalganj, Katihar, Koshi, Muzaffarpur, Madhubani, Saran, Sitamarhi, Siwan, West Champaran and Vaishali	Severe flood (Gandak)	<ul style="list-style-type: none"> <li>i) More than 150 persons died.</li> <li>ii) About 250 animals perished.</li> </ul>	<ul style="list-style-type: none"> <li>i) Crops and many houses destroyed.</li> <li>ii) Bridge on NH85 between Devapur and Mirzapur destroyed completely affecting road links to Barauni, Motihari, Raxaul, Betia and Nepal.</li> <li>iii) Railway track of the section Mashrak submerged.</li> <li>iv) Power supply cut off as grid stations flooded.</li> <li>v) Army helped rescue operations.</li> </ul>
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S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
2.	5 Oct.	Bhojpur	Heavy rains	6 persons died.	
3.	8 Oct.	Buxar	Heavy rains	2 persons died.	
*	Whole year	1.015 m.ha.		<i>In Bihar,</i> i) 205 human lives lost. ii) 524 cattle perished.	<i>In Bihar,</i> i) 8.292 million population affected. ii) Crops in 0.532 M.ha. damaged. iii) 1,69,522 houses damaged.
<b>GUJARAT</b>					
1.	5 Jun.	Ahmadabad	Heavy rains		Two buildings collapsed in Shahpur.
2.	11 Jun.	Ahmadabad	Heavy rains	2 persons injured under an uprooted tree.	
3.	15 Jun.	Porbandar	Heavy rains	One person swept away.	
4.	18 Jun.	Gandhinagar	Heavy rains		One 3-storeyed building fallen.
5.	29 Jun.	Ahmadabad	Heavy rains	One person died under an uprooted tree in Shahibag.	
6.	10 Aug.	Northern parts	Heavy-rains	8 persons including 4 children died and 25 injured due to wall collapse.	
7.	11 Aug.	Valsad	Heavy rains	One woman died due to wall collapse in Nanakwada village.	
*	Whole year			i) 113 human lives lost. ii) 381 cattle lost.	328 houses damaged.
<b>HIMACHAL PRADESH</b>					
1.	1-2 Jun.	Kangra, Mandi and Shimla	Heavy rains	i) One person drowned in a Nullah in Nurpur. ii) A cow and 2 bulls washed away in Katra.	i) One house buried in village Mehi due to landslide. ii) Pathankot-Mandi highway blocked for vehicular traffic. iii) A few scooters washed away in Kangra district. iv) Signboards blown off, T.V, Antennae twisted and power supply disrupted.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
2.	12 Jun.	Kullu	Heavy rains (Cloud burst)		3 houses washed away and 20 badly damaged at Bara Bhuin near Bhuntar, 11 km. from Kullu.
3.	13-14 Jun.	Kullu	Heavy rains		i) Landslides reported. ii) Manali-Kullu National Highway closed due to landslides.
4.	3 Jul.	Kinnaur	Heavy rains		Bridge over Ravi nullah washed away.
5.	22 Jul.	(a) Kullu  (b) Nainital	Flash flood due to cloud burst  Flash flood due to cloud burst	One person washed away in Jeeva nullah in Banjar.	Floods caused heavy loss to Parvati Hydel Electric Project.
3.	29-30 Jul.	Kangra	Flash flood	i) 27 persons died in Bai- jnath. ii) 40 cattle washed away.	Heavy loss reported to private and public property.
7.	8 Aug.	Sirmaur	Heavy rains (cloud burst)		i) Landslides reported from various places in Nahan. ii) Number of houses collapsed.
8.	10 Aug.	Shimla	Heavy rains (cloud burst)	In Devdhar, i) 5 persons died. ii) A few cattle washed away.	
9.	14 Aug.	Himachal Pradesh (many parts)	Heavy rains	29 persons died, in which, 16 from Chamba alone due to landslides.	Landslides reported.
10.	22 Aug.	(a) Kangra  (b) Kullu	Heavy rains (cloud burst)  Heavy rains (cloud burst)	2 persons died.	2 bridges collapsed causing heavy loss.
*	Whole year	0.008 m.ha.		i) 45 human lives lost. ii) 915 cattle lost.	i) 0.405 million population affected. ii) Crops in 0.006 m.ha. damaged. iii) 2683 houses damaged.
<b>KARNATAKA</b>					
1.	16 Apr.	(a) Bangalore	Flash flood (Vishwabharathi)	5 deaths reported from various area of Bangalore city.	

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
2.	19 Apr.	(b) Bellary Bangalore	Flash flood (Tungabhadra) Heavy rains		Construction material stored for building a bridge near Madagatti Dingbund washed away. i) Lake of Bellandur over flew. ii) Crops in the nearby fields damaged. iii) More than 20 cars submerged and 2 compound walls collapsed.
3.	Jun. (3 <sup>rd</sup> week)	Dakshina Kannada and Uttara Kan- nada	Heavy rains	One buffalo died in Udupi ta- luka.	i) Areca nut and coconut trees uprooted in various talukas e.g. Alakonda, Kathagola, Kunta and Puttur. ii) Cowsheds as well as houses collapsed.
4.	7 Jul.	Dakshina Kannada	Heavy rains	3 persons injured due to wall collapse in Venlock Govt. Hos- pital in Mangalore city.	
5.	9 Jul.	Kodagu	Heavy rains		i) Madikeri-Bhagmandala road flooded by 1ft of rain water. ii) 6 poles of 33 kV line fallen in Balekadu estate causing power failure in Shuntikoppa and Madikeri.
6.	Jul. (3 <sup>rd</sup> and 4 <sup>th</sup> week)	Bangalore, Dakshina Kannada, Ko- dagu and Uttara Kannada	Heavy rains	2 fishermen died in different incidences.	i) Many trees uprooted, houses damaged and temple of Ba- gandeshwara inundated. ii) Balamuri bridge in Kodagu submerged under water. iii) One Auto-rickshaw completely damaged due to tree fall in Bangalore city.
7.	7 Aug.	Dakshina Kannada	Heavy rains		Many houses damaged in Udupi taluka.
8.	20 & 21 Aug.	Chitradurga and Mandya	Heavy rains	5 persons died due to house collapse in Kanivebilichi (Da- vangere).	i) Paddy, sugarcane and coconut damaged. ii) Vishweshwaraih canal in Pandavpura – Mandya breached.
9.	26 Aug.	Bangalore and Mysore	Heavy rains	3 children died due to house collapse in Mysore tehsil.	Many trees uprooted affecting electric feeders and also road traf- fic.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
10.	17 Sep.	Mysore	Heavy rains		<ul style="list-style-type: none"> <li>i) Husur tehsil worst affected.</li> <li>ii) 3 tanks breached.</li> <li>iii) Standing crops like paddy, ragi and sugarcane over 100 acres destroyed.</li> <li>iv) Several coconut and areca nut trees uprooted and washed away.</li> </ul>
11.	21 Sep.	Bangalore	Heavy rains		<ul style="list-style-type: none"> <li>i) A hotel in an old building in Basavanagudi collapsed.</li> <li>ii) Many trees uprooted.</li> <li>iii) Low lying areas inundated.</li> </ul>
12.	22 Sep.	Bangalore Rural	Heavy rains	One woman washed away at Kodigrama.	Water from Yedur lake over flown. Low lying areas inundated damaging household articles and furniture.
13.	23 Sep.	(a) Bangalore	Heavy rains		400 houses in Bangalore and suburban flooded damaging furniture and household articles.
		(b) Tumkur	Heavy rains	3 persons, including 2 women, died due to house collapse.	More than 50 houses collapsed and more than 100 partially damaged.
14.	24 Sep.	(a) Bangalore	Heavy rains	A couple injured due to wall collapse.	
		(b) Bangalore Rural	Heavy rains		Standing crop in 450 acres submerged.
15.	25 & 26 Sep.	Raichur	Heavy rains	One woman died in a house collapse.	<ul style="list-style-type: none"> <li>i) Maski tehsil worst affected.</li> <li>ii) Villages near Maski cut off from rest of the state.</li> <li>iii) In Maski, more than 25 houses submerged and many houses in Maski tehsil collapsed leaving people without food and shelter.</li> <li>iv) The wall of historical fort near Nagarabenchhi entirely collapsed.</li> </ul>
16.	Oct. (2 <sup>nd</sup> and 3 <sup>rd</sup> week)	Bangalore, Bellary, Dharwad, Kolar and Raichur	Heavy rains	23 persons died and 58 injured in different incidences.	<ul style="list-style-type: none"> <li>i) In Bhima catchment area Banana and sugarcane crops and pump sets damaged.</li> <li>ii) One 90-year old Peepal tree having the girth more than 25 ft. uprooted in Bangalore city.</li> <li>iii) About 500 houses and one main bridge on the State highway near Sindanoor town badly damaged.</li> </ul>

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
17.	6 Nov.	Mandya	Heavy rains		i) Chikkdevarayasagar canal breached causing derailment of goods train. ii) 40 oil tankers also derailed, 19 of which flown off the rains. iii) Extensive damage to sugarcane and paddy crops reported.
18.	15 Nov.	Kolar	Heavy rains	3 persons of the same family died due to house collapse in Chikkaballapura.	
<b>KERALA</b>					
1.	7 Apr.	Kottayam and Kozhikode	Heavy rains		Widespread damage to property and agriculture reported.
2.	26 May	Alappuzha, Kollam and Kozhikode	Heavy rains	One person reported missing.	100 houses collapsed in Kollam and 3 other in two districts.
3.	8 Jun.	Kasaragode,	Heavy rains	One person died.	
4.	Jun. (3 <sup>rd</sup> week)	Alappuzha, Kollam, Kozhikode, Malappuram and Wayanad	Heavy rains	5 persons including one child died and 3 persons missing.	
5.	Jul. (2 <sup>nd</sup> week)	Alappuzha, Idukki, Kollam, Kottayam, Thiruvananthapuram and Thrissur	Heavy rains	22 persons died in Idukki district due to landslides and other incidences.	i) Landslides reported. ii) Widespread damage to property, and crops reported. iii) Damage to 210 houses also reported.
6.	22-25 Sep.	Thiruvananthapuram	Heavy rains	5 persons injured	i) 2144 houses damaged. ii) Widespread damage to agriculture and property reported.
7.	10 Nov.	Thiruvananthapuram	Heavy rains	40 persons died in a landslide at Poochmukki near Neyyar dam from Kurisumala Hills; a few others injured.	i) Landslides reported. ii) Electricity supply was totally cut. iii) 4 houses completely collapsed. iv) Police, army and fire brigade officials called for rescue operations.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
<b>MADHYA PRADESH &amp; CHHATISGARH</b>					
1.	13 Jun.	Many parts	Heavy rains	5 persons died.	
2.	3 Jul.	Guna, Mandsaur and Shivpuri	Heavy rains		Rail and road links disrupted and railway bridges damaged.
3.	10 Jul.	Dhamtari, Hoshangabad, Jabalpur, Jagdalpur, Kanker, Mandla, and Seoni	Heavy rains	7 persons died.	
4.	11 Jul.	(a) Damoh	Heavy rains	40 persons died when the bus carrying them fell in a nullah	
		(b) Raipur	Heavy rains	2 persons died.	
5.	18 Jul.	Jashpur and Rajgarh	Heavy rains	5 persons died.	Several houses collapsed and 40 villages flooded.
6.	17 Aug.	Kanker	Heavy rains	One person died.	Many houses damaged making many families homeless.
7.	11 Oct.	West Nimar	Heavy rains (Cloud burst)	One woman died due to house collapse in Bhikangaon.	
*	Whole year	0.089 m.ha. (pertains to Chhatisgarh)		In Chhatisgarh, i) 36 human lives lost. ii) 1580 cattle lost.	In Chhatisgarh, i) 0.410 million population affected. ii) Crops in 0.089 m.ha. damaged. iii) 12,353 houses damaged.
<b>MAHARASHTRA</b>					
1.	13 Jun.	Ahmednagar	Heavy rains		110 bags of stored sugar drenched in Parner.
2.	14 & 15 Jun.	Amravati, Buldhana, Chandrapur and Nagpur	Heavy rains	17 deaths reported from various places.	
3.	16-18 Jun.	(a) Mumbai & Thane	Heavy rains	8 persons died and 6 fishermen reported missing.	i) Central, harbor and western railway services disrupted. ii) Thousands of huts flooded. iii) Many trees uprooted, walls collapsed and electric wires snapped off.
		(b) Nandurbar and Nashik	Heavy rains	21 persons died	i) Road traffic on Nandurbar-Prakasha and Shahada-Taloda disrupted. ii) Many huts damaged.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
4.	9 Jul.	(c) Nagpur (d) Nanded Raigad	Heavy rains Heavy rains Heavy rains	A few cattle perished. 6 persons died.	In Western ghats, near Karjat landslides reported. Heave of boulders rolled on the central railway track near Jambrung and Palasdari.
5.	9 & 10 Jul.	(a) Ahmednagar	Heavy rains	1000 cattle perished.	In catchment area of Bhandardara-Mula dam, crops and houses extensively damaged. Many trees uprooted.
6.	11 Jul.	(b) Mumbai (c) Nagpur (a) Pune	Heavy rains Heavy rains Heavy rains	2 persons died. One child died in Nagpur city. 1200 grazing cattle perished in Adiwasi areas like Pokhari, Nigdale, Kondhawal of Ambegaon tehsil.	
7.	18 Jul.	(b) Raigad Pune	Heavy rains Heavy rains	Deaths of about 150 cattle and sheep reported from Junnar and Naneghat area.	Landslides reported in Warandha ghat affecting bus services.
8.	11 Aug.	Nagpur	Heavy rains	One child died in Poharadevi.	
9.	13 Sep.	Nagpur	Heavy rains		Many trees uprooted and low lying areas inundated in Nagpur city.
10.	19 Sep.	Mumbai	Heavy rains	2 persons drowned.	
11.	20 Sep.	Pune	Heavy rains		i) Water logging in post office premises of Warje reported. Help of fire brigade was sought. ii) City experienced disrupted power supply.
12.	1 Oct.	Aurangabad, Beed, Latur and Parbhani	Heavy rains	One person washed away in Aurangabad.	Road traffic disrupted.
13.	3 & 4 Oct.	Jalgaon	Heavy rains		Damage to jowar crop reported.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
14.	6-9 Oct.	Ahmednagar, Pune and Solapur	Heavy rains	i) One person died and 2 children injured due to house collapse in Pathardi (Ahmednagar). ii) 2 children died and one injured due to house collapse in Mangalvedha (Solapur)	i) Onion crop infested with 'Karpa and Taka' diseases. Harvested bajra crop drenched and became non consumable in Baramati area. ii) Pune and neighbourhood had disrupted power supply and water logging at many places.
15.	17 & 18 Oct.	Pune	Heavy rains		i) Landslides in Sinhgad ghat reported. Road blocked due to big boulders closing down the traffic completely. ii) Flowering of pomegranate crop destroyed in 400 acres of Indapur tehsil.
<b>MANIPUR</b>					
1.	30 Jun. & 1 Jul.	Imphal	Moderate flood (Imphal, Iril and Nambul)		Uripok and Sangolband areas worst affected due to breaching of river embankments; hundreds of houses flooded, flood water entered the Chierap court at Uripok.
<b>MEGHALAYA</b>					
1.	5 Jun.	Jaintia Hills	Heavy rains	8 persons died and 12 injured when a bus was pushed into a river due to landslide.	i) Landslides reported. ii) A stretch of 6 km. on NH 44 was covered with mud and silt affecting the traffic for one week.
2.	29 Jul.	East Khasi Hills	Flash flood (Nahum Khruah)	2 persons washed away.	

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
<b>ORISSA</b>					
1.	Jul. (2 <sup>nd</sup> and 3 <sup>rd</sup> week)	Entire State	Severe flood (Mahanadi, Brahmani, Devi, Kushbhadra and Dava)	i) 99 persons died. ii) 18,149 cattle lost.	i) All coastal and deltaic regions of Mahanadi flooded. Hirakud and Daleghai dam (Jagatsinghpur) flooded. ii) Cuttack, Jagatsinghpur, Jajpur, Kendrapara and Puri worst affected. Army and Air force conducted rescue operations. Food packets air-dropped. Personnel of INS Chilka shifted marooned people. iii) Acute shortage of necessary commodities. iv) Jharsuguda-Sambalpur highway flooded. v) Mahanadi and its tributaries changed their flow path at 40 places entered residential area creating havoc.
*	Whole year	0.900 m.ha.		i) 99 human lives lost. ii) 18,149 cattle lost.	i) 9.678 million population affected. ii) Crops in 0.900 m.ha. damaged. iii) 2,12,296 houses damaged.
<b>PUNJAB</b>					
1.	16 Jul.	Patiala	Heavy rains	3 persons died.	One house collapsed in Dera Bassi.
2.	14 Aug.	Many parts	Heavy rains	4 persons died in Mohali and 2 other in Barthana.	
*	Whole year	0.031 m.ha.		i) 14 human lives lost. ii) 107 cattle lost.	i) Crops in 0.031 m.ha. damaged. ii) 21 houses damaged.
<b>RAJASTHAN</b>					
1.	9 Jun.	Alwar	Heavy rains	One child died due to tree fall.	Many poles uprooted and houses damaged.
2.	16-18 Jun.	(a) Bhilwara (b) Kota	Heavy rains Heavy rains	2 children drowned in Meghras. 2 persons along with tractor trolley swept away in Kalisindh river.	

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
		(c) Udaipur	Heavy rains	2 shepherds and another 2 persons at different places died.	
3.	1-3 Jul.	Ajmer, Baran, Bhilwara, Bundi, Kota and Udaipur	Heavy rains	One girl died and 3 persons injured due to house collapse in Baran.	i) 12 'Kasbas' in Baran submerged under 5 ft. of water. Baran district cut-off completely from rest of the State. ii) Most of the lakes in Bundi and Kota districts over flown. iii) 60 houses damaged.
4.	10-14 Jul.	Banswara, Bundi, Jodhpur and Udaipur	Heavy rains	i) 5 persons washed away. ii) 300 cattle buried alive under debris.	Dozens of houses damaged.
5.	14 Aug.	Kota	Heavy rains	3 persons washed away in a nullah.	
	Whole year	0.003 m.ha.		i) 21 human lives lost. ii) 2999 cattle lost	i) 0.102 million population affected. ii) Crops in 0.001 m.ha. damaged. iii) 16,082 houses damaged.
<b>TRIPURA</b>					
1.	5 & 6 Jun.	West Tripura	Flash flood	One person washed away and another electrocuted in Agar-tala.	i) Tripura cut-off from rest of the parts. ii) 5000 people became homeless.
2.	19 Sep.	3 districts	Flash flood	One human life lost.	7453 houses damaged.
<b>UTTAR PRADESH &amp; UTTARANCHAL</b>					
1.	6 Jul.	Uttaranchal	Heavy rains	10 tourists died due to landslides in Gomukh.	i) Landslides reported. ii) Many people stranded on the way; helped by India - Tibet border Police force.

S.No.	Date/ Period	Area affected	Intensity (River)	Casualties	Extent of damage
2.	16 Jul.	Uttaranchal	Heavy rains (Cloud burst)	i) More than 25 persons died and many other injured/missing due to landslides in Gupt Kashi and Gauri Kund area ii) 25 cattle lost.	i) Landslides reported. ii) 26 houses damaged.
3.	18 Jul.	Rudra Prayag	Heavy rains (cloud burst)	i) 26 people died in landslides. ii) 30 animals perished.	i) Landslides reported. ii) 4 villages of Vyomguard and Fatta areas cut off. iii) 26 houses completely damaged. iv) Relief and rescue operations assisted by Police and Jawans of Indo-Tibet border security to remove debris. v) 850 Kedarnath pilgrims stranded between Gupt Kashi and Gaurikund. Traffic closed down on Dehradun – Chakrata and Tihiri – outer diversion, hampering supply of medicines, tents etc. to the affected people. 125 villages of Azamgarh and 65 in Bahraich inundated.
4.	4 Aug.	Azamgarh and Bahraich	Heavy rains		
5.	Sep. (1 <sup>st</sup> and 2 <sup>nd</sup> week)	East Uttar Pradesh	Severe flood	i) 212 persons died and number of persons injured. ii) Large number of cattle perished.	i) Power and telecom services disrupted. ii) Train services dislocated, routes diverted and many railway bridges damaged. iii) 2000 houses damaged.
*	Whole year			i) 273 human lives lost. ii) 312 cattle lost.	44,244 houses damaged.
<b>WEST BENGAL</b>					
1.	22 Jun.	Malda	Heavy rains	More than 50 persons drowned when a motor-boat capsized in the swollen Ganga near Ek-satichar.	The Kolkata Port Trust was requested to send divers for rescue operations.
2.	10-13 Jul.	Hooghly and Kolkata	Heavy rains		i) Many mud houses collapsed in Hooghly and Kakdweep. ii) 500 marooned people rescued by the State Govt.

S.No.	Date/Period	Area affected	Intensity (River)	Casualties	Extent of damage
3.	22 Jul.	Medinipur	Heavy rains		Low lying areas in Digha inundated due to breaching of embankment.
4.	28 & 29 Jul.	Darjeeling, Kolkata and North 24 Parganas	Heavy rains		i) Landslides reported from hills in Darjeeling cutting off communication on NH 31, and roads to Kalimpong and Sikkim. ii) Train services disrupted due to snapping off overhead wires in Kolkata and North 24 Parganas.
5.	Aug. (2 <sup>nd</sup> week)	Malda, Medinipur, Murshidabad and South 24 Parganas	Moderate flood (Ganga & Koshi)		i) More than one lakh people in 4 blocks of Malda marooned. ii) More than 60 huts of fishermen in Digha and Contai washed away, roads damaged. iii) River embankments in South 24 Parganas breached.
6.	Sep. (1 <sup>st</sup> and 2 <sup>nd</sup> week)	Jalpaiguri, Kolkata and Uttar Dinajpur	Moderate flood		i) Stretches of NH31 in Uttar Dinajpur and roads in Jalpaiguri washed away causing communication disruption. ii) Total one lakh population affected.
7.	Oct. (1 <sup>st</sup> and 2 <sup>nd</sup> week)	Darjeeling, Uttar Dinajpur and Dakshin Dinajpur	Moderate flood (Atrayee, Punarbhaba and Teesta)	i) 2 persons died and 6 injured in house collapse. ii) One girl drowned each in Uttar and Dakshin Dinajpur.	i) Landslides reported from many places including Rangtang (Kurseong) near Kalimpong. ii) Darjeeling-Sikkim road link cut off. iii) Balurghat town (Dakshin Dinajpur) inundated, thousands of residents marooned. iv) One truck loaded with cement bags washed away in Teesta river. v) Many houses collapse.
*	Whole year	0.413 m.ha.		i) 8 human lives lost. ii) 58 cattle lost.	i) 0.648 million population affected. ii) Crops in 0.049 m.ha. damaged. iii) 34635 houses damaged.

\* 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**

During the year 2001, 4 cyclonic disturbances were formed over the Indian seas. Three cyclones dissipated over the sea itself and only one cyclone crossed the North Tamil Nadu-South Andhra Pradesh coast causing substantial damage to the life and property. The details of the same are given below :

**BAY CYCLONE**

<b>Formation</b>					
1.	14-17 Oct.	<b>LPA Stage:</b> Over west-central and adjoining southwest Bay off north Tamil Nadu – south Andhra coast on 14 <sup>th</sup> morning. <b>Storm Stage :</b> Near Lat. 13.7°N/ Long. 81.0°E at 1200 UTC of 15 <sup>th</sup> .	Cyclonic Storm (Maximum Reported Intensity T2.5)	In coastal Andhra Pradesh, i) 108 persons died and 21 reported missing mainly due to heavy rains. ii) Approx. 1000 cattle perished.	i) The system caused damage in coastal Andhra Pradesh due to very heavy rainfall. Nellore, Chittoor and Cuddapah districts affected. ii) 1635 tanks breached. iii) Paddy, groundnut, pulses etc. in 1,25,000 hectares damaged. iv) 55,747 houses damaged. v) Stretches of NHs and other roads in Nellore and Chittoor districts affected. vi) Estimated loss to the tune of Rs.500 crores reported.
<b>Landfall</b>					
Near Nellore around 0000 UTC of 16 <sup>th</sup> .					
<b>Dissipation</b>					
Over Rayalaseema on 17 <sup>th</sup> morning.					