



INDIA METEOROLOGICAL DEPARTMENT
DISASTROUS WEATHER EVENTS, 1983

A REPORT



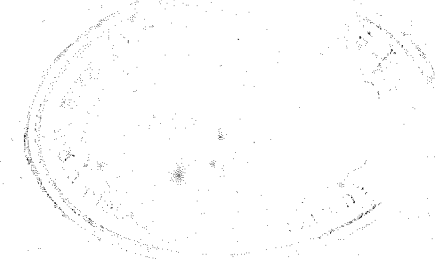
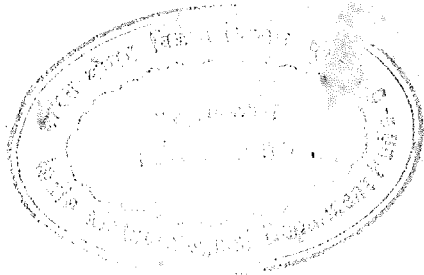
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Cover Photo : Devastation caused by landslides in Chiplun taluk (Maharashtra State).

DISASTROUS WEATHER EVENTS OF 1983

Nearly all the weather events caused damage to life and property during the year 1983. The most noteworthy among them were the following.

- (i) A Bay Cyclone, which hit the Andhra coast on 4 October, took a toll of 134 human lives and 42,800 livestock. Damage to crops was estimated at about Rs. 34 crore.
- (ii) A tornado, swept across Gaighata and Habro regions of 24 Pargana dist. of West Bengal, on 12 April. In a 2 min. spell it took a toll of 28 human lives and 500 others were injured. Many people reported to have seen a red ball of fire when tornado struck the area at about 1915 hrs IST.
- (iii) Severe flooding in many rivers of the country during the monsoons took a heavy toll of human lives and livestock. It also affected many acreage of cultivated land, damaging kharif crops heavily. The most affected regions were Andhra Pradesh, Saurashtra (Gujarat), parts of Maharashtra, Sikkim, Tamilnadu and Uttar Pradesh.
- (iv) The severe cold wave conditions during 1 to 15 January over Bihar and U.P. claimed 452 human lives.
- (v) Severe heat wave prevailed during 1st week of June in Maharashtra which claimed 100 human lives in Vidarbha region including 65 in Nagpur dist. alone.

The summary of these natural hazards is based on the various reports in the India Meteorological Department and the press informations. The areas affected by the weather phenomena are depicted on four maps (seasonwise).

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S.No.	Date/Period	Area affected	Intensity	Casualties	Remarks
(1)	(2)	(3)	(4)	(5)	(6)

TABLE - I : SNOWFALL

CRITERIA

Moderate : 7.6 to 34.9 cm in 24 hrs.

Heavy : \geq 35.0 cm in 24 hrs.

1.	8 Jan.	Chowkibal (Kupwara area of Jammu & Kashmir)	Heavy	14 persons died by avalanche.	
2.	9 Jan.	Dras area in Ladakh (J&K)	Heavy	2 BSF jawans died.	
3.	16 Jan.	Garhwal and Kumaon division (U.P.)	Heavy		Vehicular traffic disrupted.
4.	17 Jan.	Machhil (Kupwara area of J&K)	Heavy	5 BSF jawans died due to avalanche.	
5.	26-29 Jan.	(a) Simla - Solan stretches (Himachal Pradesh)	Heavy		(i) Power supply disrupted. (ii) Vehicular traffic on Simla-Kalpa road disrupted. (iii) Tap water frozen.
		(b) Jammu & Kashmir	Heavy		Vehicular traffic disrupted.
6.	27 Jan.	Tangmarg (Gulmarg area of J&K)	Heavy		Airflights between Jammu-Srinagar cancelled.
7.	30 Jan.	(a) Higher reaches of Lahaul-Spiti and Kinnaur (Himachal Pradesh)	Moderate		Vehicular traffic disrupted.
		(b) Jammu & Kashmir	Moderate		Jammu-Srinagar national highway closed to traffic.

(1)	(2)	(3)	(4)	(5)	(6)
8.	14 Feb.	(a) Higher reaches in J&K	Moderate		(i) Airflights between Srinagar-Leh cancelled. (ii) Vehicular traffic along Jammu-Srinagar national highway, Kishtwar-Bhadarwah-Poonch disrupted.
		(b) Chohar and Chachiot valley (Mandi district of Himachal Pradesh)	Moderate to Heavy		Road traffic, telecommunication and power supply disrupted.
9.	18 Feb.	Gilgit area (J&K)	Heavy	2 people died at Noru (Gurez)	
10.	18-24 Feb.	Pangi Valley (Chamba dist. of Himachal Pradesh)	Heavy	3 persons died	
11.	23 Feb.	Kargil and Kupwara (J&K)	Heavy	3 persons died in Mascal and 4 at Dras.	
12.	27,28 Feb.	Kashmir Valley	Heavy		Air services to and from Srinagar cancelled.
13.	1-3 Mar.	Badgam, Cherisharif, Kupwara and Shopian (J&K)	Moderate		Kashmir valley cut off.
14.	10 Mar.	Kargil (J&K)	Heavy	11 persons (including 8 jawans of BSF) died due to avalanche.	
15.	19,20 Mar.	Kashmir Valley	Moderate		(i) 500 vehicles stranded due to heavy landslide near Peerah and Ramban. (ii) Heavy damage caused to 'Major Trunk Road', loss estimated Rs. 5 crore.
16.	22,23 Mar.	(a) Kargil (J&K)	Heavy	7 persons died and 35 injured 12 houses collapsed in Sheela village seriously in Sheela village and 3 died in Phillithang.	

(1)	(2)	(3)	(4)	(5)	(6)
		(b) Kinnaur and Chamba (Himachal Pradesh)	Heavy	2 persons died in Tashingang village and 8 in other parts.	Outlet of river 'Chandra-Bhaga' frozen.
17.	25,26 Mar.	Banihal and Ramban (J&K)	Heavy		5000 passengers and 1000 vehicles stranded due to landslide.
18.	26 Mar.	Dras (J&K)	Moderate		3 barracks and 2 ration depots of BSF washed away due to avalanche.
19.	12-18 Apr.	Ladakh region (J&K)	Heavy	(i) 2 persons died in Gurez and Uri. (ii) 7 persons died and 8 injured seriously in Zaskar valley due to avalanche.	(i) Jammu-Srinagar national highway closed due to landslide. (ii) 1000 vehicles stranded.
20.	Oct.(3rd week)	Kulu (Himachal Pradesh)	Heavy	One person died and 100 other missing in Rohtang pass area.	(i) Condition of road from Koksar to Batal declared unsafe for vehicular traffic. (ii) Number of people in Chatru marooned due to heavy snow.
21.	25-29 Dec.	Garhwal and Kumaon region (U.P.)	Heavy		Vehicular traffic on Mussoorie-Chamba road suspended.

(1) (2) (3) (4) (5) (6)

TABLE - II : COLD WAVE

CRITERIA

Moderate : Night temperature 6 to 7°C. below normal.

Severe : Night temperature \geq 8°C. below normal.

1.	1-4 Jan.	Punjab	Severe	3 persons died in Barnala, 2 in Malerkotla and 1 in Dhanaula.	
2.	1-7 Jan.	M.P.	Severe	3 persons died in Jabalpur.	
3.	2-14 Jan.	Bihar	Severe	200 people died.	Primary and middle class schools closed for 3 days in Patna.
4.	4-17 Jan.	(a) Punjab	Severe	An old man died in Phagwara.	
		(b) U.P.	Moderate to Severe	252 persons died.	Lowest temperature (-1°C.) recorded at Fatehpur, Jhansi and Bijnaur on many days.
5.	9 Jan.	Himachal Pradesh	Moderate		Taps frozen in Simla.
6.	6-9 Dec.	Saurashtra region (Gujarat)	Moderate	One person died.	
7.	8-15 Dec.	Bareilly (U.P.)	Moderate	2 persons died (one of them near Bhojpur Rly. Station)	
8.	25-30 Dec.	(a) Haryana	Severe	One person died at Rewari on 27th.	
		(b) Punjab	Severe	2 beggars died in Amritsar on 30th.	
		(c) U.P.	Severe	15 persons died.	
9.	26-29 Dec.	M.P.	Severe	3 beggars died at Itarsi (Hoshangabad).	
10.	28, 29 Dec.	M.P.	Severe	3 persons died (2 in the outskirts of Jabalpur city and 1 in Godha area).	

(1) (2) (3) (4) (5) (6)

TABLE - III : HEAT WAVE

CRITERIA

Moderate : Day temperature 6 to 7°C. above normal

Severe : Day temperature \geq 8°C. above normal

1.	28 May to 2 Jun .	Bihar	Moderate to Severe	6 persons died.
2.	1 Jun .	Hyderabad	Moderate	One person died.
3.	2-7 Jun	(a) Punjab	Moderate	(i) 2 persons died in Moga, 1 in Jagraon and 1 in Phillaur village. (ii) 2 persons died in Bilaspore (Faridkot) on 3rd.
		(b) Haryana	Moderate	2 persons died in Hissar.
		(c) U.P.	Moderate	(i) 30 persons died in different districts. (ii) 20 monkeys reported died in Chitrakoot Dham area.
4.	6 Jun	(a) Bihar	Severe	25 persons died in Mokameh- Barauni Industrial belt.
		(b) U.P.	Severe	5 persons died (2 in Kanpur, 2 in Ballia, 1 in Banda)
5.	7 Jun	(a) Bihar	Moderate	3000 cattle-heads perished in Hazaribagh.
		(b) Orissa	Moderate	3 persons died in Bolangir.
		(c) Punjab	Moderate	One person died in Faridkot.
		(d) U.P.	Moderate	7 persons died. (3 in Banda, 2 in Bareilly and 1 each in Kanpur and Faizabad).
6.	Jun (1st week)	Maharashtra	Severe	100 persons died in Vidarbha region. (of which 65 in Nagpur alone).
7.	23 Jun .	Punjab	Moderate	One six month's old baby died at Phagwara.

(1)	(2)	(3)	(4)	(5)	(6)
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TABLE - IV : DROUGHT

KERALA

1. Apr. 10 out of 12 districts in the state. Severe

- (i) Paddy cultivation in 3,23,000 heatares of land perished amounting to a loss of Rs. 106.86 crore.
- (ii) Coconut, rubber, coffee, tea and other plantations badly affected.
- (iii) Acute drinking water scarcity in most of the State, especially in villages.

Dist. wise break-up as follows :-

Name of the Dist.	Area under paddy cultivation, affected (in hect.)	Loss in coconut production (in crores of Rs.)
1. Alleppey	25,000	2.5
2. Cannanore	17,600	1.5
3. Ernakulam	35,800	1.0
4. Kottayam	18,000	11.0
	11,000 (Coffee)	
5. Kozhikode	20,000	13.5
6. Palghat	20,000	-
7. Quilon	25,112	10.25
8. Trichur	33,000	9.0
9. Trivandrum	14,500	14.0
10. Wynad	10,130	-

MAHARASHTRA

2. Mar to May Ahmednagar Severe

- (i) About 50% of the total 85,000 hectares acreage under sugarcane crop, withered. Loss estimated at Rs. 10 crore.
- (ii) Bhandardara dam on Purna river dried up. Farming wells also dried up.

(1)	(2)	(3)	(4)	(5)	(6)
RAJASTHAN					
3.	May	Bikaner, Churu, Jaisalmer, Jodhpur and Sikar	Severe	Thousands of sheep and large numbers of cows and buffaloes perished.	A pot of water was selling at Rs. 3/- in Denoli village. (Jodhpur dist.)
SIKKIM					
4.	Jun.	South and West dist.	Moderate		Crop in 34 villages, lost. Loss estimated at Rs. 1.1 crore.
TAMILNADU					
5.	Mar.	Kanyakumari, Madras, North Arcot, Thanjavur.	Severe		(i) 1160 villages in Thanjavur dist. affected. (ii) Paddy, Millet and pulses badly affected. Paddy in 1,20,000 hectares lost. (iii) Low level in Mettur and other reservoirs affected. hydel power generation. (iv) Scarcity of drinking water experienced, especially by Madras city.

TABLE - V : SQUALLS

CRITERIA :

Moderate : Surface wind speed (in gusts) upto 80 kmph.
Severe : Surface wind speed (in gusts) \geq 80 kmph.

1.	9 Mar.	Nagpur	Severe (86 kmph)		(i) Roof top of many houses blown away. (ii) Many trees uprooted causing distruption to power supply & telephone lines.
2.	10 Apr.	Calcutta	Moderate	One person injured when tin shed collapsed on Ahiritola street in north Calcutta.	
3.	4 May.	24 Pargana	Severe (120 kmph)	2 fishermen reported missing near Jannudweep.	Hundreds of houses collapsed affecting 200 people in Sundarban area.

(1)	(2)	(3)	(4)	(5)	(6)
4.	10 & 11 May	New Delhi	Severe	(i) One woman died & 3 other injured in Kantinagar colony when H.T. Wire fell down. (ii) One scooter driver injured.	(i) Hundreds of trees uprooted disrupting power, telephone & water services. (ii) No. of hoardings blown away.
5.	18 May	New Delhi	Severe (90 km. ph.)		(i) Many trees and electric poles uprooted, disrupting power and telephone services. (ii) No. of hoardings blown away. (iii) Air service affected.
6.	29 May	Burdwan	Severe (90 to 100 km. ph.)	4 persons died and 27 injured when 3 coaches of Burdwan-Katwa passenger train blown off the track near Sripat-Srikhanda station, 141 km. away from Howrah.	
7.	31 May	Chandigarh	Moderate (70 km. ph.)		Unthrashed wheat damaged.
8.	8 Jun	New Delhi	Severe (105 km. ph.)	One person died in Bapanagar	(i) A section of the top of the 14 storeyed building collapsed. (ii) Many sign boards, auto-rickshaw tops, tree branches and roof tops of huts ripped off. (iii) Many electric poles uprooted causing disruption in power supply and vehicular traffic. (iv) Air service delayed.
9.	12 Jun	Satara	Severe	2 month old child died when the cradle blown away.	
10.	15 Jun	Quilon	Severe	15 Fishermen drowned in rough sea off Neendakara.	40 fishing boats capsized.
11.	18 Jun	Murshidabad	Severe	4 people died and 2 injured.	Roof tops of hundreds of houses blown off at Jarua and Banipur near Berhampore.

(1)	(2)	(3)	(4)	(5)	(6)
12.	28 Jun	Sagar	Moderate		(i) Roof top of a school building blown away in Deori. (ii) Bettle leaves worth Rs. 1 lakh, lost.
13.	4 & 5 Jul	New Delhi	Moderate (67 kmph)	2 persons died.	Many trees and electric poles uprooted.

TABLE - VI : GALE

CRITERIA

Strong : Wind speed \geq 75 kmph.

1.	13 May	Tirunelveli	Strong		Plantain garden worth several lakhs of rupees in 10 villages of Tiruchendur taluk, damaged.
2.	16 May	Cannanore and Palghat	Strong		Plantain trees worth Rs. 1 lakh in Cannanore and three lakh in Palghat, damaged.
3.	25 Jun	Ramanathapuram	Strong	4 boys died and 7 injured of which one seriously when a thatched shed of a Govt. Higher Secondary School building collapsed at Madarkulan.	
4.	12 Jul	Ernakulam	Strong	One person died.	40 houses and a small mosque completely destroyed in Muppzthadan and Asokapuram area.

TABLE - VII : DUSTSTORM.

CRITERIA

Moderate : Wind speed between 39 to 75 kmph and horizontal visibility upto 500 metres.

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

1.	18 May	Ballia	Severe	6 people died.	(i) Telephone/telegraph and electric lines badly damaged. (ii) Hundreds of trees uprooted. (iii) Hundreds of thatched huts blown away.
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(1)	(2)	(3)	(4)	(5)	(6)
				<u>TABLE - VIII : LIGHTNING</u>	
1.	13 Apr.	Midnapore		4 people killed (2 at Sankua in Kharagpur and 2 at Balaikunda in Sabang).	
2.	20 Apr.	Paradip		5 persons killed when a hut at Kansari Patna burnt due to lightning. Another person killed in Chatua and 4 others seriously injured.	
3.	21 Apr.	Ferozepore		2 persons killed in Dharamkot (Moga).	
4.	28 Apr.	Burdwan		11 people killed and 12 hospitalized in Rasulpur.	
5.	10 & 11 May	(a) Hissar		3 persons killed and 10 injured at Niyana.	
		(b) Sonapat		One person killed.	
6.	11 May	Hoogly (W. Bengal)		11 persons killed and 8 injured in Balagarh.	
7.	16-20 May	Ludhiana and Ropar		5 persons killed and 6 injured at Majari, 25 km. from Ludhiana.	
8.	17 May	Mangalore		A family of 3 members killed when lightning struck the home at Kallabettu, 50 km. from Mangalore.	
9.	12 Jun.	(a) Nanded		1 woman and her 3 sons killed in Katalwadi.	
		(b) Nagpur		1 woman killed.	
10.	13 Jun.	Aurangabad		1 person killed and 3 burnt severely in Rajwadi.	
11.	15 Jun.	Ratnagiri		2 women killed and 10 injured seriously in Borajbhati.	
12.	16 Jun.	Nasik		5 persons killed at Dadegaon, Imun and Astegaon.	
13.	20 Jun.	Jashpurnagar (M.P.)		12 persons killed.	

(1)	(2)	(3)	(4)	(5)	(6)
14.	Jul. (1st week)	(a) Dhule (b) Nagpur		2 persons killed at Nakane about 3 km. from Dhule. A teenager girl killed at Pardi near Nagpur.	
15.	10 Jul.	Ahmednagar		7 persons killed in Newasa.	
16.	19 Jul.	Ahmednagar		7 people including 2 Canal Inspectors of Mula Irrigation Project & 2 bullocks killed at Bramanni-Sonai in Rahuri.	
17.	14 Aug.	Bhopal			Dy. Chief Minister's residence damaged due to lightning.
18.	14-17 Aug.	Ajnora (U.P.)		5 killed & 1 woman injured.	
19.	20 Aug.	Unnao (U.P.)		3 people killed.	
20.	2 Sep.	Jabalpur		4 Agricultural labourers killed in Barkheda.	
21.	11 Sep.	Nasik		15-year old school girl killed in Malegaon.	
22.	15 Sep.	Jalgaon		One person killed in Edlabad.	
23.	16, 17 Sep.	Nagpur		9 persons (including an old woman and her teenager grand daughter) killed in Umred.	
24.	18 Sep.	Nagpur		3 persons killed.	

(1)	(2)	(3)	(4)	(5)	(6)
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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.	7 Feb.	Ganjam	Severe	142 cattle perished.	(i) 50 villages in Aska, Belaguntha and Palsara blocks affected. (ii) Rabi crop worth Rs. 31.15 lakh lost. (iii) 38 public buildings worth Rs. 1,38,000 damaged. (iv) 56 kutcha houses completely and 1651 partially collapsed. (v) Loss due to perishment of cattle estimated Rs. 31,100.
2.	18 Feb.	24 Paragana	Severe	30 persons injured in Basirhat sub-division.	(i) 4000 pucca houses collapsed rendering 20,000 people homeless. (ii) 5 boats drifted away in river 'Ichhamati'.
3.	11 Mar.	Karimganj (Cachar)	Severe		(i) 200 houses collapsed. (ii) Many trees uprooted. (iii) Mango crop badly damaged.
4.	Mar. (2nd week)	Karimganj	Severe	62-year old woman died in a house collapse.	
5.	20 Mar.	(a) Kamrup	Severe	2 persons died & many injured in Barpeta.	(i) Several houses (including a school building) damaged. (ii) Number of trees uprooted.
		(b) Bolangir	Severe	3 persons died and 10 other injured at Jalwa.	(i) 6 thatched houses collapsed and 10 partly damaged. (ii) 3 big mango trees and many other small trees uprooted.
6.	23 Mar.	Paradip	Severe (Tornado)	(i) 35-year old woman lifted upto a height of 10 metres and dropped. She was later admitted to hospital. (ii) 2 persons injured at 'Madhuban', residential area of Paradip Port Trust.	(i) Tornado in 1-2 min. spell damaged six wooden cubicles used as a Pan shop and thrown them away about 100 metres. (ii) Several hundred thatched huts razed to ground. (iii) Asbestop roof-tops of several houses blown off.

(1)	(2)	(3)	(4)	(5)	(6)
7.	10 Apr.	(a) Bankura.	Severe	6 people injured when a compartment of Bankura-Damodar down train derailed.	(iv) Power supply disrupted.
		(b) Goalpara.	Moderate		C.I. sheets of the roof of Bapuji High School at Abhaypuri blown off.
8.	11 Apr.	Kamrup,	Moderate		a) In Barpeta & neighbourhood, (i) roof top of many dwelling houses blown off. (ii) Some school buildings badly damaged. (iii) Many electric poles uprooted disrupting power supply. b) In Boke town, (i) Jawaharlal Nehru College building badly damaged. (ii) Loss estimated to be around Rs. 90,000.
9.	12 Apr.	24 Pargana	Severe (Tornado)	28 people died & 500 injured in Gaighata area.	(i) In a 2 min, spell tornado swept across 22 villages, worst affected was Charigachi. Many people reported to have seen a red ball of fire when tornado struck the area at about 1915 hrs. I.S.T. (ii) 7000 people rendered homeless due to house collapse in Gaighata & Habro, affecting 1450 families. (iii) Many trees & electric poles uprooted & roof-tops of many houses blown away. The concrete roof of 'Anchal Panchayat Office' shattered & its pieces thrown to a distance of 300 metres away.
10.	12-18 Apr.	(a) Ludhiana	Severe	One person died due to electrocution.	(iv) A shallow tube well uprooted at Charigachi. (i) Hundreds of trees uprooted. (ii) Electric & telephone poles twisted.

(1)	(2)	(3)	(4)	(5)	(6)
		(b) Bhatinda & Sangrur.	Severe		(i) Number of houses collapsed in Talwali & Longowal. (ii) 25 villages affected. (iii) Roof-tops of many houses (including a temple) blown away. (iv) Number of trees & electric poles uprooted.
11.	14 Apr.	Nadia.	Severe	2 persons died in Chapa block due to cow-shed collapse, several others injured.	(i) More than 500 families affected. (ii) One house collapsed. (iii) Number of trees and electric poles uprooted.
12.	16. Apr.	Pauri-Garhwal.	Severe	5 labourers died & 2 injured in a land-slide along Rishikesh-Badrinath road at Dugripeth.	
13.	22 Apr.	Bhubaneshwar.	Moderate		Self supporting masts of office of the Senior Supdt., Inter-State Police Wireless station, damaged.
14.	5 May.	Birbhum.	Severe (Tornado) (125 kmph)	(i) One person killed and more than hundred injured at Hoshenpur. (ii) Hundreds of cattle perished.	(i) Tornado in a one min. spell destroyed 855 huts and 165 houses, rendering 400 families homeless affecting about 2000 people. (ii) Roof top of 2 pacca houses blown off in Hoshenpur, the corrugated sheet of a school building blown off into the paddy field at a distance of some kilometres. (iii) Baro crop in 6000 bighas destroyed. (iv) Loss of property estimated at Rs. 6 lakh.
15.	5 & 6 May	Kamrup.	Moderate		(i) Several houses damaged. (ii) Roof top of Nalbari municipality market building blown off. (iii) Large number of trees uprooted. (iv) Extensive damage caused to standing paddy and other crops.

(1)	(2)	(3)	(4)	(5)	(6)
16.	6 May.	Jalpaiguri.	Severe (Tornado)	One person died & 12 seriously injured when camp at Tisha Barrage H.Q. razed to ground at Gajoldobia.	(i) Several trees uprooted. (ii) About 2000 people badly affected. (iii) Communication system and barrage site work virtually came to a standstill.
17.	7 May.	Burdwan.	Severe	3 persons died & 63 injured at Mangalcot.	50 houses in Palish & 33 houses in Krishnabati completely destroyed.
18.	16-20 May.	(a) Himachal Pradesh	Severe	26 persons died & 192 heads of cattle perished.	Fruit crops worth Rs. 25 crores damaged.
		(b) Punjab.	Severe	2 persons injured in house collapse at Amritsar & 5 in Mohalli near Chandigarh.	(i) Widespread damage to grain & fruit crops especially mango & grape. (ii) Thrashing of the wheat stalled.
		(c) Ballia.	Severe	5 persons died & 20 injured.	Many huts destroyed.
		(d) New Delhi.	Severe	One person died at Narbah.	Several trees uprooted.
19.	19 May.	Gazipur (U.P.)	Severe	13 persons drowned when a boat carrying 40 passengers capsized in Ganga near Karanda.	
20.	22 May.	Jodhpur.	Severe (Tornado)	(i) 4 persons died & 3 injured. (ii) Several cattle heads injured.	(i) Many persons trapped inside Kutcha houses which collapsed like cards. (ii) Corrugated iron sheets of several house tops blown off. (iii) Trees/electric poles/telephone poles uprooted & twisted blocking many roads.
21.	Jun. (3rd week)	Nasik.	Severe	5 people including a pregnant woman died at Dharegaon, Nimun and Astegaon in Manmad Taluk.	
22.	Jun. (4th week)	Chandrapur.	Severe	3 people washed away in Wardha river at Ballarpur while returning home after day's work.	
23.	2 Jul.	Bhavnagar.	Moderate		Low lying area under knee-deep water, affecting vehicular traffic.
24.	5 Aug.	Jammu.	Severe	One person died & hundreds of cattle heads perished in a cloud burst at Kishtwar.	

(1)	(2)	(3)	(4)	(5)	(6)
25.	11 Aug.	Akola	(Severe Tornado)		(i) Standing crop of cotton & jawar uprooted by the tornado lasting 30 min. and, which hit Palsod at 1500 hrs. IST. (ii) Standing crop on 120 hectares in Palsod, 5 hect. in Dhanori & 27 hect. in Deodi uprooted. (iii) Water level of river Mohali rose to 20 ft. height. (iv) Sand, pieces of bricks & pebbles accumulated on vast area.
26.	13 Aug.	Junagadh.	Severe (Probably Tornado)		(i) Tornado in a spell of 1 min. swept through a bus station at Bilkha in Junagadh taluk about 20 km. from Junagadh dist. (ii) A pucca cement cabin collapsed. (iii) 2 rickshaws went round and round in the storm.

TABLE - X : HAILSTORMS

CRITERIA

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

Moderate : Fall abundant enough to whiten ground

Heavy : Includes at least a proportion of large stones

1.	24 Jan.	(a) Nagpur.	Moderate		(i) Hailstones of size 1 cm. in diameter reported in Katol tehsil. (ii) Standing wheat & gram crops damaged.
		(b) Amravati.	Moderate		(i) Hailstones of size 2 cm. in diameter reported at Belora. (ii) Wheat & orange completely damaged.
2.	8 Feb.	Chandrapur.	Moderate	No. of spectators in a cinema hall injured, when the roof top blown away.	Hailstones of size 1 cm. in diameter reported at Bramhapuri.
3.	14 Feb.	Nagpur	Heavy	2 cattle perished.	(i) Hailstones of size 1 to 4 cm. in diameter reported at 32 villages in Mouda tehsil.

(1)	(2)	(3)	(4)	(5)	(6)
					(ii) Standing wheat, jowar, tur and Chilli crops, completely damaged.
4.	Feb. (4th week)	Jalpaiguri	Heavy		Thatched roof of the evacuees' camp completely damaged.
5.	5 Mar.	Behrampur	Heavy	(i) Number of persons injured, 6 in a serious condition. (ii) 50 cattle heads perished in Bhanjanagar Sub-division.	(i) Widespread damage caused to rabi crop. (ii) Number of roof tops of public and private buildings blown off.
6.	19 Mar.	North district (Tripura)	Heavy	A girl died & 10 others seriously injured in Kamalpur Sub-division.	(i) Several thatched houses razed to ground. (ii) Many trees uprooted.
7.	19, 20 Mar.	Jullundur & Ludhiana	Moderate		(i) 5 to 20% of the standing crop of fruits and vegetables damaged.
8.	8-10 Apr.	Nalgonda	Moderate		(i) 1200 huts blown away and 500 huts partially damaged in Nalgonda, Nakrekal and Chandu. (ii) Crop worth Rs. 14 lakh (of which Rs. 7 lakh in Nakrekal taluk alone) lost.
9.	12-18 Apr.	(a) Hamirpur, Simla & Sirmour (b) Haryana	Moderate Moderate		Stone fruit, apple, orchards and cereal crops extensively damaged. (i) Widespread damage to standing wheat crop. (ii) Normal life paralysed. (iii) Rail traffic delayed by 1 to 5 hrs.
10.	9 May.	Najibabad	Moderate		(i) Several huts collapsed. (ii) Harvested paddy crop damaged. (iii) Communication & power supply disrupted for 20 hrs. causing loss of Rs. 20,000 to the Electricity Board & Telephone Dept.
11.	10, 11 May.	Himachal Pradesh	Heavy		25 to 50% of fruits & rabi crop damaged. About 57,222 tonnes of apple damaged.

(1)	(2)	(3)	(4)	(5)	(6)
12.	16-20 May	Gurgaon	Heavy	Hundreds of birds killed in Nuh.	(i) Vegetable crop damaged. (ii) Many trees and electric poles uprooted.
13.	20-23 May	(a) Jammu (b) Himachal Pradesh	Heavy Heavy		Normal life and vehicular traffic disrupted. 75% of Lichi, other fruits and vegetables and 50% of rabi crop damaged.
14.	31 May	(a) Kashmir valley (b) Dehra Dun	Moderate Moderate		Extensive damage caused to fruit trees in south-eastern parts of the valley. 75% of Lichi crop damaged in Doon Valley.
15.	25 Jun.	Amravati	Moderate		Number of houses collapsed and roof tops of many houses blown off at Nerpinglai.

S.No.	Date/Period	Area affected	Intensity (river)	Casualties	Remarks
(1)	(2)	(3)	(4)	(5)	(6)

TABLE - XI : FLOODS & HEAVY RAINS

ANDHRA PRADESH

1.	8-11 Aug.	(a) Adilabad	Severe (Godavari)	4 persons died and 23 cattle washed away.	(i) 154 villages affected. (ii) About 10770 people rendered homeless, 11350 people evacuated to safer places. (iii) 2150 houses damaged, loss of property estimated to be worth Rs. 320 lakh. (iv) Crop in 1,67,930 acres flooded. (v) 600 meter rail line between Mukhed - Adilabad, breached.
		(b) East Godavari	Severe (Godavari)		50000 hectares of crop-land submerged.
		(c) Karimnagar	Severe (Godavari)	(i) 27 persons died. (ii) 700 cattle and 5000 other animals perished.	(i) Wet crop over 33,000 acres and dry crop over 73,000 acres damaged. Loss estimated Rs. 9 crore. (ii) 83 minor and medium irrigation sources completely breached. (iii) 500 oil engines, pump-sets and wells also damaged. (iv) 6000 houses collapsed. (v) Loss due to damages of roads in Karimnagar town municipal area estimated to be Rs. 100 lakh, while loss to Panchayat Raj sector estimated to be Rs. 350 lakh.

(1)	(2)	(3)	(4)	(5)	(6)
					(vi) Loss to Electricity Board Rs. 15 lakh, to Roads & Buildings Rs. 65.84 lakh and to Irrigation System Rs. 111.12 lakh. Total loss estimated about Rs. 20 crore.
	(d) Khammam		Severe (Godavari)		(i) Bhadrachalam and Kothakodem division affected. (ii) 5770 houses damaged. (iii) Crop in 8530 hectare area damaged; loss estimated to be Rs. 70 lakh. (iv) Loss to private property estimated to be Rs. 1.2 crore while that of public property to be Rs. 1 crore.
	(e) Nizamabad		Severe (Godavari)	3 persons died.	(i) Crop in one lakh acre area either flooded or sandcast. Many agriculture pump sets washed away. Total loss to agriculture estimated as Rs. 10 crore. (ii) Loss to electric instalations estimated Rs. 10 lakh. (iii) Road communication to about 50 villages cut off. Nizamabad town cut off 4 days due to breaches in national highways.
	(f) Warangal		Severe (Godavari)		(i) Standing crop in about 2200 acre completely damaged. Estimated loss Rs. 8 lakh. (ii) 954 houses completely damaged and 600 partially damaged in Eturunagaram taluk. (iii) 86 irrigation tanks breached in 7 taluks. (iv) 4 main roads damaged.
	(g) West Godavari		Severe (Godavari)	6 persons died.	(i) Godavari water flooded parts of Polavarm town. (ii) 30,000 hectare of sugarcane and paddy crops affected.
2.	21,22 Sep.	Prakasam	Heavy rains		(i) 120 minor irrigation tanks breached causing considerable damage to crops. (ii) Many roads damaged disrupting road communication surrounding 'Ongole'.

(1)	(2)	(3)	(4)	(5)	(6)
3.	22 Sep.	Guntur	Heavy rains		(i) Crop worth Rs. 57 lakh damaged. (ii) Rail communication between Guntur-Guntakal disrupted due to landslide.
4.	23 Sep.	(a) Hyderabad	Heavy rains	Two children died in house collapse in the city.	
		(b) Kurnool	Heavy rains	4 persons died in house collapse.	
		(c) Mahabub-nagar	Heavy rains	6 persons died in house collapse.	
5.	1-7 Oct.	Adilabad East Godavari (Godavari) Karimnagar Khammam Krishna Medak Nalgonda Nizamabad Srikakulam Vizianagaram Vishakhapatnam Warangal West Godavari	Severe		(i) Wet crop in 3,15,000 hectare completely or partially damaged. Loss estimated to be Rs. 160 crore, while dry crop in 36,000 hectares of land fully and in 2,50,000 hectares of land partially damaged. Loss estimated to be Rs. 34 crore. (ii) About 70,000 minor irrigation tanks breached. Total damage to major, medium & minor irrigation sources, drainage and flood banks estimated to be Rs. 25 crore. (iii) Flood water damaged roads of about 26,000 km in length and loss estimated Rs. 120 crore
<u>ASSAM</u>					
1.	8-23 May.	Cachar and Sibsagar	Severe (Brahmaputra Barak and their tributaries)		(i) Flood water of 'Jhanji' river breached its embankment and inundated vast area affecting about 5000 families in Teok. (ii) Standing Ahu crop (summer paddy) in a vast area damaged. (iii) Over 500 people shifted to relief camp at Neelam Bazar in Karimganj. (iv) The road communication at Teok and Simaluguri, disrupted.
2.	Jul. (1st week)	Dibrugarh, Lakhimpur, Nowgong and Sibsagar	Severe (Brahmaputra, Barak and their tributaries)	6 people drowned in swollen river.	(i) Flood water eroded extensive area in Silighat rendering 150 people homeless. (ii) Number of persons marooned in Lakhimpur dist. due to flood in 'Dikrong' river (iii) Flood water of 'Brahmaputra' inundated over 30 villages in Dibrugarh dist.

(1)	(2)	(3)	(4)	(5)	(6)
3.	Jul. (4th week)	Lakhimpur, Nowgong Sibsagar	Severe (Brahmaputra & its tributaries)	11 people died (3 in Lakhimpur and 8 in Sibsagar).	(iv) About 2000 people affected in Jorhat due to flooding of the Disang and Dikhow. (i) 6 lakh people affected, thousands of people marooned in Sibsagar dist. (ii) Heavy land erosion occurred in 'Majuli' island in Sibsagar dist. where 13 villages completely eroded, rendering 1200 people homeless. (iii) Standing crop in hundreds of hectares submerged. (iv) Drilling operations of ONGC at 'Lakwa' oil-fields, suspended. (v) Upper Assam completely cut off from Lower Assam. Train service & vehicular traffic disrupted. Road link between Sibsagar-Namrup closed.
4.	Aug. (4th week)	Cachar	Severe (Barak & its tributaries)	One PWD worker died in a boat disaster in Barak river.	Two major highways overtopped resulting in disruption of traffic. National highway linking Silchar with Agattala and Silchar with Hialakandhi closed for traffic. Traffic also closed in six other important roads.
5.	Sep. (2nd week)	Goalpara	Severe (Brahmaputra, Barak & their tributaries)	22 people died in Dhubri in Lower Assam.	(i) 2500 villages covering an area of 4.43 lakh hectare and with a population of 13.4 lakh people, affected. (ii) Standing crop in 58,000 hectare damaged. (iii) Tributary 'Arie' of Brahmaputra breached a portion of railway track between Bijnor and Chapra stations disrupting train services on Gohati- New Bongaigaon section of N.E. frontier railway. (iv) National highway between Bijnor & Chapra and Ata submerged under flood water.

(1)	(2)	(3)	(4)	(5)	(6)
BIHAR					
1.	Jul. (1st week)	Katihar	Severe (Mahananda, Ganga and Kosi)		(i) 12 villages inundated. (ii) 154 km. long protection embankment of Mahananda river in Cheramari village and Topra-Chooukia-Paharpur embankment of Ganga, threatened by breached, posing danger to a population of 14 lakh people. (iii) 44 ^{meter} embankment at Baharkhal breached.
2.	Jul. (2nd week)	Purnea	Severe (Mahananda, Ankau and their tributaries)		(i) Vast areas in Kishanganj, Bahadurganj and Dighanbank blocks of Kishanganj sub-division submerged. (ii) Jute crop damaged. (iii) Road linking the sub-divisional town with 5 block H.Q. was in danger due to breaches.
3.	Jul. (3rd week)	East Champaran	Severe (Bagmati)		(i) Two dozen villages inundated by flood, affecting 20,000 people due to 700 ft. wide breach at Devapur village, 45 km. from Motihari. (ii) 500 ft. stretch of a road washed away cutting off Motihari town and its surrounding area from rest of the dist.
4.	Jul. (4th week)	(a) Saharsa	Severe (Kosi)	26 people drowned when a country boat capsized in mid-stream near Dhadha village in Basantpur block.	
		(b) Darbhanga	Severe (Kosi and Kamalabalan)		157 villages of Biroul-Ghanashyampur and Kusheswar-Asthan block having population of 2 lakh, affected.
		(c) East Champaran	Severe (Gandak)		Flood water of 'Gandak' burst through its embankment at Piprasi-Pipraghat and Bairiya affecting 20,000 people.
5.	Aug. (1st week)	(a) Monghyr	Severe (Ganga and its tributaries.)		The Ganga threatened the Gogri-Narainpur embankment posing a danger to 20 villages.

(1)	(2)	(3)	(4)	(5)	(6)
	(b) East Champaran		Severe (Bagmati)		(i) 7000 ^{meter} embankment of river Bagmati near Devpur, breached Devpur-Balughat approach road at 2 points. (ii) 70,000 people in Pathi, Pakridyal and Madhuban block, affected.
6.	Aug. (3rd week)	Katihar	Severe (Ganga)		(i) Flood waters of Ganga breached 400 ft. stretch of Katakosa-Topra railway embankment. (ii) Topra-Tejnarainpur railway embankment also endangered by flood waters. (iii) 40 ft. wide breach occurred at Topra-Chaukia embankment at the starting point.
7.	Aug. (3rd and 4th week)	Darbhanga, East Champaran, West Champaran, Katihar, Madhubani, Monghyr, Muzaffarpur, Purnea, Saharsa and Santhal Pargana.	Severe (Ganga, Bagmati and their tributaries)		(i) 2.5 million people in 1586 villages affected. (ii) Standing crop worth Rs. 4.44 crore ruined. (iii) 10,000 houses damaged.
8.	Sep. (2nd and 3rd week)	Katihar, Monghyr, Saran and Vaishali	Severe (Ganga, Mahananda & their tributaries)	10 people mostly labourers reported missing when boat carrying them capsized in flooded Ganga near Sarda village, 10 km. from Monghyr on 18th.	(i) 30 villages in Monghyr dist. inundated by flood. (ii) 25 villages in Hajipur, Raghapur Diara and Sonpur in Vaishali dist. affected. (iii) 15 villages in Saran dist. affected. (iv) 600 families render homeless due to flood in Mahananda in Katihar dist.
<u>GUJARAT</u>					
1.	20-23 Jun.	Saurashtra (Junagadh, Amreli, Jamnagar, Rajkot and Bhavnagar)	Severe (Uben and Ojat)	(i) 594 persons (including 448 persons from Junagadh distt.) died. (ii) One lakh cattle heads perished.	(i) The worst ever flood in 50 years time. The most affected distt. was Junagadh. 1.3 lakh people in Ghed area spreading over 450 sq. km. in 75 villages marooned. (ii) 62,000 huts/houses either damaged or destroyed. 4 lakh people rendered homeless. The losses to residential/non-residential buildings, estimated to be Rs. 33.2 lakh.

(1)	(2)	(3)	(4)	(5)	(6)
					(iii) 17,000 hectare agricultural land eroded. (iv) All the major roads on critical communication routes, breached. 1,400 km. road including national/state highways, damaged. 8 km. tar road on Junagadh-Veraval route, disappeared. The approach road to the bridge on Uben river, washed away. Two bridges on Junagadh-Jethpur road, heavily damaged. 8 minor bridges and one major bridge damaged. The loss estimated to be Rs. 6.88 crore. (v) Jetalsar-Porbandar section railway line breached at many points. (vi) 32,000 km. transmission line supplying power to 2962 villages snapped, disrupting power supply. (vii) Water level in 27 small and medium dams, overflowed.
2.	19 Jul.	Junagadh	Heavy rains	One 6 year old boy and 5 others injured when a three storeyed building collapsed in Danpat area.	
3.	Sep. (3rd week)	Junagadh and Rajkot	Severe (Flash flooding in Kalva)		(i) Railway line between Junagadh and Veraval cut off as the track washed away near Haspur, 10 km. from Junagadh. (ii) 6 dams overflowed. (iii) Kalva river flooded Sonrakh & Lol in Rajkot distt.
<u>HARYANA</u>					
1.	4,5 Jul.	Entire state	Heavy rains		(i) Number of houses collapsed. (ii) Water supply, electricity, telecommunication service disrupted. (iii) Vehicular traffic and train traffic delayed or held up.

(1)	(2)	(3)	(4)	(5)	(6)
2.	14-20 Aug.	(a) Rohtak	Severe (Flash flooding in Western Jamuna canal)		(i) 175 of which 27 villages very badly affected. (ii) One thousand houses collapsed and 3000 damaged. (iii) Crop worth Rs. 12 crore, damaged in 80 villages. (iv) Bus stand, several Govt. offices and public buildings submerged in water due to flooding of Western Jamuna canal. (v) 27 km. long Jhajjar-Rohtak road submerged. Delhi-Fazilka road breached at several places. Delhi-Rohtak highway and Delhi-Hissar railway track breached few places causing complete disruption of vehicular and railway traffic.
		(b) Sonapat	Severe (Flash flooding in Western Jamuna canal)		(i) 144 villages marooned and 44,000 hectare land flooded. (ii) Property worth Rs. 90 lakh damaged while the crop worth Rs.18 crore lost. (iii) Stagnated water and resultant insanitation caused epidemic diseases. (iv) Panipat-Rohtak highway breached at few places causing complete disruption of vehicular traffic.
3.	22-27 Aug.	Ambala, Bhiwani, Jind, Rohtak and Sonapat	Severe (Flash flooding in Western Jamuna canal)	6 school girls washed away when a flooded drain breached.	(i) 2 million people in 450 villages affected by flood. (ii) Crop worth Rs. 20 crore lost. (iii) Number of kutcha houses collapsed. (iv) Many highways breached disrupting vehicular traffic.
HIMACHAL PRADESH					
1.	19 Mar.	Solan	Heavy rains		Extensive damage caused to fruit and vegetable crop.

(1)	(2)	(3)	(4)	(5)	(6)
2.	5-10 Sep.	Kangra and Kulu	Severe (Flash flooding)	(i) 9 persons washed away in Ghrali nullah in Nurpur sub-division of Kangra dist. (ii) 2 persons killed in Kulu and Manali.	(i) A railway bridge near Jasur washed away disrupting rail traffic between Pathankot and Jogindernagar. (ii) A petrol pump and some shops in Jasur town swept away. (iii) More than 2000 boxes of apple washed away. Total loss to crops and property estimated as Rs. 50 crore. (iv) The loss to the soil conservation wing of the state forest department estimated to be Rs. 80 lakh. (v) Kulu-Manali road damaged at several places.
3.	14-20 Oct.	Kulu	Heavy rains	4 persons killed and 100 other missing or stranded in the Rohtang pass area.	The area cut off from rest of the state and all the vehicular traffic blocked across the pass.
<u>JAMMU & KASHMIR</u>					
1.	21 Mar.	Rajouri	Heavy rains	2 persons killed and 3 other injured in a house collapse at Barooti.	
2.	12-18 Apr.	Rajouri	Heavy rains	3 children killed in house collapse at Gajal.	(i) 300 houses collapsed. (ii) Number of wooden slippers washed away from the bank of flooded Chenab river.
3.	3 Jul.	Anantnag	Cloud burst	(i) One woman died in a nearby village of Devasar area. (ii) Another person died in Lambar in Kulgam area when his hut was washed away.	
4.	9 Aug.	Baramulla	Heavy rains	15 cattle heads perished at Kakapura.	24 houses damaged.

(1)	(2)	(3)	(4)	(5)	(6)
5.	22-27 Aug.	Jammu	Heavy rains	(i) 4 women died due to house collapse at Salain, 180 km. from Jammu. (ii) One man, drowned in flooded Poonch nullah.	
6.	1,2 Sep.	(a) Jammu	Heavy rains due to cloud burst.	3 persons died.	
		(b) Poonch	Heavy rains due to cloud burst.	2 persons died and 11 cattle-heads perished at Dara-Dulian, 3 km. from Poonch.	2 houses washed away.
		(c) Srinagar	Heavy rains due to cloud burst.	6 persons died at Athaori near Pahalgam and 1 person died at Bamina near Srinagar.	(i) One bridge and a portion of nearby road damaged. (ii) One house washed away.
<u>KARNATAKA</u>					
1.	15 Jun.	Bangalore	Heavy rains	2 children died in a house collapse in J.P. Nagar	
2.	Jun. (4th week)	Belgaum, Bijapur, and Gulbarga	Severe (Krishna, Ghat-prabha and Vedganga)	(i) 9 persons died. (ii) A shephard boy trapped from 28 to 30 June on an island formed by flood waters of Krishna about 1 km. from Narainpur dam.	(i) 9 villages marooned and 5 submerged. (ii) Hundreds of houses in Sankeswar, Gokak and surrounding villages damaged. Extensive damage to property in Hukkeri and Chikodi taluks reported. (iii) Standing crops extensively damaged.
3.	Aug. (2nd week)	North Karnataka	Moderate (Bhima)		(i) The road link between Bijapur and Gulbarga disrupted. (ii) People from Mashal, Mandur and Madiyal shifted to safer places.
4.	10 Sep.	Bangalore	Heavy rains	4 children died in 3 separate incidents of house collapse in the city.	
5.	23 Sep.	Raichur	Heavy rains.	4 persons died in a house collapse at Kallur.	

(1)	(2)	(3)	(4)	(5)	(6)
<u>KERALA</u>					
1.	23 Jul.	Malappuram	Heavy rains	3 persons died.	5 houses were completely damaged and 30 partially damaged.
2.	10-17 Aug.	Ernakulam	Incessant rains		Paddy crop in 1600 hectare area submerged.
3.	2 Nov.	Palghat	Heavy rains		22 houses washed away.
<u>MADHYA PRADESH</u>					
1.	16 Aug.	Bastar	Moderate (Godavari)		More than 100 houses damaged as the flood water entered Kumta town.
2.	17 Aug.	Balaghat	Heavy rains	One 10 year old girl died and some children seriously injured when the wall of an old house collapsed.	
3.	20 Aug.	Bhopal	Heavy rains		Two houses and a wall of a house collapsed in Tila-Jamalpur and Pirgate area.
4.	5 Sep.	Raisen	Moderate (Berna)	28 persons died and 11 other missing when a private bus swept away in river.	
5.	8 Sep.	Sagar	Severe (Bebas, Bina, Ghasan and Sunar)	12 cattle-heads perished.	(i) 20 villages submerged. (ii) Crops in 700 hectare damaged. The loss estimated to be Rs. 35 lakh. (iii) 700 houses collapsed. (iv) The loss to PHE Department estimated to be Rs. 14 lakh while that/PWD to be Rs. 10 lakh. The total loss to public property estimated to be Rs. 3 crore.
6.	8,9 Sep.	Bhind, Guna, Gwalior, Chhatarpur, Hoshangabad, Jabalpur and Sagar	Heavy rains	22 persons died .	(i) 614 houses completely damaged and 864 partially damaged. (ii) Govt. property worth Rs. 83 lakh lost.
7.	9 Sep.	Rewa	Moderate (Tamus)	25 persons drowned when boat carrying them was swept away near Patheharaghat, 65 km. from Rewa.	

(1)	(2)	(3)	(4)	(5)	(6)
8.	11 Sep.	Guna and Morena	Severe (Betwa and Kunwari)	60 persons died when a bus carrying 80 to 90 passengers was swept away by flood water in Kunwari river bridge, 80 km. from Morena.	500 labourers marooned in Guna dist.
9.	12 Sep.	Datia	Heavy rains	3 children died and their parents injured in a house collapse in Khalapura.	
10.	14 Sep.	(a) Guna	Heavy rains	3 members of a family died in a house collapse at Palaktori.	
		(b) Gwalior	Heavy rains		50 houses collapsed. Estimated loss to be Rs. 2 lakh.
<u>MAHARASHTRA</u>					
1.	Jun. (4th week)	Kolhapur	Heavy rains	1 person died in house collapse at Kagal.	(i) 320 houses washed away or collapsed and 2770 damaged. (ii) Standing crop worth Rs. 1.2 crore in 5669 hectare lost.
2.	24 Jun.	Bombay	Heavy rains	3 persons injured when a compound wall of a house collapsed.	(i) Commercial life of the city, came to a standstill, as the flood water submerged low lying areas and hutment colonies. (ii) Vehicular and railway traffic disrupted.
3.	Jun. (4th week) to Jul. (1st week)	Konkan	Severe (Kalawli, Vashishti and Shastri)	(i) 30 persons died in flood and 12 in land slides. (ii) 163 cattle perished.	(i) Ratnagiri and Sindhudurg worst affected districts. (ii) A large hillock near Sangameshwar town slipped and settled down on the road blocking nearly 5000 sq. km. area, on 27th. (iii) 1848 houses damaged, loss estimated worth Rs. 47.25 lakh. (iv) The loss to Govt. and Semi-Govt. property estimated worth Rs. 230 lakh. (v) 5000 hectare of agricultural land and 14,000 farmers in Ratnagiri dist. and 10,978 farmers in Sindhudurg dist. affected. Loss to crop estimated as Rs. 327 lakh

(1)	(2)	(3)	(4)	(5)	(6)															
					<ul style="list-style-type: none"> (vi) The low lying areas in Sangameshwar town were under 3 meters of water for two consecutive days. (vii) Major and minor landslides reported in 59 villages of Ratnagiri dist. (viii) 30 schools run by Z.P., completely destroyed. (ix) Electric supply in 101 villages affected. (x) 1200 tonnes of rice in Govt. godown damaged. (xi) Vehicular traffic disrupted. Bombay-Goa national highway blocked to traffic due to landslides. 															
4.	11-17 Aug.	(a) Konkan, North Madhya Maharashtra, Marathwada and Vidarbha.	Severe (Godavari, Krishna, Bhima, Pravara, Koyna and Warna)	87 persons died and 21 reported missing. The regionwise break-up as follows : <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">Death</td> <td style="text-align: center;">Missing</td> </tr> <tr> <td>Konkan</td> <td style="text-align: center;">: 10</td> <td style="text-align: center;">3</td> </tr> <tr> <td>Vidarbha:</td> <td style="text-align: center;">16</td> <td style="text-align: center;">11</td> </tr> <tr> <td>North Madhya Maharashtra</td> <td style="text-align: center;">: 8</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Marathwada</td> <td style="text-align: center;">: 53</td> <td style="text-align: center;">6</td> </tr> </table>		Death	Missing	Konkan	: 10	3	Vidarbha:	16	11	North Madhya Maharashtra	: 8	1	Marathwada	: 53	6	<ul style="list-style-type: none"> (i) Hundreds of villages in 19 districts badly affected. (ii) Several houses either collapsed or damaged. (iii) Extensive damage to crop and property. (iv) Road traffic disrupted.
	Death	Missing																		
Konkan	: 10	3																		
Vidarbha:	16	11																		
North Madhya Maharashtra	: 8	1																		
Marathwada	: 53	6																		
		(b) Nanded	Severe (Godavari, Manjura, Manwad, Lendi, Kayadu, Penganga)	29 people died and 5 other missing.	<ul style="list-style-type: none"> (i) 70 villages affected. (ii) Hundreds of people in Bilol and Hadgaon taluks spent 3 successive days on trees and roof tops. (iii) Number of farm labourers from Kundalwadi, Mashtri, Shelgaon and Babli marooned on a bridge on Godavari. (iv) Large number of houses and bridges destroyed. (v) Large number of people started starving due to lack of food and drinking water. 															

(1)	(2)	(3)	(4)	(5)	(6)
		(c) Solapur	Severe (Bhima)		8 villages in Malshiras, Madha and Mangal-vedha taluks and 3 villages in Mohol taluk flooded.
5.	14,15 Aug.	Thane	Severe (Ulhas and Bhatsa-Kalu)	5 persons died.	road (i) Kalyan town isolated by/ from all sides. (ii) 14 persons marooned in different places. (iii) Several families staying along Tansa river in Shahapur taluk removed to a safer place. (iv) Malshej connecting Murbad (Thane dist.) to Junnar (Pune dist.) closed for vehicular traffic due to landslides on 15th.
6.	16 Aug.	Nasik	Heavy rains	1 infant girl and 4 persons injured in a house collapse.	
7.	16-17 Aug.	Pune	Severe (Flash flooding in Mula-Mutha)		10,000 people living on the bank of river, shifted to safer place.
8.	17,18 Aug.	Pandharpur (Solapur)	Severe (Flash flooding in Bhima)	117 persons died.	(i) The swollen Bhima swept through the pilgrimage centre Pandharpur in Solapur dist. (ii) 6 villages marooned. Pandharpur and several nearby villages remained under water for 2 days. (iii) Some temples submerged. Flood water invaded Pradakshina marg of Vithoba temple, Kalika mandir and vegetable market which remained under 60 cm. deep water. (iv) Water level was 6 meter above the crossway bridge and 3 meter above the Gopalpur bridge. (v) 9000 people shifted to safer place. (vi) Vehicular traffic in and out of the town suspended.

(1)	(2)	(3)	(4)	(5)	(6)
9.	14,15 Sep.	Jalgaon	Heavy rains	2 persons died in house collapse in Dhadgaon taluk.	
10.	15-19 Sep.	Marathwada and Western Maharashtra	Severe (Godavari Dudhana and Poorna)	51 persons died in Marathwada and 9 in Western Maharashtra.	(i) 4 villages in Nanded dist. marooned. (ii) Vehicular traffic from Parbhani, suspended. Road near Zharizhairi village washed away. (iii) Number of houses collapsed or washed away in flood. (iv) Communication services disrupted. (v) 2000 people from Jalna, Nanded and Bid shifted to safer places.
11.	18 Sep.	Pune	Heavy rains	(i) 4 children died when a portion of a compound wall in Indiranagar hutment colony at Yerwada. (ii) 2 persons including a 7-year old girl washed away.	
12.	24 Sep.	Amravati	Heavy rains	One woman and her two children died in Chandur Bazar Tehsil.	
13.	26,27 Sep.	Aurangabad	Heavy rains	8 persons died.	
14.	5-7 Oct.	Nanded	Severe (Godavari, Manjira, Lendi and Manya)	5 persons died.	(i) 35 villages marooned. (ii) Over 4000 people evacuated. (iii) Road traffic from Nanded to Aurangabad, Akola, Hyderabad, Parbhani and Deglur cut off due to submersion of various bridges.
15.	9 Oct.	Pune	Severe (Mula-Mutha)		Flash flood caused damage to the tune of Rs. 2.5 crore.
<u>MEGHALAYA</u>					
1.	Jul. (1st week)	Shillong	Heavy rains	4 persons died.	

(1)	(2)	(3)	(4)	(5)	(6)
<u>ORISSA</u>					
1.	25,26 Jun.	Koraput	Heavy rains	3 persons washed away.	(i) Property worth Rs. 3 crore lost. (ii) 15,000 people mostly Adivasi in 100 villages in 10 blocks marooned. (iii) Paddy crop in 7000 hectare area washed away.
2.	8-10 Jul.	Koraput	Moderate (Kolab and Indravati)	3 persons died.	(i) About 5000 farmers in 10 blocks of the dist. affected. (ii) Several hundred of people rendered homeless, when flood water washed away their mud houses. (iii) 2 houses at the upper Kolab hydel project washed away when a confer dam at the project site gave away under the pressure of flood water. (iv) Number of wooden bridges damaged and connecting roads breached. (v) Widespread damage caused to crop.
3.	29 Jul.	Sambalpur	Heavy rains		4000 people marooned in Gogua village in Deogarh sub-division.
4.	7-10 Sep.	Bhubaneshwar	Moderate (Brahmi and Baitarni)	5 persons died.	
<u>PUNJAB</u>					
1.	29 Jun.	Amritsar	Heavy rains		A house collapsed due to heavy rains in Azadnagar.
2.	4,5 Jul.	Amritsar	Heavy rains	1 person died in Amritsar when he fall into a flooded ditch.	(i) Number of houses collapsed. (ii) Water supply, electricity and telecommunication services disrupted. (iii) Vehicular traffic and train services delayed or held up.
3.	29 Jul.	Patiala	Moderate (Patialwi rivulet)		(i) Flood water entered number of houses at the outskirt of the city along Patiala-Rajpura highway.

(1)	(2)	(3)	(4)	(5)	(6)
4.	30 Aug.	Patiala	Moderate (Ghaggar and Tanngri)		(ii) 1 km. stretch of a highway between Patiala and Punjab University submerged under 3 to 4 feet of flood water. 12 villages marooned.
<u>RAJASTHAN</u>					
1.	Jul. (1st week)	Jalore, Pali and Sirohi	Heavy rains	(i) 10 people died. (ii) Several thousand cattle-heads perished.	(i) Hundreds of people rendered homeless. (ii) Rewatara village in Jalore dist. inundated. (iii) Extensive damage to property.
2.	26-30 Jul.	Ajmer, Jaipur, Jodhpur, Pali and Sawai Madhopur.	Heavy rains	(i) 15 persons died. (ii) Hundreds of cattle-heads perished.	(i) 100 villages marooned. (ii) Hundreds of mud houses collapsed. (iii) One passenger train stranded for several hours between Nawan and Gandel stations in Jaipur dist. Many other trains cancelled or delayed. (iv) I.A. flights to Jaipur and Jodhpur cancelled.
3.	10 Sep.	Alwar and Bharatpur	Heavy rains		Alwar and Bharatpur towns threatened due to leaks in Ramgarh lake in Jaipur.
<u>SIKKIM</u>					
1.	12,13 Sep.	East and North dists.	Severe (Flash flooding)	113 people died in Manul and Mangan.	(i) Gangtok-Chunotanle highway breached due to flash flood. (ii) 27 landslides (4 of them massive) marooned number of people in Mangan town and its surroundings.
<u>TAMIL NADU</u>					
1.	7-14 Sep.	North Arcot	Severe (Flash flooding in Palar and Mahakamanta)	3 persons died in a house collapse in Ambur taluk.	(i) In Gudiyathan, 42 huts washed away due to flash flood in Mahakamanta river. (ii) Flood water entered (in) a secondary high school.

(1)	(2)	(3)	(4)	(5)	(6)
2.	21-26 Dec.	Pudukkottai, Ramanathapuram, South Arcot, Thanjavur and Tiruchirapalli.	Heavy rains	64 persons died (40 from Thanjavur dist. only)	(i) Large area under paddy crop in Thanjavur and Tiruchirapalli dists, submerged in flood water. Total loss in Tiruchirapalli dist. estimated to be Rs. 10 crore with a crop loss in Rs. 110 lakh. (ii) Number of roads and railway lines breached at several places, disrupting normal vehi- cular and railway services. Large number of trains cancelled.
<u>TRIPURA</u>					
1.	5 May	North Tripura	Severe (Flash flooding)	12 persons died.	H.Q. town Kailashahar cut off from rest of the state for 5 days.
2.	4-6 Jul.	Entire area	Moderate (Manu and Khowai)		(i) 4000 people rendered homeless. (ii) Vast area including some parts of Agartala submerged under water. (iii) Kailashahar, H.Q. of North Tripura dist. cut off from rest of the state.
3.	Jul. (4th week)	Entire area	Severe (Flooding of all major rivers)	14 people died.	(i) 60,000 families affected. (ii) Road communication from Agartala to different parts of the state disrupted following landslides at 60 places in Atharamura mountain range.
4.	Aug. (2nd & 3rd week)	Entire area	Severe (All the major rivers)	34 persons died.	Loss to crop and property reported.
<u>UTTAR PRADESH</u>					
1.	6 Jul.	Jhansi and Moradabad.	Heavy rains		(i) Several houses collapsed. (ii) Vehicular traffic disrupted due to road breaches.
2.	22 Jul.	Almora	Heavy rains	37 persons died and 38 cattle- heads perished in a landslide.	The villages Karmi, Patti, Malda and Danpur in Bageshwari tehsil completely cut off from rest of the state.
3.	26-30 Jul.	Muzaffarnagar	Heavy rains	14 persons died.	Train services and vehicular traffic disrupted.

(1)	(2)	(3)	(4)	(5)	(6)
4.	Jul. (4th week)	Gorakhpur	Moderate (Rapti)		(i) 26,000 hectares of land area in 28 villages having population 45562 affected. (ii) Crop loss estimated to be worth Rs. 95,000/-.
5.	5-31 Aug.	West U.P.	Severe (Ganga, Jamuna and their tributaries)	(i) 118 persons died. (ii) 3000 cattle-heads perished.	(i) 28 lakh people in 8500 villages in 22 dists. affected. (ii) 13,000 houses collapsed. (iii) Crop in 2 lakh hectare damaged. (iv) Entire Mathura city submerged in flood waters from 15 to 17 Aug. About 200 temples inaccessible. Gobardhan town and 12 km. long Gobardhan-Parkasma remained under 3 feet of water. Water logging caused malarial epidemic.
6.	15-17 Aug.	Aligarh	Heavy rains	6 persons including 2 children died and 12 others injured in a house collapse.	25 houses collapsed and many other damaged.
7.	9-24 Sep.	Entire U.P.	Severe (Ganga, Jamuna, Ken Shandrawal, Rapti, Sarju, Gadri, Ghagra)	(i) More than 200 people died. (ii) 16 people died in a massive landslide in Pithoragarh dist.	(i) About 85 lakh people in 49 dists. and over 13,200 villages affected. (ii) About 21 lakh hectare land submerged, (iii) 78,000 houses damaged. (iv) Many bunds and culverts damaged disrupting vehicular traffic at several places. (v) Train services delayed on many days. (vi) A railway engine and 3 bogies swept away on the Gonda-Mailani section of NE railway.
8.	13-15 Oct.	Etawah, Kheri, Saharanpur, Sitapur	Moderate to severe (Ganga, Jamuna and their tributaries)	42 persons died in house collapse in various parts of the State. Dist. wise death-toll Etawah - 30 Kheri-Lakhimpur - 5 Saharanpur - 5 Sitapur - 2	(i) 8071 villages affected. (ii) 5700 houses damaged/collapsed. (iii) 1.01 lakh hectare of cropped area submerged. (iv) Landslide block Mussoorie by-pass and Bellary-Almora motor road, disrupting vehicular traffic.

(1)	(2)	(3)	(4)	(5)	(6)
<u>WEST BENGAL</u>					
1.	Jul. (1st week)	Cooch Behar	Moderate (Tista, Torsa, Raidak, Mansi and Dolong)	1 teenager drowned at 'Baraibari'	(i) 12450 people affected in Mathabhanga sub-division due to flooding in Mansi river. (ii) 1600 people shifted to safer place as the flood water of Tista inundated low lying areas, of Tista, Poyasthi and Dhaprahat villages.
2.	14-16 Jul.	Cooch Behar and Darjeeling	Moderate (Mansi, Mechhi and Raidak)	4 persons injured in a landslide at Paiyn basti in Kurseong sub-division of Darjeeling dist.	(i) 7000 people living on Char land rescued by Army jawans in Cooch Behar dist. (ii) Heavy discharge in the hill-river 'Mechhi' caused landslide impending the passage of swelling water which inundated some areas, in Naxalbari in the plains of Darjeeling dist.
3.	12-14 Sep.	Cooch Behar and Jalpaiguri dist.	Moderate (Kaljihi)	13 people died.	(i) 10,000 people in Alipurduar affected. (ii) Damage caused to private and public property.
<u>ARUNACHAL PRADESH</u>					
1.	10-14 Sep.	Entire area	Moderate (Dihang, Dibang and Subansiri)		Heavy landslide disrupted road traffic in many places.
<u>CHANDIGARH</u>					
1.	4,5 Jul.	Entire area	Heavy rains		(i) Number of houses collapsed. (ii) Water supply, electricity and telecommunication services disrupted. (iii) Vehicular and train traffic delayed or held up.
2.	22-27 Aug.	Entire area	Heavy rains	2 people died and 3 injured when a roof of a house fell down in Burail.	
<u>DELHI</u>					
1.	15 Apr.	Entire area	Heavy rains	(i) 2 labourers killed and 7 injured when the roof of a building collapsed.	(i) Rainfall amount 13.4 cm. recorded during 6 hours period, the highest ever in the century for the month of April.

(1)	(2)	(3)	(4)	(5)	(6)
				(ii) 25 donkeys drowned at different places.	(ii) Books worth Rs. several lakhs belonging to National Book Trust, damaged when the water entered the basement godown. (iii) Hundreds of hutments washed away and people shifted to safer places. (iv) 20 fires caused due to short-circuit. (v) Standing crop in many villages around the capital seriously damaged. (vi) Entire drainage system, telephone, telecommunication and electric supply services, collapsed and the whole city plunged into darkness. (vii) All the major roads water-logged and hundreds of vehicles marooned, with water running upto roof of the cars.
2.	26-30 Jul.	Entire area	Heavy rains	(i) One woman died in wall collapse in Sadar-Bazar area. (ii) One man and five children injured when the wall of a factory in Wairpur area collapsed.	(i) 8 police officers miraculously escaped when the building on Badarpur Police station partially collapsed. (ii) 36 electric short circuits caused and 12 fire cases reported. (iii) Drainage system, water supply and telephone services disrupted.
<u>GOA, DAMAN AND DIU</u>					
1.	27 Jun.	Panaji	Heavy rains	3 persons died and few injured in house collapse in Goa.	(i) Number of kutcha houses and trees uprooted. (ii) Communication and power supply completely disrupted.

S.No.	Date/Period	Area of Formation/Dissipation	Intensity	Casualties	Remarks
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TABLE - XII : CYCLONIC STORMS

1.	<u>Bay Cyclone</u> 2-6 Oct.	<u>Formation</u> : At 110 km. west of Vishakhapatnam. <u>Landfall</u> : North of Vishakhapatnam around early morning of 4th. <u>Dissipation</u> : At about 30 km. NNE of Bhadrachalam on the afternoon of 4th.		In Andhra Pradesh. (i) 134 persons died. (ii) 11800 cattle heads perished. Loss estimated at Rs. 100 lakh. 31,000 other animals perished and the loss estimated at Rs. 46 lakh.	In Andhra Pradesh. (i) About 5 lakh people affected. (ii) About 1,98000 houses fully dest- royed and 1,41000 houses partially damaged. (iii) Loss to Panchayat Raj depart- ment estimated at Rs. 120 crore while the loss to Municipality estimated at Rs. 6 crore. (iv) Railway track between Vijaywada- Waltair, Kazipet-Secandarabad damaged disrupting railway tra- ffic for 5 days. Loss to railway estimated at Rs. 7.5 crore. (v) Considerable damage occurred to the telecommunication install- ation/equipments. Telecommuni- cation completely disrupted during the storm period.
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