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INDIA METEOROLOGICAL DEPARTMENT
DISASTROUS WEATHER EVENTS, 1991



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Cover Photo : Karaikal cyclone, November 1991.

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DISASTROUS WEATHER EVENTS OF 1991

The most striking disastrous weather events of 1991 were the following :

- i) A severe cyclonic storm occurred in the Bay of Bengal during 12th to 15th November and claimed 418 human lives and 7793 cattleheads in Tamil Nadu and Andhra Pradesh.
- ii) Severe flood conditions prevailed over many parts of Andhra Pradesh, Arunachal Pradesh, Assam, Gujarat, Karnataka, Maharashtra, Meghalaya, Mizoram, Orissa, Uttar Pradesh and West Bengal, and took a toll of 891 human lives. Over Maharashtra alone, a death toll was 500 due to flash flood.
- iii) Severe heat wave condition prevailed over Rajasthan during 1-11 June and claimed 226 human lives.

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

I N D E X

<u>Table No.</u>	<u>Event</u>	<u>Page Nos.</u>
I	Snowfall	1 - 3
II	Cold Wave	4 - 5
III	Heat Wave	6
IV	Drought	7
V	Squall	7 - 8
VI	Gale	9
VII	Duststorm	10
VIII	Lightning	10 - 12
IX	Thunderstorm	13 - 16
X	Hailstorm	17 - 25
XI	Floods and Heavy rains	26 - 51
XII	Cyclonic Storm	52



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

CRITERIA

Moderate : 7.6 to 34.9 cm in 24 hrs.

Heavy : \geq 35.0 cm in 24 hrs.

1.	1-14 Jan.	(a) Himachal Pradesh (Entire State)	Heavy	86 persons died.	<ul style="list-style-type: none"> (i) 67 km stretch of Chandrabhaga river from its source Chandratal to Tindi in Lahul-Spiti valley frozen. (ii) Many areas of the interior of the state remained cut-off from Shimla. (iii) Telecommunication link in Shimla cut-off from rest of the country. (iv) Vehicular traffic on Hindustan-Tibet national highway remained suspended.
		(b) Jammu and Kashmir (Entire State)	Heavy		<ul style="list-style-type: none"> (i) Kashmir valley cut-off from rest of the country. (ii) Temperature hovered between -30°C to -40°C. (iii) Dal lake in Srinagar remained frozen. (iv) 300 km long Jammu-Srinagar national highway remained closed for vehicular traffic. (v) Hundreds of vehicles stranded on the highway.
2.	5 Jan.	Almora	Heavy	10 persons died due to snowstorm.	

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
3.	9-12 Feb.	Himachal Pradesh (Entire State)	Heavy	One person died.	(i) All lakes and rivulets remained frozen. (ii) Night temperature dropped to -15°C to -20°C at several places. (iii) 350 km. long Hindustan-Tibet national highway suspended. Chamba-Bairagarh and Chamba-Barmur road also remained closed for vehicular traffic.
4.	10-16 Feb.	Jammu and Kashmir (Entire State)	Heavy	19 persons died, 17 other injured due to avalanche.	Hundreds of huts destroyed.
5.	24-28 Feb.	Himachal Pradesh (Entire State)	Heavy	28 persons died.	Normal life completely paralysed in Kinnaur, Lahul-Spiti, Pangi valley, Barmur and Dhauladhar ranges.
6.	13 & 14 Apr.	Himachal Pradesh (Higher ridges)	Moderate		Vehicular traffic disrupted due to landslides at several places.
7.	10 May	Himachal Pradesh (Higher ridges)	Moderate		(i) Normal life completely paralysed. (ii) Minimum temperature dropped to -6°C.
8.	20-29 Dec.	Chamba, Kangra, Kinnaur and Lahul-Spiti	Heavy		(i) 3 districts cut-off from rest of the state. (ii) Telecommunication/water and power supply disrupted at several places.
9.	24 Dec.	Shimla	Heavy		(i) Normal life completely paralysed. (ii) Telecommunication/water supply completely disrupted in some parts of the city.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
					(iii) Vehicular traffic on Hindustan-Tibet national highway, Shimla-Kalka and Shimla-Mandi suspended.
					(iv) Vayudoot flights between Delhi-Kalka and Delhi-Shimla suspended.
10.	28 Dec.	Dehra Dun	Heavy		(i) 12 villages remained cut-off as link road covered with snow ranging 1-2 metres. (ii) Mussoorie-Tehri, Chakrata-Dehra Dun and Chakrata-Tuni road completely closed for vehicular traffic.

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

CRITERIA

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

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

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

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

Cold wave : Night temperature 3° to 4°C below normal.

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

1.	1 & 2 Jan.	(a) Himachal Pradesh (Entire State)	Severe cold wave (Both A and B as appropriate)	6 persons died.	
		(b) Madhya Pradesh (Entire State)	Severe cold wave (Both A and B as appropriate)	One person died.	
2.	1-4 Jan.	Rajasthan (Entire State)	Severe cold wave (Both A and B as appropriate)	7 persons died.	(i) 80% of the standing vegetable and mustard crop damaged. (ii) Churu reported -2°C as night temperature on 1st.
3.	4 Jan.	Hugli	Severe cold wave (A).	One person died.	

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
4.	5 Jan.	Ahmednagar	Severe cold wave (A)	2 persons died.	
5.	7 Jan.	Calcutta	Severe cold wave (A)	A 5 years old boy died.	
6.	15-20 Jan.	Rajasthan (Entire State)	Severe cold wave (Both A and B as appropriate)	2 persons died.	Churu and Mt. Abu recorded 0°C temperature on 15th and 16th respectively.
7.	21 & 22 Mar.	Himachal Pradesh (Tribal area and Higher ranges)	Severe cold wave (Both A and B as appropriate)		(f) Normal life paralysed. (if) Night temperature dropped to -30°C.
8.	22 Dec.	Jaipur	Severe cold wave (B)	One person died.	
9.	24 Dec.	Calcutta	Severe cold wave (A)	6 footpath dwellers died.	
10.	27-31 Dec.	Almora and Lucknow	Severe cold wave (B)	4 persons, 2 from each district died.	
11.	29 Dec.	Garhwal	Severe cold wave (B)	3 persons died.	

S.N. Date/period Area affected Intensity Casualties Extent of damage

TABLE - III : HEAT WAVE

CRITERIA

(A) Where; Normal maximum temperature is 40°C or less.

Heat wave : Day temperature 5° to 6°C above normal.

Severe heat wave : Day temperature 7°C or more above normal.

(B) Where; Normal maximum temperature is more than 40°C.

Heat wave : Day temperature 3° to 4°C above normal.

Severe heat wave : Day temperature 5°C or more above normal.

1.	May (4th week)	Chandrapur and Nagpur	Severe heat wave (Both A and B as appropriate)	2 persons died and 6 other admitted to hospital due to sunstroke.	Nagpur recorded maximum temperature 45.5°C.
2.	1-11 Jun.	Rajasthan (Entire State)	Severe heat wave (Both A and B as appropriate)	226 persons died.	Ajmer, Barmer, Bikaner, Jaisalmer, Jodhpur and Pali districts worst affected.
3.	Jun. (1st week)	Gujarat (Entire State)	Severe heat wave (Both A and B as appropriate)	22 persons died.	(i) Ahmedabad recorded maximum temperature 46.6°C. (ii) Deesa in Banaskantha district recorded maximum temperature 47.4°C.
4.	1-4 Jul.	Ajmer and Bharatpur	Severe heat wave (A)	2 persons died.	

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
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TABLE - IV : DROUGHT

<u>ASSAM</u>					
1.	Mar. (3rd week)	Dhubri			Early variety of paddy crop damaged.
<u>MAHARASHTRA</u>					
1.	✓ Sept.	Ahmednagar, Amravati, Aurangabad, Beed, Buldhana, Chandrapur, Dhule, Jalgaon, Latur, Nagpur, Nasik, Osmanabad, and Yavatmal			✓(i) 12,000 villages affected. <i>W</i> ✓(ii) 70% crop in Amravati and 65% of the cotton production in Yavatmal affected. (iii) Acute shortage of drinking water and fodder reported.
<u>NAGALAND</u>					
1.	Sept. (2nd week)	Entire State			(i) Baghli, Dimpaur and Jalukia areas badly affected. (ii) 4000 farmers in 350 villages affected. (iii) Paddy transplantation in 11,000 hectares of land damaged. (iv) Shortfall in production estimated to worth Rs. 8.75 crore.

TABLE - V : SQUALL

CRITERIA

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

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

1.	3 Feb.	Nadia	Severe	One child died and 20 other injured.	(i) 10 mud houses collapsed. (ii) Many betel plants damaged.
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S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
2.	6 Mar.	Medinipur	Severe		(i) Bishenpur and Chura-Chandrapur villages affected. (ii) 350 houses destroyed. (iii) 2000 people rendered homeless.
3.	5 Apr.	Bombay	Severe		(i) 9 moored boats capsized. (ii) 8 huts at Gori village blown away.
4.	8 Apr.	Cuttack	Severe	23 persons injured.	(i) Roof tops of several thatched houses blown off. (ii) Several telephone/electric poles uprooted disrupting completely telecommunication services and power supply.
5.	9 Apr.	Medinipur	Severe		(i) Many houses collapsed. (ii) Vegetables worth Rs. 50 lakhs in Nandigram damaged.
6.	3 May	Murshidabad	Moderate		8 electric poles uprooted disrupting electric supply at different places.
7.	16 May	Medinipur	Severe	One person died and 20 other injured.	(i) Several houses damaged. (ii) Large number of trees uprooted.
8.	24 May	Nadia	Severe	3 persons died and another injured.	All the electric poles in Ranaghat uprooted disrupting complete power supply.
9.	8 Jul.	Delhi	Moderate		Large number of trees uprooted damaging several cars and scooters.

S.N. Date/period Area affected Intensity Casualties Extent of damage

TABLE - VI : GALE

CRITERIA

Strong : Wind speed \geq 75 kmph.

1.	10 Mar.	Calcutta	Strong		An old building and a marriage pandal collapsed.
2.	22 Apr.	Alapuzha	Strong		(i) Many houses collapsed. (ii) A large number of coconut trees uprooted.
3.	27 Apr.	Kasaragoda	Strong		(i) Several houses collapsed. (ii) Heavy damage to crop reported.
4.	1 Jun.	Cannur	Strong		Extensive damage to coconut trees reported.
5.	2 Jun.	Alapuzha	Strong		(i) 27 houses collapsed. (ii) Many coconut trees uprooted.
6.	4 Jun.	Alapuzha	Strong		(i) 500 coconut trees uprooted. (ii) Extensive damage to vegetation and houses reported.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
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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.	9 May	Delhi	Severe (96 kmph)		Several trees/electric poles uprooted.
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2.	12 Jul.	Jaipur	Moderate	One person died.	Many trees uprooted.
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TABLE - VIII : LIGHTNING

1.	Feb. (4th week)	Mandsaur		2 sisters died due to electrocution in Garoth tehsil.	
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2.	7 Apr.	Vidisha			Premises of a co-operative bank caught fire and record destroyed due to lightning.
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3.	8 Apr.	Cuttack		One person died.	
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4.	10 Apr.	Koraput		2 persons died at Gunapur town.	
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5.	12 Apr.	Dhenkanal		(i) One person died. (ii) 2 cattleheads perished at Mugupada village.	
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S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
6.	15 Apr.	Bidar			One person died at a locality under Chitguppa Police Station.
7.	23 Apr.	Rajauri			5 persons died at Thanamandi and Dana areas.
8.	6 May	Darrang		(i) One cowboy injured at Bandarguri village. (ii) 5 cattleheads perished.	
9.	6 & 7 May	Cachar and Karimganj			5 persons, including one woman, died.
10.	7 May	Barpeta			One person killed at Jangabari village under Jalah development block.
11.	10 May	Bidar			2 persons died at localities under Janwada and Kalyan Police Station areas.
12.	26 May	Sangli			2 girls electrocuted at Dogarwadi near Walekhindi.
13.	4 Jun.	Chitradurga			A man and a woman electrocuted and 3 other injured.
14.	8 Jun.	Sehore			3 persons died and 3 other injured.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
15.	15 Jun.	Bidar		One person died in a village under Mekhali Police Station.	
16.	24 Jun.	Nagpur ✓		One woman died and 3 other suffered severe burns injury at Kanhan village.	
17.	11 Jul.	Wardha ✓		3 persons died at Ashti village.	
18.	19 Jul.	Cuttack		One boy died at Nurugan village under Rajnagar block.	
19.	22 Jul.	Cuttack		11 persons electrocuted.	
20.	1 Aug.	Hamirpur		One person electrocuted at Taprai village.	
21.	18 Aug.	Banda		4 persons, including 2 women, died.	
22.	21 Sept.	Ganjam		2 persons died at Nadigaon village.	
23.	26 Sept.	Puri		One person died at Golapakhari village.	
24.	8 Oct.	Hassan		3 persons died at Koppalu village of Arkalgudu tehsil.	

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
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TABLE - IX : THUNDERSTORM

CRITERIA

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

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

1.	7 Mar.	Puri	Moderate		Standing vegetable crop in extensive areas damaged.
2.	2 Apr.	Pune ✓	Moderate		(i) Several hoardings in the streets and roof-tops of road side stalls blown away. (ii) Electric supply broke down in several parts of the city.
3.	4 Apr.	Pune ✓	Severe		(i) A semi-pakka house at Uruli Devachi village damaged. (ii) Large number of trees uprooted.
4.	7 & 8 Apr.	Bhopal	Severe	One person died due to collapse of smoke tower of brick furnace at Obaidullaganj.	(i) Several huts destroyed. (ii) Roof tops of many houses blown off.
5.	9 Apr.	(a) Kamrup and Nalbari	Severe		Many houses including school buildings, shops and commercial establishments damaged. Loss estimated to worth several lakhs of rupees.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
		(b) Puri	Severe		(i) Roof-tops of several houses blown off in Khandapara block. (ii) Large number of trees/electric poles uprooted disrupting power supply.
		(c) South 24 Parganas	Severe	One woman died and 4 children injured at Mrinalsagar village under Kakdeep Police Station.	
6.	10 Apr.	Bhubaneswar	Moderate		Electric power supply disrupted at several places.
7.	11 Apr.	(a) Barpeta and Nalbari	Severe		(i) Several thatched houses damaged. (ii) Large number of trees uprooted.
		(b) Cuttack	Severe	One person died.	(i) Roof tops of several thatched houses blown off. (ii) Telephone and electric lines completely disrupted at Jaipur road town area.
8.	19 Apr.	(a) Cuttack	Severe		(i) Roof tops of several houses blown off. (ii) Electric wires snapped at several places causing fire. (iii) Large number of trees uprooted.
		(b) Purulia	Severe	One person died and 8 other seriously injured.	
9.	12 May	Pune ✓	Severe	3 persons injured.	(i) Low lying areas inundated by rain water. (ii) Several trees uprooted. (iii) Power supply broke down in many parts of the city.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
10.	26 May	Parbhani ✓	Severe	2 people died and 5 other including 2 women injured when a tree fell over them.	(i) Several houses collapsed. (ii) Trees/telephone/electric poles uprooted at many places.
11.	2 Jun.	Pune ✓	Severe (106 kmph)		(i) Normal life completely paralysed. (ii) Several hoardings blown off. (iii) Large number of trees uprooted.
12.	10 Jun.	(a) Chandigarh	Severe	(i) 2 children died. (ii) Large number of birds perished.	(i) Roof tops of large number of Juggies either blown off or damaged. (ii) Large number of trees uprooted disrupting power supply and telecommunication services.
		(b) Medinipur	Severe	6 persons died at Basanchak village under Keshpur Police Station.	
13.	16 Jun.	Calcutta	Severe	One old man died at Maniktala in north Calcutta.	(i) Normal life completely paralysed. (ii) Varandah of a house collapsed.
14.	2 Jul.	(a) Hugli	Severe	One person died in Hasan village.	
		(b) Jalpaiguri	Severe	One person electrocuted.	Low lying areas flooded.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
15.	12 Aug.	Datia	Severe	(i) 5 persons including 2 women died. (ii) 2 cattleheads perished.	One house collapsed.
16.	2 Sept.	North 24 Parganas	Severe	2 persons died at Barasat Thana.	
17.	25 Sept.	Burdwan	Severe	3 persons died and 2 other seriously injured at Kana inathsal and Memori Thana.	
18.	24 Dec.	Maldah	Severe	25 persons died when a boat carrying about 55 passengers capsized in Ganga near Narayanpur village in Manikchand.	

Apr 2 - - - - - None
 May 2 5 2 - - - - - None
 June 1 - - - - - None

None of - mm
 Particulars - MRAK: 1 1 - -
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S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
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TABLE - X : HAILSTORM

CRITERIA

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

Moderate : Fall abundant enough to whiten ground.

Heavy : Includes atleast a proportion of large stones.

1.	3 Jan.	Sonitpur	Heavy		(i) Several thatched houses damaged in Tezpur and neighbouring areas. (ii) Standing crop including seasonal vegetables damaged.
2.	2 Feb.	Keonjhar	Heavy	Several birds perished.	(i) Large number of houses damaged rendering 600 families homeless. (ii) Several trees uprooted.
3.	11 Feb.	(a) Alwar and Ganganagar	Moderate		Standing crop worth several lakhs of rupees, damaged.
		(b) Bhatinda and Hamirpur	Moderate		Crop worth several lakhs of rupees damaged.
		(c) Delhi	Heavy	3 persons died due to electrocution and 4 other injured in a wall collapse.	(i) Normal life completely paralysed. (ii) One Maruti car crashed under a tree.
		(d) Faridabad	Heavy	5 persons died.	
4.	25 Feb.	Morena	Moderate		Crop in 26 villages affected.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
5.	27 Feb.	Lakhimpur	Heavy	Several people injured.	(i) Roof-tops of several houses with C.I. sheets blown away upto 1 km. (ii) Hundreds of families rendered homeless. (iii) Extensive damage to houses and many school buildings reported. (iv) Telecommunication/power supply completely disrupted. (v) Loss estimated to worth rupees several lakhs.
6.	28 Feb.	(a) Gurgaon and Sonipat	Moderate		Crops in several villages damaged.
		(b) Karimnagar	Heavy	Hundreds of sheep, goats, cattle and poultry birds perished.	(i) 20 villages in Ramadugu and Gangadhar mandals affected. (ii) Extensive damage to paddy, chilly, cotton, castor and vegetable crop in hundreds of acres reported. (iii) Loss estimated to worth Rs.10 crore.
7.	28 Feb. & 1 Mar.	Barpeta	Heavy		Several Banana plantations and betel-nut trees uprooted.
8.	2 Mar.	Keonjhar and Mayurbhanj	Heavy	Several cattleheads perished.	(i) Roof-tops of large number of thatched houses blown off. (ii) Several houses damaged. (iii) Standing vegetable and other crops in several hundreds of acres of land damaged.
9.	2-4 Mar.	Sagar	Heavy	75 cattleheads perished.	Heavy loss to crops in Parsoriya revenue circle reported.
10.	3 Mar.	Betul	Moderate		Heavy loss of standing crops in Dokya, Padman and Hiverkhedi villages reported.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
11.	5 & 6 Mar.	Chhatarpur	Moderate		(i) 50 villages affected. (ii) 90% rabi crop affected.
12.	8 Mar.	Tinsukia	Heavy	4 persons injured.	(i) Vegetable crop and Tea gardens in Dihing Margherita areas damaged. (ii) Several houses of casual labourers damaged.
13.	12 Mar.	(a) Nagaon	Heavy		(i) Roads and fields covered with 3 inch thick layer of hail looking like a white carpet. (ii) Glass panes of large number of windows damaged. (iii) Extensive damage to green plantations reported.
		(b) Sambalpur	Heavy	211 cattleheads perished.	
14.	14 Mar.	Rewa	Moderate		Crop in 7 villages affected.
15.	15 Mar.	Kamrup	Heavy		(i) Portion of a top of Barkukuria lower primary school building blown away. (ii) Nav Yuvak Library and several houses and shops damaged. (iii) Standing crop badly affected. (iv) At Barambai village, several thatched houses damaged.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
16.	16 Mar.	Kamrup	Heavy		(i) Varandah of the Rangiya Agriculture Office damaged. (ii) Several thatched houses damaged. (iii) Large number of trees/electric poles uprooted. (iv) Extensive damage to standing crop reported.
17.	17 Mar.	Karbi Anglong	Heavy		(i) Several roof-tops blown away. (ii) Extensive damage to crop reported. (iii) Trees/electric poles/telephone poles uprooted or twisted.
18.	22 Mar.	Himachal Pradesh (Several places)	Moderate		Extensive damage to crop reported.
19.	23 Mar.	Bharatpur	Heavy		Extensive damage to crop reported.
20.	24 Mar.	Gurgaon and Mahendragarh	Moderate		Wheat crop badly damaged.
21.	31 Mar.	(a) Darrang	Heavy		Roof-top of a hall of Bherua high school blown off. The loss estimated to worth Rs. 21,000/-.
		(b) Kamrup	Heavy		(i) Palasbari and adjoining areas affected. (ii) Extensive damage to standing crop reported. (iii) Several electric poles/trees uprooted.
22.	2 Apr.	Puri	Heavy		Standing rabi crop and vegetable crop damaged at Bahapur and Khandpara.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
23.	5 Apr.	(a) Bombay and Thane ✓	Heavy	Few members of a family injured when a tree fell on their hut.	(i) Hailstones of diameter 1-1.5 cm reported. (ii) Roof tops of many thatched huts blown away rendering several people homeless. (iii) Banana plantations destroyed. (iv) Several electric poles uprooted.
		(b) Darrang	Heavy		(i) Hailstones weighing 500 gms reported. (ii) Large number of roof tops either blown away or damaged. (iii) 20 electric poles and several trees uprooted, disrupting power supply.
24.	6 Apr.	(a) Balasore	Heavy		Roof tops of several tiled and asbestos houses damaged in Jaleswar area.
		(b) Bhilwara	Heavy		(i) A thick layer of hailstones weighing 20-25 gm accumulated on the ground. (ii) Standing wheat and other crops damaged.
		(c) Pune ✓	Heavy		Onion crop in Chakan and Rajgurunagar damaged.
25.	7 Apr.	Balasore	Heavy		Standing rabi crop in large areas damaged in Bhogrei.
26.	8 Apr.	Cuttack	Heavy		Standing paddy crop in vast areas damaged.
27.	8-10 Apr.	DhoIpur, Kota and Udaipur	Heavy	(i) 10 persons died due to electro-cution in Kota. (ii) Hundreds of birds perished.	(i) 40% of the standing crop damaged. (ii) Large number of trees uprooted.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
28.	10 Apr.	(a) Calcutta, Hugli and North 24 Parganas	Heavy	One girl died at Saiberia village of Barasat due to fall of coconut tree while one woman died and another injured in a house collapse at Uttarpada.	(i) 2 Chimneys of a factory on Grand Trunk road blown away and factory roof-tops damaged. (ii) Train services in Calcutta and Barddhaman main line disrupted due to snapping of overhead wires at Konnagar railway station. (iii) A large portion of boundary wall of the Purta Bhavan at salt lake in north Calcutta collapsed.
		(b) Jorhat and adjoining areas	Heavy	Several persons injured by flying C.I. sheets.	(i) An ambassador car fell off the road in a ditch. (ii) One multi-storied building damaged.
29.	11 & 12 Apr.	Balasore and Cuttack	Heavy	(i) One person died. (ii) Several cattle-heads injured.	(i) Hailstones weighing 2 kg. reported. (ii) Several thatched houses damaged. (iii) Standing vegetable and other crops in extensive areas damaged. (iv) Telephone and electric supply between Chandbali and Bhadrak, disrupted.
30.	12 Apr.	(a) Keonjhar	Heavy	(i) 5 persons seriously injured. (ii) Several cattle-heads injured.	(i) About 300 houses damaged. (ii) Angaruon village primary school and M.E. school building damaged. (iii) Several telephone/electric poles and trees uprooted.
		(b) Lakhimpur	Heavy	One woman died and 100 other injured at Bhipuria town.	(i) About 1000 houses/sheds razed to ground. (ii) Several trees/telephone poles uprooted.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
31.	13 Apr.	Bilaspur, Hamirpur Sirmour and Solan	Moderate		Signboards, hoardings and antenna blown off at several places.
32.	14 Apr.	(a) Dhubri	Heavy	Hundreds of people injured at Gauripur.	
		(b) Ganganagar	Heavy	One person died.	(i) 2-3 inch thick layer of hailstone covered the ground. (ii) 40% of the standing crop damaged. (iii) Telecommunication services snapped.
33.	15 Apr.	Darrang	Heavy		(i) Hirapara camp of 3rd Assam Battalion Task Force damaged. (ii) Several betelnut gardens extensively damaged. (iii) Dhula highschool and Dhula cooperative society building damaged. (iv) Large number of dwellings damaged. (v) Several telephone/electric poles either uprooted or twisted.
34.	19 Apr.	Dhenkanal	Heavy		(i) Hailstones weighing 150-200 gm reported. (ii) Roof tops of several thatched houses blown off. Tiles and asbestos roofs damaged at various places. (iii) Standing paddy and vegetable crop extensively damaged.
35.	2 May	Shimla	Heavy		(i) Several boards and hoardings blown off. (ii) Apple trees and stone fruit crs reported damaged.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
36.	3 May	Kamrup	Heavy	Large number of persons injured.	(i) Building of J.N. College completely damaged. Loss estimated to worth Rs. 10 lakhs. (ii) Many houses and trees razed to ground.
37.	6 May	(a) Alwar	Moderate		(i) Normal life completely paralysed. (ii) Several trees uprooted.
		(b) Cuttack	Heavy	One person died.	(i) Roof tops of several thatched houses and asbestos roofs and tiled roof tops of few houses blown off. (ii) Vegetable crop extensively damaged.
		(c) Dhenkanal	Heavy	2 persons electrocuted.	(i) Roof tops of several thatched houses blown off. (ii) Asbestos roof tops of Narayanpur school and tiled roof tops of Chatia school damaged. (iii) Electric supply completely disrupted.
38.	9 May	Keonjhar	Heavy		(i) Roof tops of several houses blown off. (ii) Standing crop badly damaged. (iii) Trees and electric/telephone poles uprooted disrupting power and telecommunication services.
39.	23 May	(a) Ahmednagar	Heavy		Extensive damage to crops, houses and livestock reported. The loss estimated to worth Rs. 75 lakhs.
		(b) Barpeta	Heavy	2 teenaged sisters killed.	(i) Hundreds of dwellings severely damaged. (ii) Several trees uprooted.

S.N.	Date/period	Area affected	Intensity	Casualties	Extent of damage
40.	24 May	Ganjam	Heavy	One person died and another injured at Dhanapeth village.	
41.	25 May	Ganganagar	Moderate		Hailstones of 3 cm diameter reported.
42.	25-28 May	Shimla and surrounding areas	Moderate		(i) Telecommunication link completely disrupted. (ii) Water supply affected.
43.	18 Jul.	Tikamgarh and neighbourhood	Heavy	(i) 3 persons injured. (ii) 10 cattleheads perished.	
44.	21 Dec.	Faridabad	Heavy		(i) Normal life completely paralysed. (ii) Crop badly damaged. (iii) Large number of trees uprooted.
45.	24 Dec.	(a) Bhind	Heavy		(i) About 100 villages affected. (ii) Wheat and mustard crop damaged. (iii) Damage estimated to worth Rs. 15 crore.
		(b) Sambalpur	Moderate		Rabi crop in Kolabira damaged.

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S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
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TABLE - XI : FLOODS AND HEAVY RAINS

STATES

ANDHRA PRADESH

1.	18 Jun.	Hyderabad	Heavy rains	9 persons died when excess water released from Himayat Sagar. Usmana Sagar reservoirs of Munshi river.	
2.	28 & 29 Jul.	Srikakulam	Severe flood (Vamsadhara)	15 fishermen died.	(i) 85,000 people affected. (ii) 4,000 houses damaged.
3.	22 & 23 Sept.	Guntur, Krishna, Kurnool, Mahbubnagar, Nalgonda and West Godavari	Heavy rains	21 persons died.	(i) Crops in thousands of acres of land submerged. (ii) 5,600 houses damaged. (iii) 1,500 people shifted to safer places.
4.	28-30 Oct.	Anantapur, Chittoor, Cuddapah, Nellore and Prakasam	Heavy rains	18 persons died.	(i) crops in thousands of acres of land submerged. (ii) 19,188 houses damaged. (iii) 9 irrigation tanks breached.

ARUNACHAL PRADESH

1.	5 May	Entire State	Heavy rains	10 army personnel died and 25 other injured in a landslide.	(i) 5 army barracks washed away. (ii) A portion of Tawang-Bomdila road washed away.
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S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
2.	7 May	Tawang	Heavy rains	2 army personnel died and at least 42 reported missing.	
3.	9 & 10 May	Lohit	Heavy rains		(i) Normal life completely paralysed. (ii) Several villages and vast stretches of low lying areas submerged. (iii) 7,000 people rendered homeless in Namsai area.
4.	15 May	Lohit	Heavy rains		15,000 people in 40 villages badly affected.
5.	11 Jul.	West Siang	Flash flood	25 persons drowned.	One village washed away. Out of 22 houses, 19 destroyed.
6.	19 Jul.	Itanagar	Heavy rains		Road communication between Itanagar and rest of the country cut off due to landslide between Kenderdewa and Nahar legun.
<u>ASSAM</u>					
1.	3 May	Cachar, Hailakandi, Kamrup and Karimganj	Heavy rains	Several persons injured and hospitalized.	(i) J.N. College at Boko completely damaged. Loss estimated to worth Rs. 10 lakhs. (ii) Many houses and trees razed to the ground.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
					(iii) Train services to and fro from Barrack valley disrupted due to landslide between lower Haflong and Bagetar on Lumding-Bhadrapur section.
2.	5-7 May	Cachar, Hailakandi and Karimganj	Heavy rains		(i) Vast areas of human habitation and crop land flooded. (ii) Railway services between Bhadrapur and Lumding section of north frontier railway disrupted. (iii) Vehicular traffic on national highway No. 44 suspended.
3.	8-22 May	Barpeta, Cachar, Darrang, Dhubri, Dibrugarh Goalpara, Golaghat, Hailakandi, Jorhat, Kamrup, Karimganj, Lakhimpur, Nagaon, Nalbari, Sibsagar and Tinsukia	Severe flood (Brahmaputra and its tributaries)	39 persons died.	(i) 2 million people affected. (ii) 7 lakh people rendered homeless. (iii) Paddy and jute crop badly damaged. (iv) Rail and road communication completely disrupted.
4.	12 Jun. to 30 Jul.	Barpeta, Bongaigaon, Cachar, Darrang, Dhemaji, Dhubri, Dibrugarh, Goalpara, Golaghat, Hailakandi, Jorhat, Kamrup, Karimganj, Kokrajhar, Lakhimpur, Marigaon, Nagaon, Nalbari, Sibsagar, Sonitpur and Tinsukia	Severe flood (Brahmaputra and its tributaries)	(i) 36 persons died. (ii) 1,400 cattleheads perished.	(i) 34,84,533 people in 3,998 villages affected. (ii) 7,67,189 hectares of land and 2,38,648 hectares of crop land submerged. (iii) 5,732 houses damaged while 339 houses damaged due to erosion. (iv) 1,769 families affected due to erosion. (v) Standing ahu, paddy and jute crop extensively damaged. (vi) National highway Nos. 52 and 53 submerged. (vii) Burchapari forest in Sonitpur district inundated.
5.	3 Aug.	Kamrup	Heavy rains		(i) Normal life completely paralysed in Guwahati.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
					(ii) Vast areas submerged. (iii) Vehicular traffic completely disrupted.
6.	12 Aug.	Kamrup	Heavy rains		Several areas of Palasbari town submerged.
7.	18 Aug.	Dhemaji, Marigaon and Sibsagar	Severe flood	One person died.	(i) 1,37,328 people in 265 villages affected. (ii) 32,691 hectares of land submerged. (iii) Crop in 15,231 hectares of land damaged.
8.	9 Sept.	Barpeta	Heavy rains		A school building at paschim Khagrabari damaged. Loss estimated to worth Rs. 5,500/-.
9.	14 & 15 Oct	Kamrup	Heavy rains	20 persons including women and children killed in a landslide at Kachari Basti near Dispur college.	(i) Vast areas submerged under knee-deep water. (ii) Road communication between upper and lower Assam disrupted following breakdown of a sluice gate near Khetri.
10.	16-21 Oct.	Goalpara, Kamrup, Karbi Anglong, Marigaon and Nagaon	Severe flood	(i) 18 persons died. (ii) 109 cattleheads perished.	(i) 5,94,249 people in 519 villages affected. (ii) 47,680 acres of land submerged. (iii) 25,000 hectares of standing Sali crop affected.
*	Whole year	1.00 million hectare		(i) 108 human lives lost. (ii) 21,627 cattleheads lost.	(i) Crop worth Rs. 115.66 crores damaged. (ii) 3,21,355 houses worth Rs. 43.17 crores damaged. (iii) Public utilities worth Rs. 32.43 crores damaged.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
<u>BIHAR</u>					
*	Whole year	0.98 million hectare		(i) 56 persons died. (ii) 84 cattleheads lost.	(i) Crop worth Rs. 23.61 crores damaged. (ii) 27,324 houses worth Rs. 6.138 crores damaged. (iii) Public utilities worth Rs. 1.399 crores damaged.
<u>GUJARAT</u>					
1.	1 Aug. to 1 Sept.	Mehsana, Panchmahals, Sabarkantha, Vadodara	Severe flood	15 persons died.	(i) Mangadh village of Idar tehsil, Sanchodar village of Himmatnagar tehsil and Baneri and Morasia villages of Bayad tehsil totally cut off from rest of the state. (ii) 400 huts and houses in Umreth town in Mehasana district badly damaged. (iii) People took shelter in high buildings or tree tops in Rehdi, Kalki, Bhoi, Kanbar, Patafalia, Mohanpali and Jadav villages in Halol tehsil of Panchmahals district as these villages submerged under 5-6 feet of water.
*	Whole year	9.431 million hectare		(i) 40 persons died. (ii) 26 cattleheads lost	(i) Crop worth Rs. 5.225 crores damaged. (ii) 1,719 houses worth Rs. 0.315 crores damaged. (iii) Public utilities worth Rs. 43.467 crores damaged.
<u>HARYANA</u>					
1.	2 Aug.	Jind	Heavy rains		Jind city cut off from rest of the state
*	Whole year	0.001 million hectare			11 houses damaged.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
<u>HIMACHAL PRADESH</u>					
1.	4 Aug.	Hamirpur	Heavy rains	2 boys washed away at Ghamot village.	
2.	29 Aug.	Hamirpur	Heavy rains	5 members of a family killed when their house collapsed due to landslides at Bhuranj village.	
3.	5 Sept.	Hamirpur	Heavy rains		(i) Normal life completely paralysed. (ii) Most of the rural areas submerged under flood water.
*	Whole year			(i) 59 persons died. (ii) 577 cattleheads lost.	(i) 1,979 houses worth Rs. 13.41 crores damaged. (ii) Public utilities worth Rs. 5.21 crores damaged.
<u>JAMMU AND KASHMIR</u>					
1.	11-21 Apr.	Doda and Udhampur	Heavy rains	21 persons died due to landslides.	(i) Several houses collapsed. (ii) Jammu-Srinagar national highway closed to vehicular traffic.
<u>KARNATAKA</u>					
1.	28 Apr.	Mysore	Heavy rains	2 children and a woman died.	19 huts washed away.
2.	4 May	Mysore	Heavy rains	2 persons died.	Many houses and industrial shades inundated.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
3.	9 May	Bangalore, Bellary and Tumkur	Heavy rains	8 persons died and 4 other injured.	Wall of one old house collapsed.
4.	25 May	Bellary	Heavy rains	4 persons died when a tree fell on them at Harapanahally.	
5.	5 Jun.	Chickmagalur	Heavy rains	One person died due to wall collapse at Narayanpur near Ajjampur.	
6.	27 Jun.	Dharwar	Heavy rains		About 100 houses completely and 500 partially damaged rendering several people homeless.
7.	6-10 Jul.	Mangalore	Heavy rains		2 buildings collapsed and 6 huts damaged.
8.	8 Jul.	Karwar	Heavy rains		(i) Many parts of the Karwar town marooned. (ii) 8 houses collapsed. (iii) Large number of trees/electric poles uprooted. (iv) Telecommunication services disrupted.
9.	8 & 9 Jul.	Uttar Kannada	Heavy rains	2 persons died.	(i) Many villages in Honavar inundated. (ii) 300 houses marooned. (iii) Paddy field damaged in Belse village of Ankola tehsil.
10.	17 Jul.	Dakshin Kannada	Heavy rains	One person died in Udupi due to house collapse.	

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
11.	18 Jul.	Dharwar	Heavy rains	One person died in a house collapse at Hanagal tehsil.	
12.	26-28 Jul.	Chickmagalur, Mandya and Mysore	Severe flood	7 persons died.	(i) Several villages marooned. (ii) Large number of houses collapsed. (iii) 1,000 people rendered homeless. (iv) Brindavan garden submerged. (v) Ranganathitto and internationally famous bird sanctuary near Srirangapatnam extensively damaged.
13.	28-30 Oct.	Bangalore and Kolar	Heavy rains	(i) 13 persons died in a house collapse. (ii) 29 persons died in a train accident between Maklidurga and Thondebhari railway stations about 55 km away from Bangalore due to heavy rains.	(i) Several houses collapsed. (ii) Large number of irrigation tanks breached.
14.	9-16 Nov.	Bangalore and Dakshin Kannada	Severe flood	(i) 27 persons died in a house collapse. (ii) 1,100 cattle-heads perished.	(i) About 1 lakh houses either partially or fully damaged. (ii) Extensive damage to crop, public and private property reported. (iii) Thousands of people shifted to safer places. (iv) 31,160 hectares of land area submerged.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
<u>KERALA</u>					
1.	9 Mar.	Kollam	Heavy rains		Extensive damage to rubber plantations reported.
2.	21 May	Kozhikode	Heavy rains		Extensive damage to agriculture reported.
3.	3 Jun.	Ernakulam	Heavy rains		(i) Century highest rainfall reported. (ii) Several trees uprooted. (iii) Train services badly affected. (iv) Indian Airlines flight to Cochi suspended.
4.	6 Jun.	Alapuzha, Idukki, Kasaragoda, Kollam, Kottayam, Kozhikode, Palakkad, Pathanamthitta, Thiruvananthapuram and Wyanad	Heavy rains	(i) 22 persons died. (ii) Large number of domestic animals perished.	(i) Several houses collapsed. (ii) Agriculture crop and the property worth Rs. 100 crores destroyed.
5.	9 Jun.	Alapuzha and Kozhikode	Heavy rains	8 persons died when a country boat capsized.	
6.	19 Jun.	Ernakulam and Thiruvananthapuram	Heavy rains		(i) About 146 houses partially collapsed. (ii) Thousands of families shifted to release camp. (iii) Extensive damage to vegetation reported.
7.	7 Jul.	Cannur, Kollam, Palakkad, and Thiruvananthapuram	Heavy rains		Extensive damage to crop and houses reported.
*	Whole year	1.251 million* hectare		(i) 138 human lives lost. (ii) 11,075 cattle-heads lost.	(i) Crop worth Rs. 102.50 crores damaged. (ii) 66,398 houses worth Rs. 15.38 crores damaged. (iii) Public utilities worth Rs. 192.77 crores damaged.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
<u>MADHYA PRADESH</u>					
1.	8 Jun.	Bhopal	Heavy rains		All telephone lines snapped.
2.	22 Jul.	Bhopal	Heavy rains		(i) Several Kachcha houses and Juggies flooded. (ii) Vehicular traffic suspended.
3.	30 & 31 Jul.	Betul, Dewas, Indore and Ujjain	Heavy rains	(i) 22 persons killed. (ii) 150 cattleheads perished.	(i) One house collapsed. (ii) Chandora dam damaged and Sapana dam breached.
4.	3 Aug.	Dewas, Dhar, Indore and Ujjain	Heavy rains	6 persons died.	
5.	19 Aug.	Gwalior	Heavy rains	2 persons died.	Several houses collapsed.
6.	23-26 Aug.	Bilaspur, Damoh, Gwalior, and Mandla	Heavy rains	(i) 7 persons died. (6 in Damoh and 1 in Mandla) (ii) 100 cattleheads perished in Damoh.	(i) 10,000 persons in 125 villages affected. (ii) 118 houses collapsed. (iii) Crop in 400 hectares of land damaged. (iv) Railway culvert between Sagoni and Salaiyia stations on Beena-Cutni section washed away disrupting railway services.
*	Whole year	N.R.		(i) 33 human lives lost. (ii) 666 cattleheads lost.	8,081 houses damaged.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
<u>MAHARASHTRA</u>					
1.	27 May	Parbhani	Heavy rains	2 persons killed and 5 other injured when a tree fell over them.	
2.	2 Jun.	Pune	Heavy rains	3 persons died when a ceiling of a old house collapsed.	
3.	4 Jun.	Nagpur	Heavy rains	14 persons died when a boat cap-sized in a river at Deolapar.	
4.	6 & 7 Jun.	(a) Aurangabad	Heavy rains		(i) Normal life paralysed. (ii) Many low lying areas inundated. (iii) Large number of roof tops blown off. (iv) Several walls collapsed. (v) Railway services disrupted.
		(b) Pune	Heavy rains		(i) Low lying areas flooded. (ii) Hundreds of families in different slum areas shifted to safer places. (iii) 5 trees uprooted. (iv) Railway traffic in Pune-Bombay section disrupted. (v) Hyderabad-Pune-Ahmedabad and Pune-Bombay Vayudoot flights cancelled.

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S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
5.	7-10 Jun.	Bombay and Thane	Heavy rains	(i) 74 persons died and 100 other injured. (ii) 2,550 cattle-heads perished.	(i) City life completely paralysed. (ii) 66 trees uprooted. (iii) Train services for suburban and long distance disrupted both on central and western railway. (iv) Electric supply switched off in several areas due to short circuit. (v) Bombay International Airport closed for 16 hours on 9th.
6.	8 & 9 Jun.	Kolhapur	Heavy rains		(i) Low lying areas inundated. (ii) Vehicular traffic completely disrupted.
7.	14 Jun.	Rajgarh	Heavy rains	4 persons died at Devdanda.	Coconut trees and Banana plantations extensively damaged.
8.	30 Jun. & 1 Jul.	Nanded	Heavy rains	5 persons died and 4 other injured.	
9.	13 Jul.	(a) <u>Bombay</u>	Heavy rains		Suburban train services both on central and western railway disrupted.
		(b) Buldhana	Heavy rains	4 women died at Mokodi village in Malkapur tehsil.	
		(c) Nagpur	Heavy rains	A child washed away at Nanabhau Peth.	All the huts in low lying areas submerged under water.
10.	16 & 17 Jul.	Bombay	Heavy rains		(i) Hutmen's dweller worst affected. (ii) Entire eastern portion of a five storeyed vacant building in Kohinoor mill compound collapsed. (iii) 14 trains on western railway cancelled.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
11.	18-30 Jul.	Amravati and Nagpur	Flash flood (Wardha)	(i) 500 people killed at Mowad when embankment of Wardha river breached. (ii) 1,916 cattle-heads perished.	(i) Mowad village of 1,500 population in Narkhed tehsil washed away. (ii) 2,000 houses razed to ground. (iii) Property worth Rs. 250 crore damaged. (iv) 19 villages completely destroyed. (v) 10,969 houses either partially or completely damaged. (vi) 10,000 people rendered homeless. (vii) 40,000 hectares of crop land washed away. (viii) Communication system completely suspended.
12.	22 Jul.	Thane	Heavy rains		Railway and vehicular traffic disrupted.
13.	27 Jul.	Bombay	Heavy rains	4 fishermen drowned when a trawler capsized.	(i) 7,000 people given a temporary accommodation at municipal primary school and 1,200 slum dwellers shifted to safer places. (ii) Suburban and long distance train services on western and central railway disrupted.
14.	29 & 30 Jul.	Bhandara	Heavy rains	One boy died and 4 other injured.	
15.	3 Aug.	Amravati	Heavy rains		One primary school collapsed.
16.	12-16 Aug.	Amravati, Chandrapur, Gadchizholi, Nagpur and Yavatmal	Severe flood Wardha)		(i) Chandrapur and Gadchizholi districts worst affected. (ii) Vehicular traffic on Nagpur-Yavatmal route disrupted. (iii) Large number of long distance heavy vehicles stranded on national highway Nos. 6 and 7. (iv) State Transport buses cancelled between Nagpur-Chandrapur and Nagpur-Gadchizholi. (v) People living on the downstream evacuated to safer places.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
17.	17 Aug.	Nagpur	Heavy rains	A mother and a child died.	
<u>MANIPUR</u>					
1.	4-9 May	Imphal city and neighbourhood	Heavy rains		Several low lying areas inundated.
2.	3 Nov.	Entire State	Heavy rains		Manipur cut off from the rest of the country as the vehicular traffic on national highway No. 39 suspended due to landslide.
<u>MEGHALAYA</u>					
1.	11 May	East Garo Hills	Heavy rains	More than 100 persons injured.	(i) Large number of dwellings collapsed. (ii) Extensive damage to crop and other plantations reported. (iii) Loss estimated to worth Rs. 50 lakhs.
2.	11 Jul.	West Garo Hills	Severe flood		(i) Thousands of people rendered homeless. (ii) Standing crop worth Rs. 2.3 crore damaged.
3.	19 Jul.	West Garo Hills	Severe flood	2 persons died.	One lakh people rendered homeless.
*	Whole year	0.003 million hectare		N.R.	Crop worth Rs. 2.21 crores damaged.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
<u>MIZORAM</u>					
1.	30 Apr. & 1 May	Entire State	Heavy rains	2 women died at Zoboawk in Lunglei district.	(i) VHF tower of Lunglei district collapsed. (ii) One Govt. hospital at Saiha collapsed while Govt. hospital at Lunglei partially damaged. (iii) Vehicular traffic suspended at various places due to landslides. (iv) Telecommunication system completely disrupted.
2.	8 May	Entire State	Severe flood	5 persons died.	(i) 3,000 people rendered homeless. (ii) Mizoram cut off from rest of the country.
<u>ORISSA</u>					
1.	28-31 Apr.	Cuttack	Heavy rains		Saline water inundated in vast areas damaging jute, rabi and vegetable crops.
2.	18 Jul.	Ganjam	Heavy rains		(i) Road communication disrupted in Ghumsur and Phulbani. (ii) A culvert on river Jarav near Surada washed away.
3.	29 Jul.	(a) Balasore	Severe flood (Baitarni and its tributaries)	One person died.	(i) 172 villages and vast area of paddy land submerged. (ii) 80 houses either partially or fully damaged.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
		(b) Cuttack	Heavy rains	6 out of 7 crew members of a fishing trawler missing when a vessel capsized.	
4.	30 & 31 Jul.	Balasore, Cuttack, Ganjam, Kalahandi, Koraput and Sambalpur	Severe flood (i) (Baitarni and Indravati)	(i) 8 persons died. (ii) 40 workers working in the tunnel of Indravati hydel project at Mukhiguda in Kalahandi district died. (iii) Several cattle-heads swept away in Koraput district.	(i) In Kalahandi district, vast areas of paddy land submerged. (ii) In Cuttack district, 1,535 villages under 9 blocks affected while in Puri district 70 villages marooned. (iii) In Balasore district, about 50 villages under Aska police station either fully or partially destroyed. (iv) 40,000 acres of paddy land submerged. (v) Rural roads extensively damaged. Bhubaneswar-Bhavanipatna national highway No. 6 cut off at Narla. (vi) Railway line at Kabisuryanapara submerged. (vii) In Koraput district, 15,000 people affected and a road bridge collapsed. (viii) In Kalahandi district, road communication badly hit due to 4 major breaches on important road linking the district to the other part of the state.
5.	1 Aug.	Sambalpur	Heavy rains		60 houses in low lying areas submerged and large number of families affected.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
6.	13 Aug.	(a) Ganjam	Severe flood (Badanadi)	One woman swept away.	(i) About 3 lakh people affected. (ii) Hundreds of houses either collapsed or partially damaged. (iii) Vast areas of crop land submerged. (iv) Large number of minor irrigation and lift irrigation projects and a building of irrigation department damaged.
		(b) Keonjhar	Severe flood (Baitarni, Samakoe and Kusei)	Several cattle-heads perished.	(i) Vegetable and other crop extensively damaged. (ii) Vast areas of crop land sandcast. (iii) Several minor irrigation and lift irrigation projects damaged.
7.	16 Aug.	(a) Cuttack	Severe flood (Mahanadi and Kathjodi)	10 persons died.	(i) Several lakhs of people in 41 blocks affected. (ii) 1,16,000 hectares of paddy and 12,473 hectares of non-paddy land submerged. (iii) 3 lakh hectares of agriculture land with standing crop extensively damaged. (iv) 29,000 houses collapsed.
		(b) Puri	Severe flood (Bhargavi and Dhanua)	22 persons washed away when a boat capsized near Sakhigopal.	(i) About 5 lakh people affected. (ii) Road communication disrupted at several places.
8.	17 Aug.	Balasore	Severe flood (Baitarni, Koila, Kapilo)	16 cattleheads swept away in Dhanangar block.	(i) 2 lakh people affected. (ii) Several hectares of standing paddy and other vegetable crop submerged.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
9.	27 Aug.	Phulbani	Severe flood	(i) One woman washed away in Laxminala in Harbhanga (ii) 12 cattleheads perished.	(i) Thousands of people affected. Standing paddy crop damaged. (ii) Hundreds of lift irrigation projects damaged. (iii) Road communication disrupted at several places due to breaches. (iv)
*	Whole year	1.095 million hectare		(i) 54 persons died. (ii) 1,569 cattle-heads lost.	(i) Crop worth Rs. 83.668 crores damaged. (ii) 1,08,084 houses worth Rs. 12.279 crores damaged. (iii) Public utilities worth Rs. 251.588 crores damaged.
<u>PUNJAB</u>					
1.	4 Aug.	Patiala	Heavy rains	4 constables of CRPF died when a portion of a boundary wall of Bahadurgarh fort collapsed.	
<u>RAJASTHAN</u>					
1.	26-28 Jul.	Kota and Udaipur	Heavy rains	(i) 5 persons washed away. (ii) 200 cattleheads perished.	100 houses either completely or partially damaged.
2.	31 Jul.	Banswara	Heavy rains	2 state employees washed away when their jeep capsized in rain water.	

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
3.	27 & 28 Aug.	Jaipur	Heavy rains		(i) Normal life completely paralysed. (ii) 25 kachcha houses damaged. (iii) Vehicular traffic suspended.
4.	1 Sept.	Alwar	Heavy rains	5 persons died in house collapse and 5 other drowned in a well.	
<u>SIKKIM</u>					
1.	16 Sept.	Entire State	Heavy rains		(i) Entire state cut off from rest of the country. (ii) Shortage of essential commodities reported due to disrupted communication.
<u>TAMILNADU</u>					
1.	20-30 Oct.	Entire State	Heavy rains	21 persons including 11 children died, while 6 other injured.	Extensive damage to crops due to breaches of irrigation tanks reported.
<u>TRIPURA</u>					
1.	29 & 30 Apr.	Entire State	Heavy rains	5 persons died and 6 other injured.	(i) 7,000 houses razed to ground, rendering several people homeless. (ii) At least 500 school buildings damaged. (iii) Property worth Rs. 50 crore damaged. (iv) Standing boro, paddy and vegetables in thousands of hectares of land destroyed.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
					(v) Railway communication between Badrapur and Lumding section destroyed due to landslides. (vi) Road communication between Silchar and Jowai-Bhadrapur on national highway disrupted.
2.	8 & 9 May	Entire State	Heavy rains	7 persons died.	(i) Thousands of families rendered homeless. (ii) Tripura remain cut off from rest of the country.
		<u>UTTAR PRADESH</u>			
1.	7 Aug.	Faizabad	Severe flood (Ghagra)	3 persons died.	(i) 4,870 people in 114 villages affected. (ii) 22,201 hectares of land area and 13,229 hectares of crop land submerged. (iii) 2 houses damaged.
2.	8 Aug.	Gonda	Severe flood (Ghagra)	(i) 2 persons died. (ii) One cattlehead perished.	(i) 99,098 people in 55 villages affected. (ii) 33,674 hectares of land area and 27,394 hectares of crop land submerged.
3.	13 Aug.	Sitapur	Severe flood (Sarda)	(i) One person died. (ii) 2 cattleheads perished.	(i) 12,000 people in 17 villages affected. (ii) 2,620 hectares of land area submerged. (iii) 54 houses completely and one partially damaged.
4.	14 Aug.	Azamgarh	Severe flood (Ghagra)	(i) 10 persons died. (ii) 50 cattleheads perished.	(i) 2,83,019 people in 383 villages affected. (ii) 35,619 hectares of land area and 30,230 hectares of crop land submerged. (iii) 84 houses completely and 139 partially damaged.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
5.	15 & 16 Aug.	Chamoli	Heavy rains	(i) 32 persons died. (ii) 90 cattleheads perished.	(i) 6 villages affected. (ii) 40 hectares of agriculture land submerged. (iii) 96 houses completely and 146 partially collapsed.
6.	16 & 17 Aug.	Almora	Heavy rains	(i) One person died. (ii) 14 cattleheads perished.	(i) 6,709 people in 29 villages affected. (ii) 31 hectares of land area and 38 hectares of crop land submerged. (iii) 34 houses completely and 115 partially damaged.
7.	18 Aug.	Tehri Garhwal	Heavy rains	5 cattleheads perished.	3 houses completely damaged.
8.	20 Aug.	(a) Bahraich	Severe flood (Ghagra)		(i) 12 villages affected. (ii) 119 houses completely and 145 partially damaged.
		(b) Varanasi	Severe flood (Ganga and its tributaries)	6 persons died.	(i) 3,12,589 people in 325 villages affected. (ii) 18,034 hectares of land area and 10,360 hectares of crop land submerged. (iii) 92 houses completely and 899 partially damaged.
9.	25 Aug.	Lalitpur	Severe flood (Betawa)		(i) 3,703 people in 9 villages affected. (ii) 3,044 hectares of land area and 707 hectares of crop land submerged.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
10.	25-31 Aug.	Meerut	Heavy rains	(i) 9 years old girl died. (ii) A woman and a child died in two seperate incidents of house collapse.	(i) Low lying areas submerged. (ii) 70 houses suffered severe damage.
11.	25 & 26 Aug.	Hamirpur	Heavy rains	9 cattleheads perished.	(i) 52,300 people in 31 villages affected. (ii) 3,430 hectares of land area and 2,746 hectares of cropped area submerged. (iii) 31 houses completely and 22 partially damaged.
12.	26 Aug.	(a) Aligarh	Heavy rains	(i) 14 persons died. (ii) 119 cattleheads perished.	786 houses completely and 4,177 partially damaged.
		(b) Bulandshahr	Heavy rains	48 persons died.	14,988 houses completely and 46,185 partially damaged.
13.	28 Aug.	(a) Etawah	Severe flood (Jamuna)	(i) 4 persons died. (ii) 2 cattleheads perished.	(i) 10 villages affected. (ii) 28,207 hectares of land area and 1,620 hectares of agriculture land submerged.
		(b) Ghaziabad	Heavy rains	8 persons died.	

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
14.	29 Aug.	(a) Meerut	Severe flood (Ganga)	One cattlehead perished.	(i) 4,436 people in 16 villages affected. (ii) 6,665 hectares of land area and 5,567 hectares of agriculture land submerged. (iii) 1,035 houses partially damaged.
		(b) Mirzapur	Severe flood (Ganga)	9 persons died.	(i) 2,98,862 people in 361 villages affected. (ii) 22,366 hectares of crop area submerged.
15.	30 Aug.	(a) Bijnor	Heavy rains	(i) 2 persons died. (ii) 2 cattleheads perished.	
		(b) Ghazipur	Severe flood (Ganga)	(i) One person died. (ii) One cattlehead perished.	(i) 80,265 people in 322 villages affected. (ii) 9,015 hectares of land area and 2,864 hectares of cropped area submerged. (iii) 6 houses partially damaged.
16.	31 Aug.	Ballia	Severe flood (Ganga and Ghagra)	(i) 7 persons died. (ii) 2 cattleheads perished.	(i) 2,99,157 people in 368 villages affected. (ii) 32,703 hectares of land area and 13,378 hectares of cropped area submerged. (iii) 108 houses completely and 42 partially damaged.
17.	2 Sept.	Banda	Severe flood (Ghagra)	(i) 2 persons died. (ii) 6 cattleheads perished.	(i) 31,629 people in 168 villages affected. (ii) 10,829 hectares of land area and 5,866 hectares of cropped area submerged.
18.	4 Sept.	Kheri	Severe flood (Ghagra)	(i) 6 persons died. (ii) 2 cattleheads perished.	(i) 2,61,000 people in 151 villages affected. (ii) 68,371 hectares of land area submerged.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
19.	5 Sept.	(a) Deoria	Severe flood (Burhi Gandak)		(i) 34,316 people in 23 villages affected. (ii) 4,621 hectares of land area and 3,527 hectares of crop area submerged. (iii) 9 houses partially damaged.
		(b) Mathura	Heavy rains	(i) 3 persons died. (ii) 14 cattleheads perished.	(i) 1,99,600 people in 153 villages affected. (ii) 1,44,747 hectares of land area and 24,235 hectares of cropped area submerged. (iii) 200 houses completely and 8,000 partially damaged.
20.	7 Sept.	Jaunpur	Heavy rains	(i) 18 persons died. (ii) 9 cattleheads perished.	(i) 29,559 people in 106 villages affected. (ii) 5,652 hectares of land area and 2,542 hectares of cropped area submerged. (iii) 3 houses partially damaged.
21.	11 Sept.	Bara Banki	Severe flood (Ghagra)	3 persons died.	(i) 33,233 people in 47 villages affected. (ii) 15,234 hectares of land area and 6,742 hectares of cropped area submerged. (iii) 118 houses completely damaged.
22.	14 Sept.	Shahjahanpur	Severe flood (Ganga)		(i) 40,308 people in 34 villages affected. (ii) 3,864 hectares of land area submerged.
23.	16 Sept.	Gorakhpur	Severe flood (Rapti)		(i) 680 people in 4 villages affected. (ii) 392 hectares of land area and 241 hectares of cropped area submerged.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
<u>WEST BENGAL</u>					
1.	29 Apr.	North 24-Parganas and South 24-Parganas	Heavy rains		(i) 225 houses collapsed in Sagar, Namkhana and Pathar Pratima blocks. (ii) 100 betel fields damaged. (iii) Large scale damage of electric poles/ lines reported disrupting electric supply in North 24 Parganas.
2.	5 Jun.	Darjiling	Heavy rains	8 persons died and several other injured due to landslides.	(i) Several houses destroyed. (ii) Road communication completely disrupted.
3.	5 & 6 Jun.	Calcutta and its neighbourhood	Heavy rains		(i) Low lying areas flooded. (ii) A portion of a building, housing 'Elgin Road Post Office', collapsed. (iii) Tram services disrupted.
4.	7 Jun.	Medinipur	Heavy rains	One child died and 6 other injured at Dakshin Basulipath village under Ramnagar Police Station.	
5.	7 Jul.	Maldah	Heavy rains		(i) Low lying areas flooded. (ii) City telegraph/telephone exchange unserviceable due to waterlogging in the cable chamber.
6.	6-14 Sept.	Cooch Behar, Darjiling, Hugli, Jalpaiguri, Maldah, Murshidabad, Nadia and West Dinajpur	Severe flood (Mahananda)	64 persons died.	(i) Maldah district worst affected. (ii) 100 villages marooned in Maldah district. (iii) 36.2 lakh people affected. (iv) 35,000 houses damaged.

S.N.	Date/period	Area affected	Intensity (river)	Casualties	Extent of damage
					(v) Entire Belurghat town in West Dinajpur district submerged under 5 feet of water.
					(vi) 20 km. stretch of state highway between Belurghat and Gangarampur submerged under flood water.
7.	8 Sept.	Calcutta	Heavy rains	2 persons seriously injured when a double storeyed building collapsed.	(i) Low lying areas flooded. (ii) Vehicular traffic completely disrupted.
*	Whole year	0.679 million hectare		(i) 81 human lives lost. (ii) 740 cattleheads lost.	(i) Crop worth Rs. 100.352 crores damaged. (ii) 3,21,374 houses worth Rs. 10.94 crores damaged. (iii) Public utilities worth Rs. 64.947 crores damaged.
<u>UNION TERRITORIES</u>					
<u>DELHI</u>					
1.	25 & 26 Aug.	Deihi	Heavy rains	(i) 3 persons died in 3 separate house collapse incidents and 2 more died due to electrocution.	(i) Normal life completely paralysed. (ii) Electric/Telephone services completely disrupted.
<u>PONDICHERRY</u>					
*	Whole year	0.012 million hectare		(i) 2 human lives lost. (ii) 156 cattleheads lost.	(i) Crop worth Rs. 5.09 crores damaged. (ii) 31,878 houses worth Rs. 1.59 crores damaged. (iii) Public utilities worth Rs. 16.04 cr damaged.

* Compiled tentative reports by Central Water Commission.

N.R. = Not reported.

S.N.	Date/period	Area of Formation/ Dissipation	Intensity	Casualties	Extent of damage
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TABLE - XII : CYCLONIC STORM

BAY CYCLONES

In Tamil Nadu

1.	12-15 Nov.	Formation : At Lat. 11°N Long. 87°E	Cyclonic storm	(i) 185 persons died (ii) 540 cattleheads perished.	(i) 3,920 villages affected. (ii) 3,56,115 families rendered homeless. (iii) 1.75 lakh people evacuated to safer places. (iv) 2.5 lakh huts partially and 99,281 huts completely damaged. (v) Crop in 2.36 lakh hectare damaged. (vi) Several irrigation tanks breached. (vii) Loss estimated to worth Rs. 340 crore.
		Landfall : Near Karaikal in the early hours of 15 Nov.			
		Dissipation: At about 30 km. west of Cuddalore on 15 Nov. at 0300 UTC			

In Andhra Pradesh

(i) 233 persons died.	(i) Chittoor, Cuddapah, Guntur, Krishna and Nellore districts affected.
(ii) 7,253 cattle-heads and 4,500 poultry birds perished.	(ii) 1,79,286 people evacuated to safer places. (iii) 24,599 houses fully and 72,603 partially damaged.
	(iv) Crop worth crores of rupees lost.