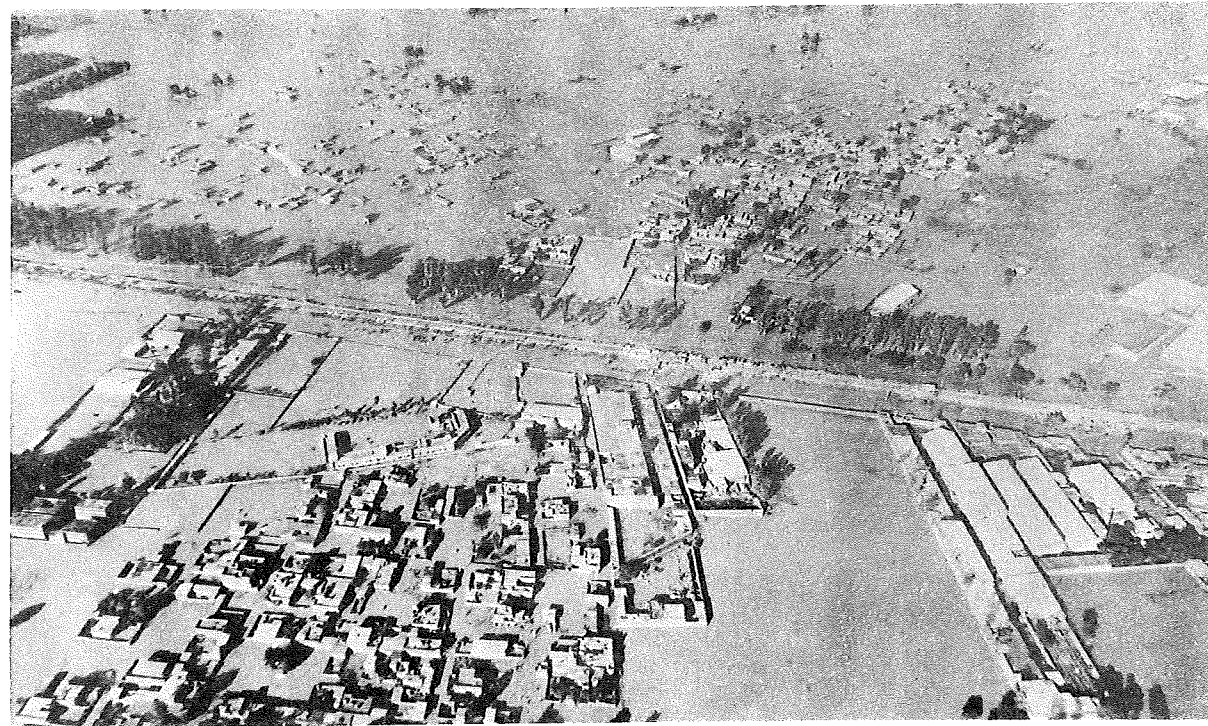




INDIA METEOROLOGICAL DEPARTMENT
DISASTROUS WEATHER EVENTS , 1988



ISSUED BY
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(RESEARCH)
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Cover Photo : An aerial view of floods in Ludhiana.

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DISASTROUS WEATHER EVENTS OF 1988

The most striking disastrous weather events in 1988 were the following :-

- (i) A severe cyclonic storm with a core of hurricane wind, in the Bay of Bengal during 23rd to 30th November, took a toll of 532 human lives and 57,604 cattleheads in West Bengal.
- (ii) Severe flood condition prevailed over large areas of Andhra Pradesh, Assam, Gujarat, Haryana, Himachal Pradesh, Punjab, Uttar Pradesh and West Bengal and took a toll of over 1400 human lives.
- (iii) Severe heat wave condition prevailed over Madhya Pradesh and Rajasthan during May and June. It took about 500 lives in these states.
- (iv) Heavy snowfall over Jammu and Kashmir during March claimed more than 200 lives.

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

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I N D E X

<u>Table No.</u>	<u>Event</u>	<u>Page Nos.</u>
I	Snowfall	1 - 3
II	Cold Wave	4
III	Heat Wave	4 - 5
IV	Drought	6
V	Squall	7 - 8
VI	Gale	8 - 9
VII	Duststorm	9 - 10
VIII	Lightning	10 - 12
IX	Thunderstorm	12 - 17
X	Hailstorm	17 - 19
XI	Floods and Heavy Rains	20 - 39
XII	Cyclonic Storms	40

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
(1)	(2)	(3)	(4)	(5)	(6)

TABLE - I : SNOWFALL

CRITERIA

Moderate : 7.6 to 34.9 cm in 24 hrs.

Heavy : \gg 35.0 cm in 24 hrs.

1.	3 Jan.	Higher ridges of Himachal Pradesh	Moderate		Rohtang and Baralacha passes closed.
2.	8-10 Jan.	Jammu and Ladakh	Heavy		(i) Jammu and Ladakh districts remained cut off from rest of the country for 3 days. (ii) Leh bound Indian Air Lines flight cancelled.
3.	22 Jan.	Jammu and Kashmir	Heavy	3 persons died in Penderas.	National highway between Srinagar and Jammu closed for vehicular traffic.
4.	26 & 27 Feb.	Chamba, Kangra, Kinnaur and Lahul-Spiti	Moderate		Chandigarh-Kulu Vayu-Doot flight disrupted.
5.	27 & 28 Feb.	Jammu and Kashmir	Heavy		(i) The normal life in the state completely paralysed. (ii) 300 km Jammu-Srinagar highway blocked due to landslide. (iii) 110 km Batote-Kishtwar road and Sanji-Chhat area enroute Vishnudevi shrine, closed.

(1)	(2)	(3)	(4)	(5)	(6)
6.	4-12 Mar.	Jammu and Kashmir	Heavy	<p>(i) 90 persons died in Sakar Rigma village due to avalanche.</p> <p>(ii) 10 labourers washed away in Chinab when snow avalanche fell in the river.</p> <p>(iii) 3 persons buried alive due to house collapse in Karnah village due to avalanche.</p>	<p>(i) National highway between Srinagar and Jammu remained closed for 7 days.</p> <p>(ii) Hundreds of passengers stranded on the highway,</p> <p>(iii) Vehicular traffic completely disrupted.</p>
7.	8-12 Mar.	Himachal Pradesh	Heavy	<p>One person died at Kulu in Kangra district.</p>	<p>(i) Lahul-Spiti and Pangti valley in Chamba district worst affected.</p> <p>(ii) The tribal belt of the state cut off from rest of the country.</p> <p>(iii) In Lahul-Spiti, 125 cm and 120 cm of snow recorded in Keylong and Kaza, respectively.</p> <p>(iv) 180 cm of snow recorded in Pangti valley. A jhulla bridge at Reishaur and a concrete bridge at Parthi in the valley, washed away.</p> <p>(v) In Shimla and surrounding area the extensive damage of crops and fruits reported.</p> <p>(vi) In Kulu district, supply of the drinking water complete disrupted as the main water station damaged due to land slide.</p> <p>(vii) In Lahul valley temperature dropped to - 10°C.</p> <p>(viii) Vehicular traffic in the state completely disrupted.</p> <p>(ix) Tele-communication/power supply badly affected.</p>

(1)	(2)	(3)	(4)	(5)	(6)
8.	12-15 Mar.	Tirap (Arunachal Pradesh)	Moderate		Vehicular traffic completely disrupted.
9.	16 Mar.	Ladakh	Heavy	36 persons killed at Kharboo village due to snow avalanche.	4000-5000 people in Zaskar region rescued with the help of Indian Air-force plane.
10.	17 Mar.	Chamba, Kinnaur and Lahul-Spiti	Heavy	(i) (ii) (iii)	Normal life completely paralysed. 2-3 metres of snow accumulated throughout the area. Minimum temperature fell down to -20°C.
11.	18 Mar.	Kargil	Heavy	90 persons killed at Shangov and Loivvik villages due to snow avalanche.	
12.	6 Jun.	Zojila pass	Moderate		Vehicular traffic completely suspended on national highway between Srinagar and Leh.
13.	19-26 Dec.	Himachal Pradesh	Heavy	(i) (ii) (iii) (iv) (v) (vi) (vii) (viii)	Kinnaur, Lahul-Spiti and Shimla district worst affected. Kinnaur, Pangi and Pin valleys and the entire tribal belt of Lahul-Spiti completely cut-off from the rest of the country for consecutive 8 days. Normal life in the state completely paralysed. Minimum temperature dropped to -11°C to -14°C at several places in the state. In Shimla, water pipes frozen as the minimum temperature dropped to -3°C. Nako lake at 12,000 ft. height frozen as the temperature dropped to -15°C. Vehicular traffic on 320 km long Hindusthan-Tibet road suspended beyond Shimla. Air services suspended.

(1)	(2)	(3)	(4)	(5)	(6)
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TABLE - II : COLD WAVE

CRITERIA

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

Severe : Night temperature below normal by 8°C or more.

1.	Jan. (1st week)	Hazaribagh, Nalanda and Vaishali	Severe	15 persons including 1 woman and 1 boy died.	Hazaribagh and Nalanda worst affected.
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TABLE - III : HEAT WAVE

CRITERIA

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

Severe : Day temperature above normal by 8°C or more.

1.	3-10 May	Central Gujarat and Saurashtra region	Severe	5 persons killed.	
2.	6-16 May	Rajasthan	Severe	337 people died.	
3.	7-12 May	Bankura	Severe	2 persons died at Doltala and Nikunjapur areas.	Acute shortage of drinking water reported.
4.	11 May	Midnapore	Severe	8 persons died and 214 admitted in hospital under Jhargram police station.	
5.	15 May	Yavatmal	Severe	One person died due to sunstroke.	
6.	16 May	(a) Chandigarh	Severe	One person died at Manimagra due to sunstroke.	
		(b) Gaya	Severe	3 children died at Vazirganj.	

(1)	(2)	(3)	(4)	(5)	(6)
7.	22-31 May	Chandigarh, Delhi, Haryana, Himachal Pradesh and Punjab	Severe	24 people died in Delhi while 5 people died each in Haryana and Punjab.	(i) Chandigarh recorded maximum temperature of 46.5°C. (ii) Shimla recorded maximum temperature of 32°C; hottest day in past 21 years.
8.	28-30 May	Chandrapur Chandigarh and Nagpur	Severe	20 persons died due to sunstroke at Nagpur.	Chandrapur recorded maximum temperature of 48°C.
9.	29 May	Burdwan	Severe	A middle aged man died in Hijalgara village under Jamuria Thana.	
10.	31 May	Pune	Severe (i) (ii)	A 3 year girl died and 9 admitted to hospital due to sunstroke. Large number of birds perished.	
11.	May (4th week)	Agra, Allahabad, Ballia, Banda, Basti, Raibareli, Etawah, Gorkhpur, Jalaun, Jhansi, Kanpur, Lucknow and Meerut.	Severe	18 persons died.	Agra reported maximum temperature of 48°C on 3 days.
12.	May (4th week) to Jun. (1st week)	Gwalior	Severe	100 people died.	
13.	1-6 Jun.	Rajasthan	Severe	82 persons died.	Alwar, Bhartpur, Dholpur, Jaipur, Sawaimadhopur and Sikar districts worst affected.
14.	3-4 Jun.	Bolangir, Balasore, Phulbani and Surendragarh	Severe	22 persons, 15 from Surendragarh alone, died.	Titlagarh in Phulbani district recorded maximum temperature of 48°C.

(1)	(2)	(3)	(4)	(5)	(6)
<u>TABLE - IV : DROUGHT</u>					
1.	Mar.	<u>GUJARAT</u> Bhavnagar and Junagadh	In Junagadh district several cattle heads perished.	(i)	Groundnut and sugarcane crushing factories closed due to non-availability of raw materials.
				(ii)	90% of village population experienced acute shortage of drinking water.
<u>HIMACHAL PRADESH</u>					
1.	May to May	Una		(i)	70-80% of the crops worth about 13 crore destroyed.
				(ii)	Shortage of fodder and drinking water reported.
<u>MAHARASHTRA</u>					
1.	Feb. to Apr.	Ahmednagar, Bhandara, Chandrapur, Gadchizoli, Nagpur, Pune, Thana and Wardha		(i)	Bhandara district worst affected where all the lakes dried up.
				(ii)	In Ahmednagar district sugarcane production reduced by 50-60%. The loss of agriculture production estimated worth 150 crores.
				(iii)	Acute shortage of drinking water reported.
<u>NAGALAND</u>					
1.	May	Entire state		(i)	All the rivers and lakes in the state dried up.
				(ii)	Acute shortage of drinking water reported. One can of water costing Rs. 7-10 reported.
<u>RAJASTHAN</u>					
1.	May	Entire state			80% of state population affected. Around 33 million people and 40 million cattleheads suffered.

(1)	(2)	(3)	(4)	(5)	(6)
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TABLE - V : SQUALL

CRITERIA

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

Severe : Surface wind speed (in gusts) > 80 kmph.

1.	1 Mar.	Calcutta city and Haora	Severe	(i) One labourer killed when struck by a water tank which blown off due to squall. (ii) 4 persons severely injured in a house collapse at Ultadanga area.	(i) Several fibre glass roof covers of Eden Garden stadium blown off. (ii) Many trees/electric poles uprooted in Haora district disrupting vehicular and electrical services.
2.	13 Mar.	Calcutta and neighbourhood	Severe		Several trees/electric poles uprooted, disrupting vehicular services.
3.	18 Mar.	Dhenkanal	Severe		(i) Large number of huts damaged. (ii) Roof tops of a school and a Dak Banglow blown away. (iii) Number of trees uprooted.
4.	15 Apr.	Calcutta city and Haora	Moderate (76 kmph)	One old lady died in a wall collapse at Nandalal Mitra Lane.	2 big trees uprooted disrupting tram services in Mallik Bazar area.
5.	11 May	Cuttack	Severe		(i) Number of thatched houses damaged in Jaigur area. (ii) Several trees, electric/telephone poles uprooted disrupting power and telecommunication services.
6.	12 May	Balasore	Severe		(i) 3 boats carrying goods capsized in Baitarini river. (ii) Several roof tops at Chandbali blown off.

(1)	(2)	(3)	(4)	(5)	(6)
7.	19 May	Puri	Severe	(i) One child killed when a mango tree fell on him. (ii) One person severely injured at Maltipur village in Nayagarh taluka.	Number of trees uprooted.
8.	15 Jun.	Karnal	Severe (100 kmph)	4 people died and 20 injured in shed and balcony collapse in Panipat.	

TABLE - VI : GALE

CRITERIA

Strong : Wind speed \geq 75 kmph.

1.	14 Feb.	Trivandrum	Strong		Widespread damage to property and agricultural crops under Venganur Panchayat, reported.
2.	19 Mar.	Kottayam	Strong		Widespread damage to property, houses and agriculture reported at Merangely village.
3.	10 Apr.	Kottayam	Strong		Damage to property in Chenganazerry reported.
4.	11 Apr.	Ernakulam	Strong		Widespread damage to agriculture reported.
5.	16 Apr.	Cannanore	Strong		Damage to property in Trikkarippur, reported.
6.	14 May	Quilon	Strong		A fishing boat damaged.
7.	3 Jun.	Sibsagar	Strong		Extensive damage to crops in Jorhat, reported.

(1)	(2)	(3)	(4)	(5)	(6)
8.	8 Jun.	Alleppey	Strong	(i)	Extensive damage to property reported.
				(ii)	Roof-tops of several houses blown away.
9.	9 Jun.	Alleppey, Ernakulam and Kottayam	Strong		Damage to property reported.
10.	10 Jun.	Kottayam	Strong	(i)	Damage to property and agriculture reported.
				(ii)	Several telephone/electric lines damaged.
11.	11 Jun.	Quilon	Strong		One fishing boat sank in Neentakara area.

TABLE - VII : DUSTSTORM

CRITERIA

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

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

1.	19 May	Chandigarh	Moderate	(i)	Mango crop badly damaged.
				(ii)	Several tree uprooted.
				(iii)	Electric/telephone poles tilted.
2.	1 Jun.	(a) Chandigarh	Severe	(i)	Roofs of many kutcha houses and huts blown off.
				(ii)	Several trees, electric/telephone poles uprooted.
		(b) Jammu region	Severe	(i)	Number of roof-tops blown away.
			One person died and several other injured.	(ii)	Hundreds of tree uprooted resulting in collapse of some walls and structures.

(1)	(2)	(3)	(4)	(5)	(6)
3.	5 Jun.	Delhi	Severe	2 persons killed and 12 injured when a boundary wall of Air India complex in Vasant Vihar fell on a cluster of Jhuggis.	(i) Many trees, electric/telephone poles uprooted. (ii) Vehicular traffic completely disrupted.

TABLE - VIII: LIGHTNING

1.	10 Apr.	Alleppey		3 persons died under Thakazhi panchayat.
2.	18 Apr.	Gurdaspur		One woman electrocuted at Dinanagar.
3.	19 Apr.	Shimoga		4 people killed in Shikaripur and Thirthahalli talukas.
4.	28 Apr.	24 Parganas		One person electrocuted in Diamond Harbour area.
5.	19 and 20 May	Jammu region		3 persons died at Basohli and Akhnoor.
6.	27 May	Dharwar		3 persons electrocuted in 3 separate incidents in Kalghatgi, Savanur and Kundgol talukas.
7.	3 Jun.	Mayurbhanj		One woman and her 8 year old son killed when lightning struck the house at Bisoi village.
8.	6 Jun.	Purnea	(i) One person died. (ii) 2 cattlehead perished.	
9.	12 Jun.	Bidar	(i) One person died and another injured at Matala village. (ii) Another person died at Aurad taluka,	
10.	15 Jun.	Yavatmal		3 persons electrocuted at Kinvatbedi village when lightning struck on a school building.

(1)	(2)	(3)	(4)	(5)	(6)
11.	16 Jun.	Gadchizoli and Nagpur		4 persons died and 30 injured.	
12.	22 Jun.	Khandwa		3 members of a family died at Mohana village.	
13.	27 Jun.	Chandrapur		4 persons died and 11 other injured at Chirawa village.	
14.	6 Jul.	Cuttack		5 persons including a girl died and 2 injured under Bari block.	
15.	7 Jul.	Dhenkanal		One person electrocuted at Sankarpur village.	
16.	30 Jul.	Puri		2 persons killed and another injured at Bhubaneswar.	
17.	31 Jul.	Cuttack	(i)	5 persons died and ^{other} 4 injured under Kujanga and Ersama police stations and at Paradeep.	
			(ii)	2 cattlehead perished.	
18.	8 Aug.	24 Parganas		6 persons died and 6 other injured in Fakirpara village.	
19.	2 Sept.	Munger	(i)	One woman electrocuted.	
			(ii)	4 cattlehead perished in Dewaria and Manjhi Taran villages.	
20.	7 Sept.	Cuttack		One person electrocuted at Kaliapani village.	4 houses burnt.
21.	14 Sept.	Cuttack		3 woman killed and 2 other injured under Tigiria block.	
22.	16 Sept.	Cuttack		One person died and his mother injured at Basudebapur village.	

(1)	(2)	(3)	(4)	(5)	(6)
23.	17 Sept.	Cuttack		One couple died at Nadiabhaanga village.	
24.	29 Sept.	Nashik		2 school going children killed and 2 other injured at Khalas near Niphad taluka.	
25.	5 Oct.	Thane		2 persons electrocuted in Vasi taluka.	

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.	17 Feb.	Ganjam	Severe		(i) Roof tops of many huts blown away under Puruso, Hampur and Surda block. (ii) Rabi and vegetable crops damaged. (iii) Many trees and telephone poles uprooted.
2.	18 Feb.	Puri	Severe	(i) Several persons injured. (ii) Number of cattlehead perished.	Damage to crop, houses and properties reported at Nayagar area.
3.	20-29 Feb.	Kalahandi	Severe	One person died and 65 injured in Saliljuds village.	(i) Several houses damaged. (ii) Standing rabi crop in 6000 acres of land completely damaged.

(1)	(2)	(3)	(4)	(5)	(6)
4.	23 Feb.	Sambalpur	Moderate		Pole of one microwave tower damaged.
5.	3 Mar.	Bangalore	Severe	One person injured when a large tree fell on him.	Number of trees uprooted causing damage to 3 cars.
6.	11 Mar.	Bhojpur, Purnea, Saran and Vaishali	Severe	One person died and 13 other injured at Sondoghat village.	(i) Rabi crop especially wheat and oil-seeds completely damaged. (ii) Mango crop badly damaged. (iii) In Bhojpur district, several houses collapsed.
7.	12 Mar.	(a) Bhagalpur, Khagaria and Munger	Severe		Extensive damage to rabi crop reported.
		(b) Bhandara	Severe		(i) 60 trees uprooted. (ii) Vehicular traffic on Warthi-Bhandara road completely disrupted. (iii) Telecommunication system in Jawaharnagar, Lakhni and Warthi completely disrupted.
8.	13 Mar.	(a) Dibrugarh, Golaghat and Kamrup	Severe		More than 100 houses damaged.
		(b) Ferozpur	Severe (125 kmph)	Several birds perished.	(i) Several roof-tops blown away at Moga village. (ii) Low lying area flooded. (iii) Hundreds of trees uprooted in Faridkot.
		(c) Munger, Nawada and Patna	Severe	2 persons injured at Barasali-ganj village in Nawada district.	(i) Nawada district worst affected. 400 houses collapsed and 200 trees uprooted. (ii) In Munger district extensive damage to rabi crops reported. (iii) In Patna town low lying areas flooded and the power supply completely disrupted.

(1)	(2)	(3)	(4)	(5)	(6)
9.	14-16 Apr.	Balasore, Cuttack Keonjhar and Mayurbhanj	Severe	(i) 4 persons killed and 62 other injured. (ii) 25 students injured when tiles of roof of M.E. school fell on them at Kantabania village. (iii) 3 cattlehead perished.	(i) In Keonjhar district 50 houses compl- etely damaged. Several trees uprooted disrupting power supply. (ii) In Balasore district, standing rabi crops and Betel vines in thousand acres of land badly damaged. (iii) In Mayurbhanj district Kaptipoda and Suliapoda worst affected blocks. Many houses damaged and large number of trees uprooted disrupting vehicular and telecommunication services.
10.	18 Apr.	Dharamsala	Moderate		(i) Normal life completely disrupted. (ii) Extensive damage to crops reported.
11.	22 Apr.	Puri	Severe	One woman seriously injured in a wall collapse.	(i) Several roof-tops of private and public buildings blown away. (ii) Standing rabi crop damaged.
12.	23 Apr.	Balasore	Severe		(i) Several thatched houses blown off. (ii) Several trees, electric/telephone poles uprooted snapping electric wire and disrupting power supply. (iii) Vehicular traffic suspended for hours together.
13.	24 Apr.	Mandya	Severe		(i) Roof-top of an old house and few huts in the low lying area, coll- apsed. (ii) Train services at Shrirangpatnam affected due to blocking of tracks by fallen trees.
14.	27 Apr.	East Champaran	Moderate		Extensive damage to wheat crop in Raxual reported.

(1)	(2)	(3)	(4)	(5)	(6)
15.	28 Apr.	Puri	Severe	(i) 2 students killed when well of a high school collapse at Simora village. (ii) 18 persons injured when blowing tin/asbestos sheet of the school/house hit them. (iii) Several cattleheads perished or reported missing.	(i) 2 high schools damaged. Number of public/private houses and shops damaged. The loss estimated to be around Rs. 8 lakhs. (ii) About 500 families affected. (iii) Several trees, electric/telephone poles uprooted disrupting power/telecommunication systems.
16.	13 May	Puri	Severe	(i) One person killed due to wall collapse at Konark bazar in Nimapara. (ii) 2 fishermen killed and 2 other injured in boat capsized in Devi river near Astarang.	
17.	17 May	Calcutta	Severe		(i) Normal life in the city completely paralysed. (ii) Several low lying areas inundated by rain water. (iii) Vehicular traffic completely disrupted.
18.	22 May	(a) Purnea	Severe	2 tribal women died due to house collapse and several children wounded at Harinool village in Dhamdaha block.	(i) Several houses collapsed in Forebasganj area. (ii) Several trees/telegraph poles uprooted.
		(b) Santhal Parganas	Severe		(i) 5000, thatched houses collapsed in Murtiganj in Madhupur. (ii) Several trees uprooted. (iii) Number of telephone poles tilted.
19.	24 May	Bangalore city	Severe	One person electrocuted.	(i) Three cars damaged near Sajjan road circle. (ii) 3 trees uprooted at Nrupathunga road.

(1)	(2)	(3)	(4)	(5)	(6)
20.	28 and 29 May	Patna and neighbourhood	Severe		(i) Normal life of Patna city paralysed. (ii) Power supply completely disrupted. (iii) Several telegraph poles uprooted.
21.	29 May	Gaya	Severe	2 persons died due to wall collapse of a Cinema hall in Gopalganj area.	
22.	3 Jun.	(a) Dhenkanal	Severe		(i) Roof tops of several thatched houses in Angul area blown off. (ii) Walls of many houses collapsed. (iii) Several trees uprooted disrupting vehicular traffic. (iv) Number of electric/telephone poles uprooted disrupting power and tele- communication systems.
		(b) Kolar	Severe	One person died and 2 injured under Bagepalli taluka.	(i) Roof-top of several houses of Karnataka water supply and sewage Board blown off. (ii) Water supply pump house damaged. (iii) Large number of trees uprooted.
23.	4 Jun.	Buldana	Severe		(i) Several roof tops/tin sheds blown away. (ii) Normal life in Mehkar village completely paralysed.
24.	9 Jun.	24 Parganas	Severe		The roof of Kakdeep village hospital blown off.
25.	18 Jun.	Balasore	Severe	4 persons died and 4 reported missing in Sarga and Jaleswar area when they went for fishing.	
26.	10 and 11 Jul.	Amravati	Severe	One girl died and 7 students injured in Achalpur taluka.	

(1)	(2)	(3)	(4)	(5)	(6)
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27.	21 Jul.	Srinagar	Severe	(i)	Many houses damaged.
				(ii)	Several trees, electric poles uprooted.

TABIE - 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.	14 Feb.	Jammu and Kashmir	Heavy	(i)	One thousand hectares area around Rambirsinghpura affected.
				(ii)	Considerable damage to standing crop reported.
2.	16 Feb.	Puri and Sambalpur	Heavy	(i)	7 persons injured.
				(ii)	One person missing while fishing in Mahananda river.
				(i)	Hailstones weighing 2-3 kg. reported at Nuagaon and Oragaon blocks while hailstone weighing 100-150 gm. reported at Selpahara.
				(ii)	In Sambalpur district 135 houses damaged. Number of huts blown away and vegetable crops badly damaged.
				(iii)	In Puri, 500 houses damaged. Rabi and vegetable crops in 20,000 acres and sugarcane crop in 500 acres damaged.
				(iv)	Large number of trees uprooted disrupting vehicular traffic.
3.	17 Feb.	Cuttack and Keonjhar	Heavy	(i)	3 persons died and several other injured in Keonjhar district while one person died and 3 injured in Cuttack district.
				(i)	In Keonjhar district, in Anandpur area, ground reported covered upto 2-3 feet with hailstones.
				(ii)	In Cuttack district, 200 huts damaged at Atthagarh and Tigiria blocks.

(1)	(2)	(3)	(4)	(5)	(6)
				(ii) Several cattlehead perished. (iii)	Extensive damage to public and private houses, crop and orchards reported. The loss estimated worth several lakh rupees.
4.	19 and 20 Feb.	Ganjam	Heavy	(i) (ii)	Hailstone of tennisball size reported. Damage to crops in Hingil and Berhampur area.
5.	21 Feb.	Cuttack	Heavy		A roof of Konarak Ceramic Industry at Atthagarh blown away causing extensive damage to machine and material of the industry.
6.	21-23 Feb.	Bhandara, Chandrapur, Gadchizoli and Nagpur	Heavy	(i) 6 persons killed. (ii) 20 cattlehead perished.	(i) Wheat and green Pea crops damaged. (ii) Mango flowers damaged.
7.	28 Feb.	(a) Kurukshetra	Moderate		(i) 15,000 acre land in 50 villages affected. (ii) Crop worth Rs. 6 crore damaged.
		(b) Sambalpur	Moderate		Damage to standing vegetable crops reported.
8.	9 Mar.	Wardha	Moderate		Hailstones of grain size reported.
9.	13 Mar.	Sonepat	Heavy	(i) (ii) (iii)	Hailstone weighing 20-200 gms reported. Several Kuccha houses damaged. Extensive damage to crops reported.
10.	14 Mar.	Kamrup, Lakhimpur, Nagaon and Sonitpur	Heavy	One girl died. (i) (ii)	Hailstones weighing 100 gms reported. Vast area of forest and agriculture cultivation damaged.

(1)	(2)	(3)	(4)	(5)	(6)
11.	19 Mar.	Sibsagar	Moderate		Extensive damage to crops reported.
12.	24 Mar.	Barpeta	Heavy	2 persons died.	Hailstones of 5 cm diameter reported.
13.	17 Apr.	Chamba, Kangra and Palampur	Heavy		(i) Hailstones of egg size reported. (ii) Wheat and fruit-crops badly damaged in Kangra district. (iii) In Palampur district tea crop and in Chamba district fruit crops extensively damaged.
14.	23 Apr.	Satara	Heavy	3 persons died.	Extensive damage to property in Panchgani and Mahabaleshwar reported.
15.	24 Apr.	Kolar	Heavy	2 persons died in wall collapse.	(i) 631 families affected. (ii) Standing crops badly damaged.
16.	25 Apr.	(a) Bombay	Heavy	7 persons including 2 children killed in a wall collapse.	
		(b) Cuttack	Heavy	One person and 2 children died.	600 houses collapsed at Jenapur grampanchayat.
17.	12 May	Murshidabad	Heavy	Hundreds of birds perished in Berhampur town.	(i) Hailstones weighing 50-200 gms reported. (ii) Several thatched houses damaged. (iii) Mango and lichi crops severely damaged.
18.	17 May	Shimla and adjoining area	Heavy		(i) Extensive damage to apple crop reported. (ii) Trees, telephone/electric poles uprooted disrupting electric/telecommunication services.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
(1)	(2)	(3)	(4)	(5)	(6)

TABLE - XI : FLOODS AND HEAVY RAINS

ANDHRA PRADESH

1.	Jul. to Aug. (1st week)	Adilabad, East and West Godavari, Guntur, Karimnagar, Khammam, Krishna, Mehboobnagar and Warangal.	Severe (Godavari and Krishna)	109 people died, 4233 cattleheads perished.	(i) 6886 houses completely and 4108 houses partially damaged. (ii) Paddy crop in 3 lakh hectares completely damaged.
2.	Aug. (4th week)	Kurnool	Severe (Kundu)	One person died.	1,400 families in the three wards of Nandyal town and 14 nearby villages affected.

ARUNACHAL PRADESH

1.	Aug. (4th week)	Entire state	Severe		(i) Oil production at Dhuriajan suspended. (ii) Asia's longest Bailey bridge near Roing in Debang valley district, collapsed.
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ASSAM

1.	May (4th week) to Jun. (1st week)	Cachar, Darrang, Goalpara, Jorhat, Kamrup, Karimganj, Lakhimpur, Nagaon	Severe (Brahmaputra)	(i) 35 persons died. (ii) Large number of cattleheads perished.	(i) 2 million people affected. (ii) Crops in 10,000 hectares damaged. (iii) Several hundred houses submerged. (iv) Road communication between upper and lower Assam completely disrupted. (v) National highway No. 36 submerged between Doboka and Diphu, disrupting road communication to Nagaland.
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(1)	(2)	(3)	(4)	(5)	(6)
					(vi) A stretch of 3 km highway No. 37 washed away due to 3 breaches between Dharamtul and Silchand.
					(vii) Railway track on Lumding - Badrapur section North East Railway blocked due to landslide.
2.	Jun. (4th week)	Dhubri and Nagaon	Flash flood (Killing and Kolong)		(i) Many houses collapsed. (ii) Damage to agriculture crops reported. (iii) National highway No. 37 damaged.
3.	Jul. (2nd week) to Jul. (4th week)	Cachar, Darrang, Dibrugarh, Goalpara, Jorhat, Kamrup, Karbiang-long, Kokrazhar, Lakhimpur, and Nagaon and Sibsagar.	Severe (Brahmaputra and its tributaries)	(i) 24 persons died. (ii) Hundreds of cattleheads perished.	(i) 4000 villages with a population of 8 lakhs affected. (ii) 3000 houses damaged. (iii) Standing crops in 1 lakh hectares damaged. (iv) Road communication between upper and lower Assam completely disrupted. (v) National highway No. 37 submerged at 5 different points between Raha and Nellie. (vi) 500 relief camps set up. (vii) Army called to rescue marooned people.
4.	Aug. (3rd week) to Sept. (2nd week)	Entire state	Severe (Brahmaputra and its tributaries)	(i) 167 persons died. (ii) 39,875 cattleheads perished. (iii) 33 Rhinos perished.	(i) 6 million people affected. (ii) Dibrugarh, Kamrup and Sibsagar worst affected districts. (iii) Standing Ahu and Sali, paddy in 23,000 hectares damaged.

(1)	(2)	(3)	(4)	(5)	(6)
					<ul style="list-style-type: none"> (iv) 430 sq.km. Kaziranga National park submerged. (v) 25 villages in Jorhat district washed away following the breaches in the dykes and embankment of river Brahmaputra. (vi) Several bridges collapsed. Loss estimated to be crores of rupees. (vii) National highway No. 53 between Silchar and Hailakandi and the road between Silchar and Karimganj washed away. (viii) Indian Air Force helicopter put into action to rescue the people.
5.	Oct. (1st week) to Oct. (2nd week)	Dhemaji	Severe (Brahmaputra and its tributaries)		<ul style="list-style-type: none"> (i) 379 villages covering 50,240 hectares with a population of about 27,000 inundated. (ii) P.W.D. road between Machkhowa and Dhakuakhana breached.
<u>BIHAR</u>					
1.	19 Jun.	Singhbhum	Heavy rains	3 persons killed and 4 other injured in a wall collapse in Jamshedpur city.	
2.	17 & 18 Jul.	Darbhanga and Patna	Heavy rains	17 people drowned when a boat capsized in Sone river.	
3.	11 Aug.	Begusarai	Heavy rains	10 women drowned when a boat carrying passengers capsized in Ganga near Talha village.	

(1)	(2)	(3)	(4)	(5)	(6)
4.	Aug. (4th week)	Bhojpur, Gopalganj, Katihar, Khagaria and Saharsa	Severe (Kosi and Mahananda)	7 persons died.	<ul style="list-style-type: none"> (i) Flood water inundated vast areas of Saharsa and Khagaria districts. (ii) In Khagaria 75,000 people affected and 400 families shifted to safer places. (iii) 100 metre long stretch of left embankment of Mahananda near Govindpur, sank. (iv) Embankment of Ganga and Kosi suffered heavy erosion. (v) In Katihar district Govt. offices remained closed. (vi) 8 wooden bridges on Katihar-Pranpur and Barsoi-Balrampur damaged. (vii) Katihar-Kadwa road cut-off for 4 consecutive days.
<u>GUJARAT</u>					
1.	14 Jun.	Ahmedabad, Kachchh and Sabarkantha	Heavy rains	<ul style="list-style-type: none"> (i) One person drowned in Narmada river at Nareshwar village. (ii) 2 cattleheads perished. 	<ul style="list-style-type: none"> (i) 200 houses damaged in Himatnagar town. (ii) Power supply in Ahmedabad city completely disrupted. (iii) Vehicular traffic on Ahmedabad-Gandhinagar road suspended.
2.	Jul. (2nd week to 4th week)	Amreli, Banaskantha, Bhaunagar, Bulsar, Jamnagar, Junagadh, Kachchh, Rajkot, Surat and Vadodara.	Severe (Narmada and its tributaries)	<ul style="list-style-type: none"> (i) 130 people died. (ii) 7,000 cattleheads perished. 	<ul style="list-style-type: none"> (i) 2500 houses razed to ground. 22,000 dwellings damaged. (ii) Standing crops on thousands of hectares washed away. (iii) In Saurashtra region 26 dams flooded. (iv) In Jamnagar district 17 villages marooned.

(1)	(2)	(3)	(4)	(5)	(6)
					(v) Bhuj in Kuchchh district 2000 employees of Gujarat Mineral Development Corporation Ltd. and Gujarat Electricity Board at Panandro marooned for 3 days.
					(vi) In Junagadh district, 1 lakh people in 75 villages marooned.
					(vii) In Surat district 26,000 people stranded and 5000 rendered homeless.
3.	28 Spet.	Jamnagar	Flash flood (Thandar)	40 people died when a state transport corporation bus swept away in Thandar river at Lalpur village.	
		<u>HARYANA</u>			
1.	2 Jul.	Ambala	Heavy rains	One person died.	Low lying areas of the cities innundated due to breachment of Tangri rivulet.
2.	7 Jul.	Ambala, Kurukshetra and Sonapat	Heavy rains		(i) Normal life completely paralysed. (ii) Many low lying areas innundated. (iii) Telecommunication services badly affected.
3.	20-31 Jul.	Ambala and Panipat	Flash floods (Markanda)	(i) 7 persons died. (ii) 250 cattleheads perished.	(i) Paddy crop in 20 villages in Ambala, completely damaged. (ii) 30 feet wide bridge in Derababa Nanak area damaged. (iii) Train services between Delhi-Ambala badly affected due to breaches in railway track.

(1)	(2)	(3)	(4)	(5)	(6)
4.	9-10 Aug.	Ambala, Faridabad, Hissar, Jind, Karnal, Kurukshetra, Sirsa, Sonapat	Severe (Ghaggra)	15 persons died.	(i) More than 65,000 people and 1,10,899 hectares of land affected. (ii) Crops worth Rs. 50 crore in 85,000 hectares destroyed. (iii) 645 roads damaged. (iv) Vehicular traffic on Ambala-Shimla highway disrupted following landslide at many places. (v) Surajpur-Jhajar bridge sank when two of its span washed away.
5.	Sept. (4th week) to Oct. (1st week)	Faridabad, Hissar, Jind, Karnal, Kurukshetra, Sirsa and Sonapat	Severe (Ghaggra)	5 persons died.	(i) Flood water submerged 4000 hectares of land and marooned a village in Sirsa district. (ii) In Faridabad district 10,000 people and 5,000 people in Sonapat district evacuated to safer place. (iii) Kharif crops completely damaged. (iv) 6 tonnes of food grains and 1,80,000 tonnes of cotton damaged.
<u>HIMACHAL PRADESH</u>					
1.	18 Mar.	Dharamsala	Flash flood (Bari Nala)		(i) 540 km long Chamera Hydroelectric project of National Hydroelectric Power Corporation Ltd., flooded. (ii) Dumpers, Dewatering pumps, excavators and 1200 cement bags damaged. Loss estimated to be worth Rs. 30 lakhs.
2.	18 Jun.	Kangra	Heavy rains		(i) Vehicular traffic on Mandi-Kulu National Highway suspended due to land slide. (ii) 100 vehicles and more than 600 people stranded on Manali-Kulu road,

(1)	(2)	(3)	(4)	(5)	(6)
3.	Jul.(1st week) to Aug. (2nd week)	Entire state	Severe (Beas, Sutlaj)	(i) 38 persons died. (ii) 719 cattleheads perished.	(i) 1,511 houses damaged while 250 houses washed away. (ii) Public property worth Rs. 14.60 crore damaged. (iii) In Hamirpur 60% Maize crop destroyed. (iv) Kulu, Mandi and Shimla completely cut-off from the rest of the country. (v) Extensive damage to roads reported. (vi) Railway and vehicular traffic suspended. Hundreds of vehicles stranded at various places. (vii) Railway traffic in Shimla-Kalka section remained suspended due to washing away of a bridge in Guma-Koti section. (viii) Some equipment of Chamba Project washed away. (ix) 3 luxury buses and 1 jeep in the work- shop of Tourist Dept. washed away. Loss estimated Rs. 30 lakhs.
4.	Sept.(4th week)	Bilaspur, Chamba, Kangra, Kulu, Shimla and Una	Severe (Beas, Sutlaj)	32 persons died.	(i) Una district worst affected. (ii) Hundreds of people rendered homeless. (iii) 2000 people and a large number of cattleheads marooned in Pongdam area. (iv) Chamba, Kinnaur, Lahul-Spiti and Manali remained cut-off from the rest of the country.
<u>JAMMU AND KASHMIR</u>					
1.	2 Jun.	Jammu	Heavy rains	2 persons died and 7 injured.	
2.	14 Jul.	Poonch	Heavy rains	2 persons died in a house collapse and 2 others washed away in Chenab river.	

(1)	(2)	(3)	(4)	(5)	(6)
3.	18-20 Jul.	Entire state	Severe (Chenab and Jhelum)	20 persons died. Several cattleheads perished.	(i) 150 villages severely affected. (ii) 800 houses damaged. (iii) 25,000 people in 30 villages marooned. (iv) 3000 people rescued by IAF helicopters. (v) Extensive damage to the crops reported.
4.	28 Jul.	Kupwara	Cloud burst		100 houses damaged.
5.	30 Jul.	Anantnag	Heavy rains		(i) Traffic on Jammu-Srinagar National Highway blocked between Ramban and Banihal. (ii) Indian Airlines flights cancelled.
6.	1 Aug.	Kargil	Flash flood	(i) 17 persons died. (ii) Large number of cattleheads perished.	(i) Several houses collapsed. (ii) Kashmir valley cut-off from the rest of the country.
7.	8 Aug.	Poonch	Flash flood (Poonch)	34 persons washed away.	
8.	15 Aug.	Jammu	Cloud burst	6 members of a family died.	
9.	Sept. (4th week)	Entire state	Severe (Chenab)	50 persons died.	(i) 300 km long Srinagar-Jammu National Highway closed for traffic. (ii) Hundreds of vehicles stranded at Kargil and Dras in Ladakh region. (iii) 2,300 people rescued and shifted to safer places. (iv) Army put into action to supply drinking water to Jammu region.

KARNATAKA

1.	26 Apr.	Raichur	Heavy rains (i)	4 persons died in a house collapse at Gabbarkar village.
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(1)	(2)	(3)	(4)	(5)	(6)
			(ii)	A boy was killed at Manvi village.	
2.	5 Jul.	Bangalore	Heavy rains	6 persons died.	(i) Several Kutcha houses collapsed affecting hundreds of people. (ii) Several people evacuated in low lying areas of Padarayanapura, Byaparayanapura, Frazer and Gouripadaya towns.
3.	15-18 Jul.	Bangalore and Mangalore	Heavy rains	2 persons killed at Cuff road in Bangalore city,	(i) In Mangalore city 2 houses collapsed and 15 damaged. (ii) Low lying areas innundated in flood water.
4.	20 Jul.	(a) Hassan	Heavy rains	One woman and 3 children died due to hut collapse.	Wall of Channakeshava temple collapsed in Belur taluka.
		(b) Shimoga	Heavy rains	6 persons died.	Thousands of houses submerged in rain water.
5.	22 Jul.	Kodagu	Heavy rains		(i) Somawarpet and Virajpet talukas worst affected. (ii) Two bridges and 5 kutcha houses collapsed. (iii) Around 400 acres under paddy completely destroyed due to landslide.
6.	7-9 Aug.	Belgaum	Heavy rains	5 persons killed in house collapse at Gokak and Raibhag taluka.	A bridge in Amodghat section collapsed and another bridge submerged under flood water disrupting vehicular traffic.
7.	25 and 26 Aug.	Bangalore	Heavy rains	One woman and a child died in a hut collapse at Kanteeravanagar.	(i) 8 huts collapsed. (ii) Low lying areas of the city innundated.

(1)	(2)	(3)	(4)	(5)	(6)
8.	28 and 29 Aug.	Bidar, Dharwar, Raichur and Tumkur	Heavy rains	One person killed in a house collapse in Dharwar while 3 died in Tumkur.	(i) Large number of houses/huts damaged. (ii) River embankment breached at many places.
9.	9 Sept.	Bangalore	Heavy rains	10 persons including 4 children died and many other injured.	(i) Normal life in the city completely paralysed. (ii) Low lying areas innundated.
10.	11 Sept.	Bangalore, Bijapur and Tumkur	Heavy rains	(i) 18 persons died and 25 other injured in different parts of Bangalore city. (ii) 7 people killed in house collapse in Bijapur and Tumkur district.	In Bangalore 5,000 families rendered homeless.
11.	Sept. (4th week)	Bijapur and Dharwar	Flash flood	12 persons, 10 from Bijapur died.	(i) 2,225 houses damaged. (ii) Kharif crops badly destroyed.
<u>KERALA</u>					
1.	17 Apr.	Ernakulam	Heavy rains		Damage to property and crops in Kettaimangalam reported.
2.	5 Jun.	Malapuram	Heavy rains		Damage to crops at Kallikkau village reported.
3.	18 Jul.	Idukki	Heavy rains		Extensive damage to property and agriculture reported.
4.	21 Jul.	Idukki	Heavy rains		Loss to crops product and private and public property reported.
5.	23 Jul.	Cannanore	Heavy rains		Extensive damage to property and agriculture reported.
6.	25 Aug.	Malapuram	Heavy rains	6 persons died due to landslide.	Public property and crops damaged.

(1)	(2)	(3)	(4)	(5)	(6)
7.	15 Sept.	Idukki	Heavy rains		7 houses completely and 35 partially damaged.
8.	22 Sept.	Quilon	Heavy rains		Several houses damaged at Sasathancotti village.
<u>MAHARASHTRA</u>					
1.	14 Jun.	(a) Bombay	Heavy rains	One person died when a portion of a small hillock collapsed.	
		(b) Nashik	Heavy rains	One person died and 9 other injured.	
2.	15 Jun.	Bombay	Heavy rains	(i) (ii)	160 local trains cancelled. Railway tracks at Bombay central, Masjid, Grand Road and Mahalaxmi flooded.
3.	2 and 3 Jul.	Nagpur	Heavy rains (i) (ii)	2 persons died in a house collapse. One person died and 5 other injured when rainwater washed away their houses.	
4.	3 Jul.	Thane	Heavy rains	One child swept away and 7 other injured in 2 building collapses.	
5.	9-11 Jul.	Akola	Heavy rains	2 men and one woman washed away.	
6.	16 Jul.	(a) Bombay	Heavy rains (i) (ii)	One girl died and 5 other injured when a portion of a compound wall collapsed at Ghatkopar. 4 persons, 2 each at Bandra and Bombay central injured in hut collapse.	(i) Normal city life completely disrupted. (ii) 119 local trains cancelled. (iii) Movement of the incoming long distance trains badly affected. (iv) Vehicular traffic badly affected.

(1)	(2)	(3)	(4)	(5)	(6)
		(b) Thane	Heavy rains	One person drowned in flooded Nala at Ulhasnagar area.	(i) Bail Bazaar and Shivaji Chowk area of Kalyan town innundated by flood water. (ii) Hundreds of families of hutments, dwellers shifted to safer places. (iii) Vehicular traffic on Thane-Belapur road suspended.
7.	17 Jul.	Sindhudurg	Heavy rains	One man drowned in Kudal taluka in Sindhudurg district.	
8.	17-20 Jul.	Thane	Heavy rains	11 persons died.	2,000 families evacuated.
9.	19 and 20 Jul.	Amravati, Chandrapur, Nashik, Pusad and Yavatmal	Heavy rains	7 persons including 6 from Amravati district died.	(i) Normal life in Vidarbha region completely paralysed. (ii) In Amravati district 46 houses collapsed in Dhamagaon taluka. (iii) Extensive damage to agriculture product reported.
10.	23 Jul.	Bombay	Heavy rains	8 persons died when a portion of a hillock slipped on the hutments at Ghatkopar.	
11.	24-31 Jul.	Yavatmal	Heavy rains	2 girls washed away in Satkund Nala in Umarkhed taluka.	(i) Extensive damage to huts and houses reported. (ii) Crops damaged due to flash flood in Painganga.
12.	25 Jul.	Chandrapur	Heavy rains	One person died.	(i) Normal life completely paralysed. (ii) Extensive damage to agriculture reported.
13.	18 and 19 Aug.	Amravati	Heavy rains	5 persons died.	(i) Large number of people rendered homeless. (ii) Kharif crops badly damaged. (iii) 500-700 families evacuated from low lying areas to safer places.

(1)	(2)	(3)	(4)	(5)	(6)
				(iv)	Flood water entered inside Irwin Hospital and damaged medicines and other hospital equipments. Loss estimated worth Rs. 10 lakhs.
				(v)	Medicines in a general hospital also damaged. Loss estimated to be worth Rs. 50 lakhs.
14.	22 Aug.	Bhandara	Heavy rains	(i)	500 houses/huts damaged rendering 600 families homeless.
				(ii)	Property worth Rs. 45 lakhs damaged.
				(iii)	Estimated loss to municipal corporation Rs. 35 lakhs.
15.	31 Aug.	Ahmednagar, Aurangabad, Beed	Heavy rains		11 persons killed and 9 injured in different incidents of house collapse.
16.	11 Sept.	Beed and Pune	Heavy rains		15 persons died in Beed while 14 persons killed in a wall collapse on Karve Road, Pune.
17.	Sept. (2nd to 4th week)	Aurangabad, Jalna, Nanded, Osmanabad and Parbhani	Severe (Bindusara)	(i)	15 persons washed away and 14 injured in various incidents of house collapse.
				(ii)	Large number of cattle-heads perished.
				(i)	Beed city worst affected.
				(ii)	36 villages in Nanded district and 20 in Parbhani district affected.
				(iii)	Damage to property worth lakhs of rupees reported.
				(iv)	In Parbhani, schools remained closed.
18.	16 Sept.	Satara	Heavy rains		5 members of a family including 3 children died in a wall collapse at Phaltan.

(1)	(2)	(3)	(4)	(5)	(6)
19.	Sept. (3rd week)	Pune	Heavy rains	3 persons washed away.	4 hutments collapsed.
20.	20 Sept.	Ahmednagar	Heavy rains	One woman died in a wall collapse.	
21.	22 Sept.	Bombay	Heavy rains	One fisherman died when the boat capsized off the coast.	
22.	25 and 26 Sept.	Yavatmal	Heavy rains	(i) 2 persons washed away while crossing Purnavati river at Pardi village. (ii) A 6 years old girl died and 3 other children injured in a wall collapse.	Extensive damage to crop reported.
23.	28 Sept.	(a) Bombay	Cloud burst	One woman and her one year old son crushed to death in a landslide at Utkarshnagar colony, Bhandup (east).	(i) City life completely paralysed. (ii) On central railway, locals and through train services completely disrupted due to flooding of tracks between Byculla and V.T. (iii) Loading and unloading of the dock-yard suspended. (iv) Fire brigade attended 132 calls.
		(b) Buldhana	Heavy rains		Property worth Rs. 1.60 crore damaged.
24.	2 and 3 Oct.	Akola, Amravati, Buldana and Yavatmal	Heavy rains	12 persons, 8 from Amravati died in various wall collapse incidence.	(i) In Buldhana district property worth Rs. 1.35 crore damaged. (ii) 100 persons shifted to safer places. (iii) Standing crops worth million of rupees destroyed.
25.	3 Oct.	(a) Ahmednagar	Heavy rains		(i) 70 bunds washed away in Sangamner taluka.

(1)	(2)	(3)	(4)	(5)	(6)
		(b) Bombay	Heavy rains	12 persons killed and 18 other injured in a compound wall collapse.	(ii) Paddy crop suffered heavy loss. (i) City life completely paralysed. (ii) 19 hutments damaged. (iii) Road, railway and air traffic completely disrupted.
26.	6 Oct.	Akola	Heavy rains	One woman washed away in Purna river at Vadegaon village.	5 villages including Gandhigram submerged under flood water disrupting vehicular traffic.
27.	10 Oct.	Bhandara	Heavy rains	13 persons including a woman died.	
		<u>MEGHALAY</u>			
1.	May (4th week)	Entire state	Heavy rains	5 people killed.	
		<u>ORISSA</u>			
1.	29 Jul.	Sambalpur	Heavy rains		(i) Large no. of Kutcha houses completely/ partially damaged. (ii) Road link at several places washed away. (iii) Several families shifted to safer places.
2.	3 Aug.	Sambalpur	Heavy rains		(i) Road link at several places washed away. (ii) Power supply and telecommunication services completely disrupted.
3.	18 Aug.	Cuttack	Heavy rains	One person died at Balipatna village and another injured at Pakhariapara village.	

(1)	(2)	(3)	(4)	(5)	(6)
4.	21 Sept.	Balasore	Heavy rains	5 persons died.	Road link at several places submerged.
5.	23 Sept.	Balasore	Heavy rains	2 persons died and 2 injured at Bhandapakhari village.	
<u>PUNJAB</u>					
1.	11-14 Mar.	Gurudaspur	Flash flood (Ravi)	One person died. (i)	40 villages innundated by flood water. while 15 villages remained cut-off from rest of the state for 3 consecutive days.
				(ii)	Large number of people took shelter on tree-tops.
				(iii)	180 metre long Dhussi Bundh washed away near Kamalpur village damaging standing crops in 50,000 acres.
2.	29 Jun.	Ropar	Heavy rains		Vehicular traffic on Chandigarh-Manali section of National Highway remained disrupted as the large portion of the highway submerged in 1 metre water.
3.	3 Jul.	Patiala	Heavy rains	5 persons died. (i)	1/3rd of the city submerged under flood water.
				(ii)	20,000 people rendered homeless.
				(iii)	12 buildings collapsed.
				(iv)	Loss estimated worth crores of rupees.
4.	7 Jul.	Hoshiyarpur, Jullander and Ropar	Heavy rains	One person washed away in Hoshiyarpur district. (i)	Canal link washed away at many places.
				(ii)	Work on Sutlaj/Jamuna link canal affected.
5.	Jul. (2nd week) to Aug. (2nd week)	Amritsar, Bhatinda, Ferozpur, Gurudaspur, Hoshiyarpur	Severe (Ravi and Sutlaj)	(i) 38 persons died. (ii) 208 cattleheads perished. (iii)	70 villages in Patiala and 60 villages in Gurudaspur district affected. Crops worth crores of rupees damaged in 200 villages. 8,900 houses destroyed while 1000 tube wells damaged.

(1)	(2)	(3)	(4)	(5)	(6)
		Jullander, Kapurthala, Ludhiana, Patiala and Sangrur		(iv)	In Sangrur district 30,000 acres in 26 villages completely submerged.
				(v)	Total loss of crop and property estimated worth Rs. 1346.38 lakhs.
				(vi)	Heavy damage to roads reported.
				(vii)	Vehicular traffic on Mansa-Sardulgarh road suspended due to breaches in Ghaggra river.
				(viii)	24 km long Dhussi Bundh in Amritsar and Gurudaspur districts breached at couple of places.
				(ix)	Some parts of Mukerian Hydle canal washed away. Loss estimated Rs. 4 crore.
				(x)	Hundred feet long Chandigarh-Hoshiyarpur highway washed away.
6.	Sept. (4th week) to Oct. (2nd week)	Amritsar, Bhatinda, Ferozepur, Gurudaspur, Hoshiyarpur, Jullander, Kapurthala, Ludhiana, Patiala and Ropar	Severe (Beas, Ravi and Sutlaj)	57 people died.	(i) Amritsar, Gurudaspur, Jullander, Kapurthala and Ropar districts worst affected. (ii) 2 lakhs people marooned in 1483 villages. (iii) Paddy worth Rs. 112 crore, Maize worth Rs. 14 crore, Cotton worth Rs. 85 crore, Oil seeds and Sunflower worth Rs. 17 crore and Dal worth Rs. 14 crore damaged. (iv) 74,000 tonnes foodgrain lying in Mandis damaged. (v) IAF base at Adampur in Jullander district was in danger by flood as the Blist Daab canal developed a breach. (vi) Road bridge over railway track at Dhilwal collapsed disrupting traffic between Jullander and Amritsar. (vii) 4 trains cancelled due to breaches in 16 places at Ferozepur division of Northern Railway.

RAJASTHAN

1.	25 Jul.	Ajmer, Alwar Bharatpur, Jhalawar and Kota	Heavy rains	3 persons including 2 children died.	Several houses damaged.
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(1)	(2)	(3)	(4)	(5)	(6)
<u>TAMILNADU</u>					
1.	6 Nov.	Madras	Heavy rains	3 persons including a 6 years old boy died and 4 injured due to wall collapse.	
<u>TRIPURA</u>					
1.	27-29 May	Agartala	Heavy rains		(i) Low lying areas submerged. (ii) Hundreds of houses innundated while 10,000 families marooned. (iii) People rescued to safer places. (iv) Vehicular traffic completely disrupted.
2.	24 Jun.	Entire state	Flash flood		(i) 20,000 people marooned. (ii) Hundreds of houses in the low lying areas flooded rendering more than 5000 families homeless.
3.	Jul. (2nd week) to 4th week)	Entire state	Severe	7 persons died in land-slide at Kailashar.	(i) Several thousand persons affected. (ii) 2,000 acres of paddy field submerged.
<u>UTTAR PRADESH</u>					
1.	Jul. (2nd week) to Sept. (2nd week)	29 districts affected	Severe (Ganga and tributaries)	(i) 611 persons died. (ii) Hundreds of cattleheads perished.	(i) 2.05 million people in 3441 villages affected. (ii) 15.10 lakh hectares of land innundated. (iii) Crops in 2,28,000 hectares destroyed. (iv) 5,10,000 people and 44,000 cattleheads rescued to safer place.
<u>WEST BENGAL</u>					
1.	12 Jun.	Calcutta	Heavy rains	2 persons injured.	(i) Normal city life completely paralysed. (ii) Low lying areas submerged. (iii) A private car damaged.

(1)	(2)	(3)	(4)	(5)	(6)
2.	12 & 13 Jun.	Hugli, Midnapore and 24 paraganas.	Heavy rains (i) 4 persons including an old lady died due to house collapse. (ii) 30 people injured at Midnapore.	(i) 4 barges and 3 launches capsized near Haldia in Hugli district. (ii) Embankment across river Ganga breached at several places. (iii) 300 kutcha houses collapsed in Midnapore district.	
3.	27 Jun.	Calcutta and Haora	Heavy rains 2 persons died.	(i) Vast area of Calcutta and Haora innundated by rain water. (ii) City life completely paralysed. (iii) Bus, tram and train services affected.	
4.	6 Jul.	Calcutta	Heavy rains	(i) Various parts of the city submerged. (ii) Normal life completely paralysed. (iii) Vehicular traffic almost suspended.	
5.	Aug. and Sept.	Birbhum, Cooch Behar, Severe Jalpaiguri, Malda, Murshidabad, Nadia and West Dinajpur	(i) 53 persons died. (ii) 195 cattleheads perished.	(i) Malda and West Dinajpur worst affected. (ii) 1.2 million people in 4559 villages affected. (iii) 7561 sq.km. area submerged under flood water. (iv) 1,16,968 houses fully and 1,72,797 partially damaged. (v) Crops in 3,32,956 hectares worth Rs. 6,297.90 lakh damaged. (vi) Two National Highway damaged. Nagar bridge over National Highway No. 34 near Rajganj, damaged. (vii) In Nadia district, 50 villages innundated under flood water. (viii) No. 2 and 3 spar of Farakka barage washed away and number 12 and 14 partly affected.	

(1)	(2)	(3)	(4)	(5)	(6)
<u>UNION TERRITORY</u>					
<u>CHANDIGARH</u>					
1.	29 Jun.	Chandigarh	Heavy rains	(i)	Hundreds of huts collapsed.
				(ii)	Low lying areas flooded.
2.	23 Jul.	Chandigarh	Heavy rains	(i)	Number of huts washed away.
				(ii)	Low lying areas innundated.
<u>DELHI</u>					
1.	Sept. (4th week)	Delhi	Severe (Jamuna)	(i)	Water level in Jamuna river rose to 206.92 metre at old Delhi railway bridge.
				(ii)	Flood water entered Majanuka-Tila and Mukherjeenagar colony in north Delhi.
				(iii)	Flood water entered into inter-state bus terminus.
				(iv)	Army boats rescued 35 marooned persons from Majanuka-Tila.

S.N.	Date/period	Area of Formation/Dissipation	Intensity	Casulties	Extent of damage
(1)	(2)	(3)	(4)	(5)	(6)

TABLE - XII : CYCLONIC STORMS

BAY CYCLONES

1.	23-30 Nov.	Formation : At Lat.9°N, Long. 94°E in Andaman sea and adjoining south- east Bay.	Severe (i) (with a core of hurricane winds)	(i) 532 persons died. (ii) 57,604 cattle- heads perished.	(i) In West Bengal, Hugli, Haora, Midnapore, Nadia and 24 paraganas districts affected. 24 paraganas worst affected. (ii) 3893 villages with a population of 2.83 million, affected. (iii) 1,31,794 houses fully and 2,13,794 partially damaged. (iv) Crops in 1,93,784 hectares damaged. Total loss estimated as Rs.7,352.18 lakhs. (v) The total loss of crop and property in West Bengal estimated to be about Rs. 137.77 crore. (vi) One ship M.V. Pumeri and two launches Rangabalia and Mahandra of forest Department of Govt. of West Bengal, drowned.
		<u>Landfall</u> : Near Sagar Island			
		<u>Dissipation</u> : At the point of landfall itself.			