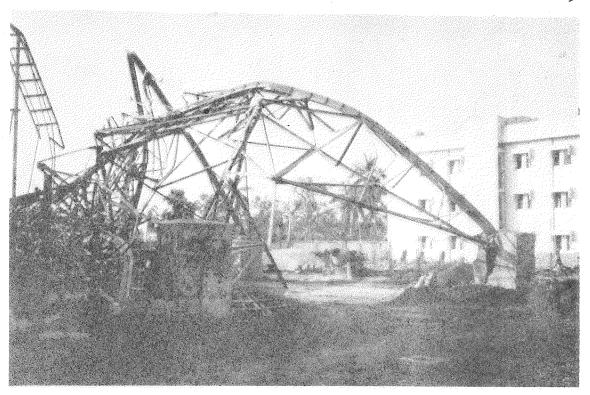


INDIA METEOROLOGICAL DEPARTMENT DISASTROUS WEATHER EVENTS, 1996



ISSUED BY ADDITIONAL DIRECTOR GENERAL OF METEOROLOGY (RESEARCH) PUNE - 411 005

Cover Photo: Damage to Microwave tower at Ravaulapale 30 kms sw of Kakinada - caused by Kakinada cyclone during 5th - 7th November 1996

Courtesy:

C.W.C VISAKHAPATNAM

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DISASTROUS WEATHER EVENTS OF 1996

The most striking disastrous weather events of 1996 were the following:

- i) A severe cyclonic storm with a core of hurricane winds (150 to 200 kmph) occurred in the Bay of Bengal during 5-7 November and took a toll of 1,058 people in coastal Andhra Pradesh, and 1,677 fishermen reported missing. 3,15,113 houses fully and 3,33, 361 houses partially damaged. 1.11 lakh hectares of crop damaged. Loss to property worth Rs. 6,126 crores.
- Severe floods and heavy rains occurred over many parts of the country and claimed over more than 1700 human lives. Property worth Rs. more than 2200 crores damaged while crop in more than 200 lakh hectares of land lost.
- iii) A severe drought occurred over entire state of Orissa during August and September in which crops withered. Kharif crop mainly paddy suffered 50-80% loss in 23 districts of the state. Over 2 lakh people migrated to other regions in search of work.

The summary of these natural hazards is based on the various reports of the India Meteorological Department and press reports. 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.

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S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
			TABLE - I:	SNOWFALL	
			CRIT	ERIA	
			Moderate: 7.6 to	34.9 cm in 24 hrs.	
			Heavy : ≥ 35.0	cm in 24 hrs.	
1.	15-17 Jan.	Himachal Pradesh	Heavy		(i) A blizzard lashed Shimla and surrounding areas. (ii) Many parts of Himachal Pradesh especially the tribal belt and higher reaches, experienced heavy snowfall. Mercury hovered between -8°C to -25°C at a number of places. (iii) Normal life affected. (iv) Many trees uprooted. (v) Power supply disrupted. (vi) Hindustan-Tibet and Kullu-Manali national highway remain closed for venicular traffic. (vii) Vehicular traffic and air services affected due to thick fog.
2.	10 Feb.	Himachal Pradesh (High altitude region)	Heavy		(i) Normal life paralysed.(ii) Hindustan-Tibet national highway suspended for vehicular traffic.
3.	25 Feb.	Himachal Pradesh	Heavy		Kullu-Manali national highway cut off at several places.
4.	18 Mar.	Kashmir valley	Heavy		(i) Jammu-Srinagar national highway closed for traffic.(ii) Jammu bound IA flights cancelled.
5.	19 Mar.	Lahaul and Spiti	Heavy	6 persons buried alive in Piaso village due to avalanche.	

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
6.	22 Mar.	Neelum Valley (Jammu & Kashmir)	Heavy	33 persons died in Bagnawa village due to avalanche.	26 houses buried in Bagnawa village.
7.	4 Oct.	Chamba	Heavy	6 persons trapped in Sach Pass.	
8.	8 Oct.	Chamba	Heavy	(i) 5 persons buried alive at Santrundi- Dhanantra moun- tain range due to snowstrom.	
			TABLE - II : (COLD WAVE	
			CRITE	ERIA	
		(A) W	nere; Normal minimum t	emperature is 10°C or more.	
		Moderate	cold wave : Night temp	erature 5° to 6°C below norm	nal.
		Severe co	old wave: Night tempera	ature 7°C or more below norr	nal.
		(B) Wh	ere; Normal minimum te	emperature is less than 10°C.	
		Cold	wave : Night temperatu	ure 30 to 40C below normal.	
		Severe co	old wave: Night tempera	ature 5°C or more below norn	nal.
1.	1 Jan.	Hamirpur	Severe cold wave (B)	5 children died.	
2.	13 Jan.	Dausa	Severe cold wave (B)	One person died.	
3.	16 Jan.	Darjeeling	Severe cold wave	2 persons died.	

(B)

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
4.	18 Jan.	Jaipur	Severe cold wave (B)	One person died.	
5.	26 Jan.	Champaran	Severe cold wave (B)	12 persons died.	
6.	8-14 Dec.	Purulia	Severe cold wave (A)	2 persons died.	
7.	10-26 Dec.	Bhilwara, Jaipur and Kota	Severe cold wave (Both A and B as appropriate)	18 persons died.	
8.	11 Dec.	Calcutta	Severe cold wave (A)	One person died in Central Calcutta.	
9.	16 Dec.	Plains of Uttar Pradesh	Severe cold wave (Both A and B as appropriate)	7 persons died.	
10.	24 & 25 Dec.	Aurangabad, Nalanda and Sheohar	Severe cold wave (A)	9 persons died.	
11.	28-30 Dec.	Uttar Pradesh	Severe cold wave (Both A and B) as appropriate)	10 persons died.	

Date/period	City/Area affected	Intensity	Casualties	Extent of damage	

	TABLE - III : HEAT WAVE CRITERIA (A) Where; Normal maximum temperature is 40°C or less.					
			e 50 to 60°C above normal.			
			OC or more above normal.			
		•	ature is more than 40°C.			
		e: Day temperature 30 i				
·		·	OC or more above normal.			
Medinipur		Severe heat wave (A)	One old man died.			
Calcutta		Severe heat wave (A)	One old man died.			
Amravati		Severe heat wave (B)	One person died.			
Chittoor		Severe heat wave (B)	4 persons died.			
Purulia		Severe heat wave (A)	2 persons died.			

19 Apr.

21 Apr.

30 Apr.

23 May

27 May

Date/period	City/Area affected	Intensity	Casualties	Extent of damage
28 May	Kanpur	Severe heat wave (B)	2 persons died.	Kanpur city and adjoining areas experienced the hottest day with mercury touching 45°C.
29 May	(a) Koraput	Severe heat wave (A)	3 persons died and 2 other hospitalised at Jeypore.	Mercury shot up to 48°C.
	(b) Rayagada	Severe heat wave (A)	3 persons died.	
10-17 Jun.	Bathinda	Severe heat wave (B)	3 persons died.	
		TABLE - IV : DF	OUGHT	
	ORISSA			
Sep.	Entire State	Severe		 (i) In Ganjam district, half of the crop lost in 114 blocks. Bolangir district worst affected. Paddy crop withered. In Sambalpur, 50% of paddy crop withered. (ii) Kharif crop mainly paddy, suffered
				50-80% loss in 23 districts of the state and remaining 7 districts reported crop losses below 50% level even in regions having irrigation facilities. Crop loss expected to
				be over 40%. (iii) Over 2 lakh people including marginal farmers migrated to other regions in search of work. (iv) 1.52 lakh people provided relief;

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Date/period	City/Area affected	Intensity	Casualties	Extent of damage	
		TABLE - V	: SQUALL		
	A sudden inc	rease of wind spood by	atleast 29 kmph (16 kts) the eneed	

rising to 40 kmph (22 kts) or more and lasting for atleast one minute **CRITERIA**

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

		, ,	3 / , , , , , , , , , , , , , , , , , ,	•
8 Mar.	Guwahati	Moderate (70 kts)		(i) Many trees and electric poles uprooted. (ii) Rabi crop damaged.
1 Apr.	Shillong and neighbourhood	Moderate (75 kmph)		(i) Many houses damaged.(ii) Several trees and electric poles uprooted.
24 Apr.	Dibrugarh	Severe	4 persons died and many injured at Naharkatia.	(i) Many houses damaged. (ii) Several trees and electric poles uprooted.
14 May	West Tripura	Severe	3 persons died.	Several houses damaged.
15 May	Nalbari	Moderate		(i) Many houses damaged. (ii) Many trees uprooted.
18 May	Nalbari	Moderate		(i) Many houses damaged.(ii) Several trees uprooted.
19 May	Tripura	Severe	4 persons died and many other injured.	Many houses damaged.
10 Jun.	Yavatmal	Severe	2 persons died at Darva village.	

N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
	25 Jul. ·	Jorhat and Sonitpur	Severe .		(i) 152 houses completely and 363 partially damaged.(ii) Several trees uprooted.
	7 Aug.	Kannur	Severe	One person died and 4 other reported missing.	
			TABLE - VI :	GALE	
			CRITERIA	A	•
		•	Strong: Wind speed	\geq 75 kmph.	
	1 May	Chennai	Strong		(i) Few trees uprooted.(ii) Several hoardings blown away.
	16 May	· Kozhikode	Strong		One house collapsed at Mangavu.
	26 May	Bangalore	Strong	One boy electrocuted when two electric poles came into contact by strong wind.	
	1 Jun.	Thiruvananthapuram	Strong		Widespread damage to property and agriculture reported.
	10 Jun.	(a) Kozhikode	Strong	4 - A 1	One boat completely damaged at Baypur.
		(b) Malappuram	Strong		One boat reported missing at Ponnani.
	11 Jun.	Malappuram	Strong		Several houses damaged at Ponnani.
	17 Jun.	(a) Pathanamthitta	Strong		(i) 11 houses completely and 43 partially damaged.(ii) Widespread damage to agriculture at Thiruvalla reported.

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
		(b) Thiruvananthapuram	Strong		(i) 4 houses damaged.(ii) Widespread damage to agriculture at Thattathmala, Parandakuzhi and Charwmpara reported.
8.	7 Aug.	Kannur	Strong	One person died and 4 other missing.	
)	TABLE - VII:	DUSTSTORM	•
			CRITE	RIA	
		Moder	rate: Wind speed be horizontal visibility	tween 39 to 74 kmph and upto 500 metres.	
		Hea	avy : Wind speed ≥ 7 visibility upto	75 kmph and horizontal 50 metres.	,
1.	19 Apr.	Lucknow	Heavy		(i) Advertising hoardings and poles uprooted.(ii) Electric supply and telephone lines disrupted.
2.	14 May	Aligarh and Lucknow	Moderate		(i) Many trees and advertising hoardings uprooted (ii) Electric supply disrupted.
3.	19 May	Lucknow	Moderate		Electric supply disrupted and mango blossom damaged.
			TABLE - VIII :	LIGHTNING	
1.	11 Feb.	Kangra			Heavy damage to telephone exchange and power transmission lines reported at Palampur.
2.	22 & 23 Feb.	Alappuzha and Pathanamth	itta		Damage to property reported.
3.	25 Feb.	Nainital		5 persons injured.	
4.	27 Feb.	Kanniyakumari		9 persons died.	

<u> </u>	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
5.	22 Mar.	Nadia		One person died and another injured at Saktinagar.	
6.	26 Mar.	Kollam		3 persons died at Mullakkara.	
7.	12 Apr.	Chengai Anna/M.G.R. and Kamarajar		3 persons including one woman died.	
8.	13 Apr.	Solapur		2 persons died and 2 other injured at Mohol.	
9.	16 Apr.	Nagpur		One majdoor died and another injured in Kesalapur camp area.	
10.	20 Apr.	Kullu		12 sheep perished.	
11.	6 May	Malda		One person died and 2 other injured at Chunkitolla of Kaliachak.	
12.	12 May	Salem		3 persons died.	
13.	15 May	(a) Bardhaman		3 persons died and 12 other injured.	
		(b) Chandigarh		One person died.	
14.	21 May	Ahmednagar		One person electro- cuted at Shirur taluka.	
15.	22 May	Kolhapur		One farmer died and 2 other injured at Dondale village in Sahuwadi taluka.	

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
16.	24 May	Raigarh		 2 persons died at Pali and Unheri in Alibag. 	
17.	25 May	Surendranagar		2 farmers died and another injured in Sayala taluka.	
18.	26 May	Mahbubnagar		9 persons died.	•
19.	29 May	(a) Alappuzha		One woman injured at Kayamkulam.	
		(b) Malda		One person died at Kumbhira village.	
20.	31 May	(a) Thiruvananthapuram		13 persons injured at Chullimanoor.	•
		(b) Purulia		One 10-year old student died.	
21.	1 Jun.	Purulia		One woman died at Jhalda.	
22.	3 Jun.	(a) Idukki		One person died at Peermade.	
		(b) Kollam		One person died at Punalur.	
		(c) Kottayam		One person died at Pala.	
		(d) Purulia		2 persons died and 8 other injured at Sukla under Ranibandh police station.	

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
23.	4 Jun.	Birbhum	Birbhum		
24.	6 Jun.	West Dinajpur		One person died and 2 other injured at Dipangarh in Balurghat.	
25.	7 Jun.	(a) Medinipur		One person died and 4 other injured at Panchghuri.	
		(b) Nadia		One person died at Gajbhanga.	
26.	8 Jun.	(a) Pune		20 year old farmer died at Wagholi.	 (i) Tin roofs of 6 houses damaged and walls cracked due to lightning. Estimated damage of Rs. 80,000/- reported. (ii) Power supply disrupted. (iii) Vehicular traffic disrupted. (iv) Low lying areas flooded.
		(b) Srikakulam and Viziana	garam	10 persons died and 3 seriously injured.	
27.	9 Jun.	(a) Nasik		One person died at Sinner.	•
		(b) Thiruvananthapuram		One person died at Poovachal Panchayat.	
28.	10 Jun.	(a) Dhule		One person died and another injured.	
		(b) Nasik		(i) 3 persons died and2 other injured.(ii) 5 cattleheadsperished.	

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
29.	11 Jun.	Dhule	•	(i) One person died and 4 other injured at Gopalpur in Taloda taluka. (ii) One cattlehead perished at Mahalpur in Sindkheda taluka.	
30.	17 Jun.	(a) Beed		9 persons died and 4 other injured.	
		(b) Jalandhar		One person died at Phagwara.	
31.	18 Jun.	Kullu		One person died.	
32.	27 Jun.	(a) Kangra		One person died at Palampur.	
		(b) Medinipur		One boy died and 5 persons injured at Bir-Bhodrapur.	
33.	1 Jul.	Murshidabad		2 persons died at Khemudi-Khola.	
34.	3 Jul.	Murshidabad		2 persons died and one seriously injured at Dolari village in Berhampur.	
35.	4 Jul.	Bardhaman		2 persons died and one woman injured at Raniganj.	

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
36.	8 Jul.	Buldhana		One person died at Lonar.	
37.	10 Jul.	(a) Aurangabad (Bihar)		11 persons died.	
		(b) Dhanbad		3 persons died and 7 other injured.	
38.	11 Jul.	Nagpur		3 persons died and 4 other injured seriously at Parsodi village in Saoner taluka.	
39.	13 Jul.	Purulia		One person died and another injured at Chandankyari.	
40.	14 Jul.	Amravati		3 persons died and 4 other injured at Ghodchindi in Daryapur taluka.	
41.	18 Jul.	Hazaribagh		24 persons,including 15 school children died and 15 other injured at Kaluakula village under Barahi police station.	
42.	4 Aug.	Medinipur		One woman died at Mahimpur and 14 years old boy also died at Gogram, under Panskura police station.	

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
43.	6 Aug.	Medinipur		One person died and his son injured at Bhagbanpur near Digha.	d
44.	12 Aug.	South 24 Parganas	•	2 persons died at Pather Pratima in Kakdeep.	
45.	19 Aug.	Allahabad		3 persons died.	
46.	20 Aug.	(a) Munghyer		3 persons died in Dharhara block.	
		(b) South 24 Parganas		13 years old boy died and 2 other injured at Chintamanipur village in Kakdeep.	
47.	25 Aug.	(a) Nadia		One person died at Natapully in Chakdha.	
		(b) Nagpur	•	One person died at Amgoan in Deoli tehsil.	
48.	30 Aug.	(a) Hazaribagh		5 persons died at Manatu in Katakmsond block.	
		(b) South 24 Parganas		3 persons died at Joho-Soho village in Madhupur Thana.	

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
49.	31 Aug.	(a) Nadia		8 persons injured at Jawa village in Kotyali police station.	
		(b) Wardha		One person died and 2 cattleheads perished at Selu.	
50.	5 Sep.	Yavatmal		6 persons died and 9 other injured.	
51.	11 Sep.	(a) Hawrah	• .	One person died at Baluhati under Domjur police station.	
		(b) Nasik		One person died at Vadnerdumala village.	
52.	12 Sep.	Sambalpur		2 women died and 6 other injured at Jaipur village under Buden police station.	
53.	13 Sep.	Ranchi		4 persons died and 8 other injured.	
54.	15 Sep.	(a) Bankura		2 persons died and another injured at Bagrapur under Chatona police station.	
		(b) Beed		One person died.	
		(c) Jamui		One person died and 2 other injured.	
		(d) Nagpur			One M.S.E.B. transformer burnt.

S.N.	Date/period	City/Area affected Intensi	ty Casualties	Extent of damage
55.	16 Sep.	(a) Beed	(i) One person died. (ii) 4 cattleheads perished.	•
		(b) Medinipur	3 persons died at Dattapur area under Digha police station.	
56.	25 Sep.	Purulia	One person died and 18 other injured.	
57.	3 Oct.	(a) Bardhaman	One person died at Gopal Danga under Salanpur police station.	
		(b) Hawrah	One person died and another injured at Bamangachi under Lilua police station.	
58.	5 Oct.	Bankura	3 persons died and 2 other injured at Bishnupur.	•
59.	8-16 Oct.	Alappuzha, Ernakulam, Idukki, Kollam, Malappuram and Waynad.	9 persons died and 27 other injured.	
60.	14 Nov.	Kollam	One person died and another injured at Kadaikkal.	
61.	21 Nov.	Thiruvananthapuram	One person died at Killimanoor.	

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
62.	23-24 Nov.	Ernakulam and Khozhikode		2 persons died, one at Kannamali and another at Vadakara.	
63.	14-18 Dec.	. Idukki, Kottayam and Thiruvananthapuram		5 persons died.	One house partially damaged.
			TABLE - IX : THU	INDERSTORM	
			CRITE	RIA	
				nder with frequent lightning yy rains and maximum to 74 kmph	
			Continuous thunder and Maximum wind s	and lightning, heavy rains speed \geq 75 kmph	
1.	24 & 25 Feb.	Calcutta, Hooghly, Nadia and North 24 Parganas	Severe	One person died under a roof collapsed at Kashipur in North 24-Parganas district and 5 other injured in a house collapse in Nadia district.	 (i) Number of families rendered homeless. (ii) Vehicular traffic connecting suburban localities in Calcutta city and parts of neighbouring districts disrupted due to uprooting of trees. (iii) Train services in Calcutta city disrupted due to snapping of overhead wires. (iv) Damage to property in Nalikul, Arambagh and Haripal in Hooghly district and Basirhat Bangaon in North 24 Parganas district reported.
2.	22 Mar.	Bardhaman	Severe	2 persons died and 2 other injured.	
3.	13 Apr.	Ahmednagar, Jalna, Kolhapur, Pune, Satara and Solapur	Moderate		(i) Electric supply disrupted.(ii) Many trees uprooted.(iii) Vehicular traffic affected for some time.(iv) Mango crop in Solapur badly affected.

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
4.	22 Apr.	Calcutta and Hooghly	Severe	One person died.	(i) A portion of a two-storeyed building collapsed.(ii) One pandal collapsed.(iii) Train services on Hawrah and Sealdah division disrupted for several hours.
5.	24 Apr.	Calcutta and its suburban areas	Moderate		Train services in Sealdah division disrupted for two hours.
6.	26 Apr.	Calcutta	Severe		(i) Low lying areas flooded.(ii) Vehicular traffic/train services disrupted at various places.
7.	28 Apr.	Bardhaman, Hooghly, Nadia and North 24 Parganas	Severe	20 persons in Bardhaman district and 2 women in North 24 Parganas district injured.	 (i) 652 houses in rural area of Bardhaman district collapsed. (ii) Electric lines at many places of Hooghly, Nadia and North 24 Parganas districts disconnected. (iii) Train services between Howrah-Sealdah and Bandel-Katwa, disrupted.
8.	11 May	Uttar Dinajpur	Severe	One person died at Rangatyapur.	Telephone and electric power supply disrupted due to uprooting of telephone/ electric poles.
9.	12 May	Jalpaiguri	Severe	4 persons injured.	(i) Roofs of many houses blown away.(ii) Many electric poles uprooted due to which the entire district was plunged into drakness.(iii) Estimated damage over Rs. 12 lakhs reported.
10.	17 May	Dhubri and Jorhat	Severe	One person died.	(i) Many houses damaged.(ii) Several trees/electric poles uprooted.(iii) Power supply disrupted.
11.	18 May	Bardhaman, Hooghly and North 24 Parganas	Moderate	One person died and one woman injured at Rayam village.	(i) Many mud houses collapsed at Chobaria.(ii) Many trees uprooted.(iii) Train services in Sealdah and Howrah divisions disrupted due to snapping of overhead wires.
12.	19 May	Ganjam	Severe	One person died.	

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
13.	23 May	Pune	Severe	5 persons electro- cuted and one injured at Pingale vasti.	(i) Normal life paralysed.(ii) Several trees/electric poles uprooted disrupting power supply.(iii) M.S.E.B. transformer burnt.
14.	24 May	Coochbehar	Severe	10 persons missing when a country boat capsized in Jheri Dharla river near Dinhata.	
15.	29 May	Nadia	Severe	One child died at Kaliganga village.	48 mud houses collapsed.
16.	Jun. (1st week)	(a) Nasik	Severe	15 persons died.	(i) Damage to houses and onion store house reported in Nandgaon.(ii) Several trees/electric poles uprooted.(iii) Power supply/water supply disrupted for 5-6 days.
	•	(b) Varanasi	Severe	(i) 6 persons died and 25 other injured.(ii) 100 cattleheads perished.	60 houses damaged.
17.	4 Jun.	Calcutta	Severe	 (i) One Rickshaw pulled died at Tangra road in south Calcutta. (ii) 4 persons injured at Sarat Bose road under Bhavanipur police station. 	er
18.	6 Jun.	(a) Allahabad	Severe	7 persons died.	 (i) Hundreds of trees/advertosement hoardings/electric and telephone poles uprooted. (ii) Normal life paralysed. (iii) Power supply disrupted. (iv) Army employed for restoration of water supply, electricity and telephone etc.

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
		(b) Gwalior	Severe	2 persons died and many other injured.	(i) Damages to many jhuggies reported. (ii) Trees and electric/telephone poles uprooted.
19.	7 Jun.	Bhopai	Severe	One child died due to wall collapse in Dunganagar locality.	
20.	11 Jun.	Yavatmal	Severe	One person died at Pusad.	
21.	13. Jun.	Yavatmal	Severe	6 persons died and 9 other injured at Pusad.	
22.	14 Jun.	Morena	Severe	7 persons died and 4 other injured at Ambah.	
23.	Jun. (2nd week)	Kalahandi	Severe		Several trees/electric poles uprooted disrupting power supply at Bhavanipatna and Junagarh.
24.	16 Jun.	Akola	Severe	One person died and 5 other injured at Risod.	
25.	18 Jun.	Pune	Severe		 (i) Roof tops of more than 50 houses in Bhimashankar blown off. (ii) Several trees/telephone poles uprooted disrupting power supply. (iii) Several shops flooded. Loss estimated to worth Rs. 5 lakhs reported.

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
26.	18-19 Jun.	Satara	Severe		(i) Several Government buildings in Mahabaleshwar damaged. Loss estimated to worth Rs. 9.5 lakhs. (ii) 30 Roof tops of primary schools blown away. (iii) Roof tops of public health clinic, temple and Grampanchayat office blown away. (iv) Loss of private property worth Rs. 1.7 lakhs reported.
27.	22 Jun.	Medinipur	Severe	(i) One person died at Digha.(ii) 3 trawlers carrying 36 fishermen missing.	
28.	23 Jun.	Pune	Severe		(i) Several roof tops blown away in Ambegaon taluka.(ii) Several mud houses collapsed in Mulsi taluka.(iii) Extensive damage to crop reported.(iv) Power supply and vehicular traffic disrupted.
29.	30 Jun.	Amritsar	Moderate	1	(i) Vehicular traffic disrupted.(ii) Power and water supply affected.
30.	2 Jul.	West Tripura	Severe	7 persons died and 34 other injured.	About 300 houses damaged.
31.	5 Aug.	Dhemaji	Severe	(i) 2 persons died and 5 other injured.(ii) 2 cattleheads perished.	
32.	31 Aug.	Nagpur	Severe	One person died and 2 other injured at Hamalapuri village in Ramtek taluka.	

S.N.	Date/period	City/Area affected	Intensity .	Casualties	Extent of damage
			TABLE - X : HA	AILSTORM	
			CRITER	IIA .	
		Slight: Spar	se, usually small size	e and often mixed with rain.	
		Moderate	e : Fall abundant en	ough to whiten ground.	
		Heavy: I	ncludes at least a pr	oportion of large stones.	
1.	14 Jan.	Satna	Moderate		Alsi and channa crop affected.
2.	11 Feb.	Mahendergarh	Moderate		Extensive damage to standing crop reported.
3.	13 Feb.	East Champaran	Moderate		Rabi crop in 500 acres of land damaged.
4.	25 Feb.	(a) Bhandara, Nagpur, Wardha and Yavatmal	Moderate		(i) Normal life paralysed.(ii) Standing crop affected.
		(b) Alwar, Bharatpur, Dausa, Jaipur, Sawai Madhopur, Sikar and Tonk	Moderate		Damage to rabi crop reported.
		(c) Rohtas	Moderate		Rabi crop in 5,00,000 acres of land damaged.
5.	26 Feb.	(a) Bhiwani	Moderate		Standing crop damaged.
		(b) Dehra Doon, Farrukhabad, Kanpur, Lucknow and Pithoragarh	Moderate		(i) Mango bloosom damaged.(ii) Extensive damage to crops and vegetables reported.
		(c) Datia, Guna, Gwalior and Shivpuri	Heavy	One person died and another injured in a wall collapse.	Wheat, Chana and Alsi crops affected.
		(d) Supaul	Moderate		Extensive damage to rabi and oilseed crops reported.

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
6.	1 & 2 Mar.	Ambala, Mahendergarh, Rohtak and Sirsa	Heavy		Crops in 128 villages affected.
7.	2 Mar.	Akola, Amravati, Bhandara and Nagpur	Moderate		(i) Several electric and telephone poles uprooted.(ii) Damage to agricultural crops reported.
8.	7 Mar.	Gaya	Heavy	100 people injured.	Damage to rabi crop reported.
9.	19 Mar.	Daltonganj	Heavy		(i) Several houses damaged.(ii) Extensive damage to crops reported.
10.	25 Mar.	Imphal	Heavy	Several thousand birds perished.	(i) Hailstone of 4 to 10 inches diameter reported.(ii) About 100 tin roof houses damaged.
11.	26 Mar.	Nadia	Heavy		(i) Roofs of many mud houses damaged.(ii) Bus services disrupted due to uprooting of trees.
12.	31 Mar.	Khammam and Nalgonda	Heavy		Damage to mango and cashew crop to the tune of Rs. 4 crores reported.
13.	10 Apr.	Mahbubnagar and Rangareddi	Heavy	58 cattleheads and 20 sheep in Rangareddi district perished.	 (a) In Mahbubnagar district, (i) Poultry farm washed away. (ii) Fruits and vegetables damaged. (b) In Rangareddi district, (i) Paddy crop in 1,900 acres and tomato crop in 100 acres damaged. (ii) Roof tops of more than 700 houses damaged (c) Property worth Rs. 4.5 crores lost both in Mahbubnagar and Rangareddi.
14.	11 Apr.	Adilabad	Heavy	3 persons died .	

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
15.	19 Apr.	Shimla	Heavy		(i) Hailstone of table-tennis ball size reported.(ii) Normal life paralysed.(iii) Power supply completely disrupted.(iv) Fruits and wheat crop at some places extensively damaged.
16.	22 Apr.	Shimla	Heavy		Damage to fruit crops reported in upper reaches of the district.
17.	30 Apr.	Kullu	Heavy		(i) Damage to fruit crops reported in Kullu-Manali area.(ii) Manali highway blocked due to landslides.
18.	1 May	Kheri	Moderate		Mango and other crops affected.
19.	9 May	Barpeta, Kamrup and Nalbari	Heavy		(i) Many houses damaged.(ii) Several trees/electric poles uprooted.(iii) Standing crop damaged.
20.	10 May	Guwahati and Goalpara	Heavy		(i) Many houses damaged.(ii) Several trees/electric poles uprooted.(iii) Standing crop damaged.
21.	11 May	(a) Guwahati, Kamrup and Nagaon	Heavy		(i) Many houses damaged.(ii) Several trees/electric poles uprooted.(iii) Standing crop damaged.
		(b) Shimla	Heavy		(i) Normal life paralysed.(ii) Extensive damage to stone fruit and apple crop reported.

S.N.	Date/period	City/Area affected	Intensity	Casualties	Extent of damage
22.	12 May	Delhi	Moderate		Several trees uprooted.
23.	13 May	Jorhat and Nagaon	Heavy		 (i) Many houses damaged. (ii) Several trees/electric poles uprooted. (iii) Standing crop damaged.
24.	16 May	Himachal Pradesh	Heavy		(i) Normal life paralysed at several places of the state.(ii) Mango fruit in Nurpur extensively damaged.
25.	20 May	Purulia	Heavy		500 mud houses damaged.
26.	22 May	Chamba	Heavy		Extensive damage to fruit crops reported.
27.	1 Jun.	Purulia	Severe		500 families rendered homeless.
28.	12 Jun.	Shimla	Severe		25% of crop damaged in upper reaches while the apple crop at the lower heights affected.

S.IV.	Date/period	City/Area affected	Intensity (τiveτ)	Casualties	Extent of damage
		TA	BLE - XI : FLOODS A	ND HEAVY RAINS	
		<u>STATES</u>			
		ANDHRA PRADESH			
1.	Aug.	Adilabad, East Godavari, Guntur, Hyderabad, Krishna, Medak, Nalgonda, Nizamabad, Visakhapatnam and Vizianagaram	Severe flood (Godavari and Krishna)	68 persons died.	Total estimated loss of Rs. 110 crores reported.
2.	Sep.	Anantapur, Cuddapah, Hyderabad and Kurnool	Severe flood	33 persons died.	Loss of public property worth Rs. 50 crores reported.
3.	1-3 Oct.	Adilabad, Anantpur, Cuddapah, East Godavari, Guntur, Kurnool, Medak, Mehbubnagar, Nellore, Nizamabad, Prakasam, Visakhapatnam and Vizianagaram	Severe flood	(i) 61 persons died. (ii) 154 cattleheads perished.	 (i) 4,48,974 hectares of crop area affected. (ii) 4,207 houses fully and 13,851 houses partially damaged. (iii) 2,138 bridge/culverts damaged. (iv) 2,114 irrigation channels breached. (v) Total loss estimated to worth Rs. 262.53 crores.
4.	17-21 Oct.	Anantapur, Chittoor, Cuddapah, East Godavari, Guntur, Krishna, Kurnool, Nellore, Prakasam, Visakhapatnam and West Godavari	Severe flood	(i) 338 persons died of which 259 from Prakasam district alone.(ii) 45,059 cattleheads perished.	(i) 11,27,673 hectares of cropped area affected. (ii) 9,819 houses fully and 21,072 houses partially damaged. (iii) 3,547 bridges/culverts/roads damaged. (iv) 3,722 irrigation cannel breached/tanks damaged. (v) Total loss estimated to worth Rs. 843.27 crores.
*	Whole year	1.128 million hectares		(i) 338 human lives lost. (ii) 45059 cattleheads perished.	(i) Crop in 1.120 million hectares of land damaged. (ii) 30,891 houses damaged.

<i>S.</i> 2\(.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
		ARUNACHAL PRADESH			
1.	14 May	Lohit and Papum-Pare	Heavy rains		(i) Road communication in Itanagar affected due to landslides on national highway No. 52 (A).(ii) Several houses damaged.(iii) Road communication disrupted in Teju.
2.	28 Jun 12 Jul.	Dibang valley, East Kameng, Lohit, East Siang, Upper Siang Lower Subansiri, Upper Suban Tawang and West Kameng			Road communication in 9 districts with the headquarters disrupted due to landslides.
4.	16 Jul.	Lohit	Flash flood		(i) Vast area inundated. (ii) About 40,000 people rendered homeless.
*	Whole year	0.007 million hectares		(i) 15 human lives lost. (ii) 3018 cattleheads perished.	 (i) 0.026 million people affected. (ii) Crop in 0.006 million hectares worth Rs. 10.429 crores damaged. (iii) 330 houses damaged. (iv) Public utilities worth Rs. 124.469 crores damaged.
<i>8</i> *-		ASSAM			
1.	12 May	Nalbari	Flash flood		(i) Low lying areas inundated due to breaching of a portion of the embankment of river Marapagladia.(ii) Standing crops damaged.
2.	13-14 May	Lakhimpur	Flash flood		(i) About 90 villages inundated.(ii) 12 houses washed away.(iii) Damage to standing crop reported.
3.	15-29 May	Dhemaji	Severe flood		(i) 111 villages submerged.(ii) Standing crops in 19530 Bighas damaged.(iii) 5804 families affected.
4.	16 May	Lakhimpur	Flash flood (Dorpong)		(i) Revenue circle low lying areas inundated in Narayanpur.(ii) Standing crop damaged.

S.N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
5.	21 May	Kamrup	Flash flood (Brahmaputra)		(i) Low lying areas inundated in Bansharmouza. (ii) Standing crops damaged.
6.	22 May	Lakhimpur	Flash flood (Dikrong)		(i) Complete area of Bodati, Jamuguri, Kenduguri, Raidongia and Dhalpur inundated.(ii) Standing crops damaged.
7.	8 Jun.	Dhemaji	Flash flood (Gomati)		(i) About 12 villages in western part of the district inundated.(ii) Standing crops damaged.
8.	27 Jun31 Jul.	Barpeta, Bongaigaon, Darrang, Dhemaji, Dhubri, Dibrugarh, Goalpara, Golaghat, Jorhat, Kamrup, Kokrajhar, Lakhimpur, Morigaon, Nalbari, Nagaon, Sibsagar, Sonitpur and Tinsukia	Severe flood (Brahmaputra and its tri- butaries)	27 persons died.	 (i) 26,63,639 people in 3788 villages of 18 districts affected. (ii) 5,63,661 hectares of area flooded. (iii) 1,98,055 hecrarea of crop land submerged. (iv) Road communication disrupted.
		Comparana micana			(vi) Many houses damaged.
9.	12 Aug3 Sep.	Cachar, Darrang, Dhemaji, Golaghat, Jorhat, Kamrup, Karimganj, Nagaon, Sibsagar and Sonitpur	Severe flood (Brahmaputra and its tri- butaries)	7 persons died in Dhemaji.	(i) 95 villages affected.(ii) Large area of crop land inundated damaging standing crop.(iii) One railway bridge washed away disrupting railway services.
10.	29 Oct.	Guwahati	Heavy rains		(i) Normal life paralysed.(ii) Large number of trees uprooted disrupting vehicular/electric services.
۴	Whole year	0.571 million hectare		30 human lives lost.	(i) 2.7 million people affected. (ii) Crop in 0.198 million hectare of land damaged (iii) 7848 houses damaged.
		BIHAR			•
1.	16 Jan.	Begusarai	Heavy rains		5 lakh acres of crop damaged.

S.N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
2.	19 & 20 Jul.	Darbhanga and Madhubani	Severe flood (Bagmati)		(i) Train services came to a standstill in north Bihar. (ii) Road links in rural areas cut off. (iii) Railway line between Darbhanga-Raxaul metregauge section damaged. (iv) Rail services between Dhodhradiha and Nirmali sections disrupted due to flooding of railway track. (v) Road link between Forbesganj and Madhubani cut off.
3.	Jul.	Entire State	Severe flood (Kosi, Burhi, Gandak etc.)	25 persons died.	(i) In all 18 districts affected.(ii) Standing crops in 1.28 lakh hectares worth Rs. 407.17 lakh damaged.(iii) More than 30 lakh people affected.
4.	Aug. (1st week)	Araria, Madhubani, Saharsa and Sitamarhi	Severe flood	51 persons died.	
*	Whole year	1.189 million hectares		218 human lives lost. (ii) 110 cattleheads perished.	 (i) 8.709 million people affected. (ii) Crops in 0.734 million hectares worth Rs. 70.314 crores damaged. (iii) 1,13,974 houses worth Rs. 14.005 crores damaged. (iv) Public utilities worth Rs. 8.462 crores damaged.
		GOA			
1.	19 & 20 Jun.	South Goa	Heavy rains		(i) Many trees uprooted in Agond, Khotigaon, Karmalghat.(ii) Electric supply/vehicular traffic disrupted.(iii) Roads in Mudgaon city waterlogged.(iv) Agricultural crops affected.

S.IV.	Date/period	City/Area affected	Intensity (τiver)	Casualties	Extent of damage
		GUJARAT			
1.	26 & 27 Jul.	Bharuch and Vadodara	Severe flood (Narmada)	4 persons injured due to house collapse.	(i) 25 villages affected.(ii) 2000 persons shifted to safer places.(iii) No. of trees uprooted disrupting vehicular traffic.
*	Whole year	1.822 million hectares		(i) 33 human lives lost. (ii) 1962 cattleheads perished.	(i) 16.480 million people affected. (ii) Crop in 0.003 million hectares worth Rs. 6.050 crores damaged. (iii) 24,644 houses damaged - loss of Rs. 3.770 crores. (iv) Public utilities worth Rs. 62.97 crores damaged.
		HARYANA			
1.	21 & 22 Mar.	Entire State	Heavy rains		Crops in several villages affected.
2.	26-27 Jun.	Faridabad and Gurgaon	Flash flood	7 persons died.	(i) 83 villages affected.(ii) National security guards and army deployed for rescue and relief operations.
3.	3 Aug.	Rohtak	Heavy rains		Several parts of the town including a civil hospital flooded.
4.	10-15 Aug.	Entire State	Heavy rains		(i) Normal life paralysed.(ii) Several villages flooded.
5.	8-10 Sep.	Entire State	Heavy rains	One persons died due to wall collapse.	Normal life completely paralysed.
*	Whole year	0.068 million hectares		(i) 10 human lives lost.(ii) 70 cattleheads perished.	(i) 0.213 million people affected. (ii) 11,228 houses damaged.

S.N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
		HIMACHAL PRADESH			
1.	17 Mar.	Kullu	Heavy rains		(i) Vehicular traffic disrupted between Kullu- Manali national highway due to landslide.(ii) Vehicular traffic suspended between Manali and Aler.
2.	19 Jun.	Solan	Heavy rains	2 children washed away in a swollen nullah.	
3.	27 Jun.	Kangra	Heavy rains	11 persons died at Palampur.	
4.	1 Jul.	Bilaspur	Heavy rains	2 persons died and another injured due to house collapse.	
5.	14-23 Jul.	Entire State	Heavy rains	7 persons died.	(i) Normal life paralysed. (ii) Road communication disrupted.
6.	3 Aug.	Hamirpur	Heavy rains	(i) 2 persons died. (ii) 350 cattleheads perished.	Power/water supply and telecommunication services disrupted.
7.	13 Aug.	Shimla	Heavy rains	2 persons died due to a landslide.	
8.	15 Aug.	Entire State	Heavy rains	3 cattleheads perished.	80 houses collapsed.

S.N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
9.	8 & 9 Sep.	Entire State	Heavy rains	3 persons including one child died.	 (i) Normal life completely paralysed. (ii) 350 bighas of agricultural land washed away. (iii) 4 houses collapsed. (iv) 2 bridges washed away. (v) Kalka-Shimla, Chamba-Pathankot and Hindustan-Tibet highways closed due to landslide.
*	Whole year	****_		(i) 51 human lives lost. (ii) 2250 cattleheads perished.	 (i) 2.296 million people affected. (ii) Crops in 0.299 million hectares worth Rs. 245.966 crores damaged. (iii) 5774 houses worth Rs. 69.281 crores damaged. (iv) Public utilities worth Rs. 161.526 crores damagec
		JAMMU & KASHMIR			
1.	24 Feb.	Kashmir Valley	Heavy rains		Kashmir valley cut off from the rest of the country, following the closure of 300 km. long Srinagar-Jammu national highway due to landslide.
2.	16 & 17 Mar.	Entire State	Heavy rains	3 persons died.	
3.	17-20 Jun.	Kashmir valley	Severe flood (Jhelam)	4 persons died.	(i) Low lying areas inundated.(ii) Srinagar-Jammu highway closed for vehicular traffic.
4.	Jun. (4th week)	Entire State	Severe flood	15 persons died.	Low level areas submerged and normal life affected.

S.N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
5.	21-26 Aug.	Doda, Jammu, Kashmir Valley, Kathua, Rajauri and Udhampur	Severe flood	241 persons died.	 (i) Due to heavy rains temperature fell down below freezing point. (ii) About 9,000 Amarnath pilgrims stranded Panchtarni and Sheshnag. Army called for rescue operations. (iii) More than 60,000 devotees remained stranded on 46 km trekking route from Pahalgam to holy cave. (iv) Road connecting Anantnag-Pahalgam cut off due to flooding. (v) Jammu-Srinagar highway blocked due to landslides. (vi) Vehicular traffic on Jammu-Pathankot highway completely disrupted due to flooding of rivers. (vii) Flood water entered into 70 villages under Doda, Jammu, Rajauri, Udhampur and Kathua.
		KARNATAKA			
1.	13-15 Jun.	Bangalore, Bellary, Bijapur, Dakshin Kannada and Kolar	Heavy rains	29 persons died and 15 other injured.	(i) Many trees uprooted.(ii) Roofs of many houses blown off, 150 houses damaged.(iii) Overhead powerlines snapped.
2.	14 Jun.	· Bangalore	Heavy rains	9 persons died and 12 other injured in a building collapse at J.P. Nagar area.	
3.	11 Aug.	Bangalore	Heavy rains	2 persons died and 7 injured.	(i) Low lying areas flooded.(ii) Many compound walls collapsed.(iii) Trees and electric poles uprooted.
4.	26 Aug.	Raichur	Heavy rains		(i) 394 huts collapsed.(ii) Several families rendered homeless.(iii) Damage worth Rs. 1.5 crores reported.

S.N.	Date/period	City/Ятеа affected	Intensity (river)	Casualties	Extent of damage
5.	Aug.	Entire State	Severe flood	(i) 137 persons died. (ii) 4,456 cattleheads perished.	 (i) Crops worth Rs. 3.16 crores in 22,657 acres damaged. (ii) 898 houses fully and 11,795 houses partially collapsed. (iii) The total loss to private the public property worth Rs. 24.31 crores, reported.
6.	Sep. (4th week)	Bijapur	Severe flood		(i) 293 houses fully collapsed and 4,081 houses badly damaged.(ii) 13 bridges and 2 school buildings damaged.
7.	1 & 2 Oct.	Belgaum, Bellary, Dharwad and Raichur	Heavy rains	15 persons died and 12 other injured.	(i) Many houses collapsed.(ii) Cinema tent collapsed.
*	Whole year	****_		(i) 74 human lives lost. (ii) 101 cattleheads perished,	 (i) Crop in 0.069 million hectares worth Rs. 2.620 crores damaged. (ii) 3348 houses worth Rs. 1.890 crores damaged. (iii) Public utilities woth Rs. 20.93 crores damaged.
		KERALA			
1.	3 Jun.	Kottayam	Heavy rains		Widespread damage to property and agriculture at Manimala panchayat areas reported.
2.	13 Jun.	Thiruvananthapuram	Heavy rains		(i) 100 houses fully and 50 partially damaged. (ii) Widespread damage to private and public property reported.
3.	14 & 15 Jun.	Alappuzha, Ernakulam, Idukki, Kannur, Kasaragode, Kottayam, Kozhikode, Malappuram, Thrissur and Waynad	Heavy rains	One person died at Kozhikode.	 (i) 100 houses fully and 300 partially damaged at Ernakulam district. (ii) 29 houses fully and 408 partially damaged at Alappuzha. (iii) 100 houses damaged at Idukki. (iv) Widespread damage to progerty and agriculture reported.

S.N.	Date/period	City/Area affected	Intersity (river)	Casualties	Extent of damage
4.	16-22 Jun.	Entire State	Heavy rains	24 persons died.	(i) 2,500 houses damaged.(ii) Extensive damage to agriculture crop reported.(iii) Loss of property worth Rs. 25 crores reported.
5.	17 Jun.	Thiruvananthapuram	Heavy rains		11 houses fully damaged.
6.	20 Jun.	Kozhikode and Thiruvananthapuram	Heavy rains	2 persons died at Mavoor in Kozhikode.	250 houses at Pozhiyoor, Paruthiyoor and Kollenkode damaged.
7.	20 & 21 Jul.	ldukki and Pathanamthitta	Heavy rains		Widespread damage to property and agriculture reported.
8.	24 Jul.	Idukki and Kozhikode	Heavy rains		(i) 27 houses partially damaged.(ii) Widespread damage to property and agriculture reported.
9.	8 Aug.	Thiruvananthapuram	Heavy rains		4 houses damaged at Kadinamkulam and Puthakurichy area.
10.	12 Aug.	ldukki	Heavy rains	One child died.	Widespread damage to property and agriculture reported.
11.	23 Aug.	Kottayam	Heavy rains		Widespread damage to property and agriculture at Thalanadu Panchayat reported.
12.	11 Sep.	Idukki	Heavy rains		Widespread damage to property and agriculture at Cheruli and Chelachuvadu reported.
*	Whole year	0.055 million hectares		88 human lives lost.	 (i) 0.476 million people affected. (ii) Crop in 0.040 million hectares worth Rs. 68.908 crores damaged. (iii) 18,729 houses worth Rs. 6.655 crores damaged. (iv) Public utilities worth Rs. 483.262 crores damaged.

S.N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
		MADHYA PRADESH			
1.	17-19 Jun.	Bastar	Heavy rains		Jagdalpur-Kota road damaged at Karlapal village disrupting vehicular traffic.
2.	1 Jul.	Bilaspur	Heavy rains	2 persons died and another injured in a house collapse.	
3.	24-27 Jul.	Bhopal and neighbourhood	Heavy rains	8 persons died.	(i) Low lying areas flooded.(ii) Several kutchcha houses collapsed.(iii) All the road link connecting other cities disrupted.(iv) Electric/telephone lines disrupted.
4.	4 Aug.	Damoh	Heavy rains	2 persons died.	(i) Low lying areas in Rakhlaolo and Notha villages flooded.(ii) Many kutchcha houses collapsed.
5.	5 Aug.	Bhopal	Heavy rains		Air services affected.
6.	21-24 Aug.	Bhopal, Morena and Raigarh	Heavy rains	(i) 2 persons died.(ii) 10 cattleheads perished.	(i) 25 villages flooded.(ii) Many kutchcha houses collapsed.(iii) Road/rail links affected.
		MAHARASHTRA			
1.	9 Jun.	Thane	Heavy rains	4 persons died and 8 other injured due to landslides.	
2.	14-18 Jun.	Ratnagiri	Heavy rains	(i) One woman washed away in Rajapur Taluka.(ii) 10 cattleheads perished.	d (i) Loss to property worth Rs. 57,500/- reported (ii) 925 houses collapsed. (ii) The loss estimated to worth Rs. 7,84,120/

S.N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
3.	15 Jun.	Nasik	Heavy rains	5 persons died due to house collapse.	
4.	17 Jun.	Mumbai	Heavy rains		A portion of a building collapsed in south Mumbai.
5.	18 & 19 Jun.	(a) Kolhapur	Heavy rains		(i) Normal life completely paralysed.(ii) Vehicular traffic on Pune-Bangalore national highway disrupted.
		(b) Mumbai and Thane	Heavy rains	(i) 6 fishermen reported missing when a trawler capsized in high sea.(ii) 9 persons injured due to wall collapse in Dahisar.	 (i) Normal life paralysed. (ii) Low lying areas flooded. (iii) Several houses collapsed. (iv) Several trees/electric poles uprooted disrupting vehicular/electric supply/railway services. (v) 32 trees uprooted in Kalyan town. (vi) Large number of land slides reported in different parts of the city.
		(c) Pune	Heavy rains		 (i) Roof tops of more than 50 houses blown away in Bhimashankar and nearby villages. (ii) Loss of property worth Rs. 5 lakhs reported. (iii) Many trees/electric poles uprooted disrupting electric supply. (iv) Crop area of 200 hectares damaged in Mulshi taluk.
6.	21-24 Jun.	Ratnagiri	Heavy rains	3 persons died.	One house collapsed.
7.	2 Jul.	Mumbai	Heavy rains		Overhead equipments of trains damaged and the tracks submerged under 8 inches of water.
8.	11 Jul.	Mumbai	Heavy rains	One child died and 11 other injured in Dharavi area.	

<i>S.</i> N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
9.	Jul. (3rd week)	Mumbai and Thane	Heavy rains	(i) 15 persons died and 6 other injured. (ii) One child died due to wall collapse in Borivali.	 (i) Normal life completely paralysed. (ii) 10 houses damaged in Thane. (iii) Suburban railway services completely disrupted. (iv) One multi storeyed building collapsed and several houses in Mumbai damaged. (v) 3000 people shifted to safer places in Ulhasnagar. (vi) Low lying areas flooded. (vii) Public transport completely disrupted.
10.	25 Aug.	Mumbai	Heavy rains		(i) Railway train schedule collapsed.(ii) Vehicular traffic blocked.
11.	27 Aug.	Amravati	Heavy rains	3 women drowned in a nullah at Kurla in Morshi tehsil.	
12.	29 Aug.	Jaina and Nanded	Heavy rains	7 persons died.	
13.	4 Sep.	Solapur	Heavy rains	2 persons injured due to wall collapse in Umerga taluk.	
14.	10-15 Sep.	Beed, Latur, and Nanded	Severe flood (Bindusara)	8 persons died in which 5 from Beed and 3 from Nanded district.	(i) Low lying areas inundated.(ii) Many houses damaged and a few collapsed.(iii) Damage of pulses crop reported.(iv) Latur-Hyderabad national highway affected and remain closed for traffic.
15.	26 Sep 5 Oct.	Entire State	Heavy rains	(i) 26 persons died and 8 other missing.(ii) 3 cattleheads and 2000 birds perished.	(i) 13 districts affected. (ii) 2,021 houses damaged. Loss estimated to worth Rs. 47,46,000/ (iii) 12 cowsheds worth Rs. 34,000/- damaged. (iv) Property worth Rs. 1,18,00,000/- in 30 taluks of 13 districts damaged. (v) Crops in 170 hectares of land destroyed while 116 hectares of agriculture land inundated. Loss estimated to worth Rs. 44,19,000/

S.N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
16.	2 Oct.	Pune	Heavy rains	4 persons died and 2 other injured.	(i) Low lying areas inundated.(ii) Many trees uprooted.(iii) Railway and road traffic affected.(iv) Many mud houses collapsed.
17.	5 Oct.	Sangli	Heavy rains	4 persons died.	
18.	22 Oct.	Ahmednagar	Heavy rains	One person drowned.	Property worth of lakhs of rupees damaged.
19.	Oct. (3rd week)	Pune and Satara	Heavy rains		 (i) In Junnar taluka, rice crop and vegetable crops damaged. Loss estimated to worth Rs. 3.25 crores. (ii) Crop in 1.36 lakh hectares of land area damaged. (iii) 40 villages in Patan taluka of Satara district affected. (iv) Large number of houses damaged. Loss estimated to worth Rs. 3.5 lakhs. (v) 52 irrigation pump sets washed away. (vi) Agriculture crops worth Rs. 2.67 lakh damaged. (vii) Road connecting Chafal-Jadhavwadi completely washed away disrupting road transport.
•		MEGHALAYA			
1.	29 Jul.	East Garo Hills, South Garo Hills and West Garo Hills	Flash flood	7 persons died.	Crop worth Rs. 7 lakhs damaged.
		MIZORAM			
1.	8 Oct.	Chhimtuipui	Heavy rains		Road communication disrupted.
		ORISSA			
1.	23 Jul.	Koraput	Heavy rains		In Kundra, Jaypore, Kotpad, Laximum areas (i) 200 thatched houses damaged. (ii) Kharif crop in over 1000 hectares submerged/washed away.

S.N.	Date/period	City/Area affected	Intensity (τiver)	Casualties	Extent of damage
		PUNJAB			
1.	19 Jun.	Ferozepur	Heavy rains	One woman and her son died under a house collapse at Panjkori village near Abohar.	,
2.	26 Jun.	Moga	Heavy rains		(i) Low lying areas in the town inundated affecting shops and houses.(ii) Oilseed stock worth several lakhs rupees washed away.
3.	3 Aug.	Entire State	Heavy rains		(i) Low lying areas flooded.(ii) Flood water entered into shopping complex causing great damage.
4.	18 Aug.	Entire State	Heavy rains		(i) Normal life paralysed in Amritsar and surrounding areas.(ii) Damage to property reported.
5.	9 Sep.	Patiala	Heavy rains	One person died.	
		RAJASTHAN			
1.	20-26 Jun.	Alwar, Bharatpur, Bikaner, Churu, Dausa, Hanumangarh, Jaipur, Jaisalmer, Jhunjhunu, Jodhpur, Nagaur, Sikar and Udaipur	Severe flood	58 persons died.	 (i) Worst affects districts Bharatpur, Jodhpur and Nagaur. (ii) Bharatpur railway station, Cimmco's wagon factory and most parts of the industrial areas flooded with water making the Bharatpur city inaccessible by rail or road. (iii) Several houses damaged. (iv) Several villages and towns marooned.
2.	26 Jul.	Jhalawar	Heavy rains	2 persons died.	One truck washed away.
3.	6 Aug.	Bharatpur and Jodhpur	Heavy rains	2 persons died.	Number of houses collapsed.

S.N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
4.	23-25 Aug.	Alwar, Bharatpur, Dholpur, Jaipur, Kota and Tonk	Heavy rains		(i) Several villages flooded. (ii) Many houses damaged.
5.	5 Sep.	Ajmer	Heavy rains	One person died.	Low lying areas flooded.
6.	8 & 9 Sep.	Ajmer, Alwar and Bharatpur	Heavy rains	13 persons died of which 6 in Alwar district alone.	
*	Whole year	1.088 million hectares		(i) 138 human lives los (ii) 6438 cattleheads perished.	st.(i) 1.273 million people affected. (ii) Crops in 0.210 million hectares of land damaged. (iii) 1,19,241 houses damaged.
		SIKKIM			
1.	5 Oct.	Gangatok	Heavy rains	7 persons died due to house collapse.	
		TAMIL NADU			
1.	14 & 15 Jun.	Chennai, Caddalore, Coimbatore and Tanjavur	Heavy rains	14 persons died.	 (i) Chennai recorded 35 cm of rainfall in a single day which is a record of last 100 years. (ii) More than 2000 people in Chennai rescued and shifted to safer place. (iii) Train services on Chennai-Bangalore and Chennai-Vijayawada sector disrupted.
2.	17-19 Oct.	Chengalpattu MGR, Chennai, Dharmapuri, Dindigul, Kanniyakumari, Madurai, Nagapattinam, Salem, Tirunelveli, Tiruchirapalli, and Tiruvannamalai	Severe flood	(i) 21 persons died. (ii) 78 cattleheads perished.	 (i) Flood water entered in 75,000 huts in Chennai. (ii) 469 huts fully and 1093 huts partially damaged. (iii) 101 irrigation channels breached. (iv) Agriculture crop extensively damaged. (v) Roads in Chennai damaged at many places.

<i>S.</i> N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
3.	17-28 Nov.	Chennai, Nagapattinam and Tanjavur	Heavy rains	5 persons died due to house collapse in Chennai.	(i) Crops in 1 lakh acres of land affected.(ii) Many huts damaged.(iii) Several roads damaged disrupted vehicular traffic.
4.	12-18 Dec.	Entire State	Heavy rains	(i) 135 persons died. (ii) 2738 cattleheads perished.	 (i) 3.05 lakh houses fully and 3.55 lakh houses partially damaged. (ii) Paddy crop in 1,89,791 hectares completely and 85,122 hectares partially submerged. (iii) Embankment of 1,333 lakes completely and 981 partially breached. (iv) 8,576 km. road damaged. (v) 976 culverts and 62 big bridges damaged. (vi) Train services between Chennai and Trichy affected due to inundation. (vii) Total loss estimated Rs. 1,090 crore.
		TRIPURA			
1.	2 Jul.	West Tripura	Heavy rains	8 person died and 40 other injured when a Government store house collapsed.	(i) Property worth more than one crore damaged. (ii) Large number of houses and shops damaged.
		UTTAR PRADESH			
1.	18 Jul.	Pithoragarh	Heavy rains	25 persons died and 9 other injured in several incidences of house collapse.	Several houses collapsed.
2.	23 Jul.	Bahraich	Flash flood (Ghagra)		(i) Hundreds of villages flooded. (ii) Crop worth crores of rupees damaged.

S.N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
3.	24 Jul.	Bara Banki	Heavy rains	5 persons died.	Many houses damaged and collapsed.
4.	13-19 Aug.	Allahabad, Bareilly and Etawah	Heavy rains	(i) 10 persons died and 3 other injured.(ii) 50 cattleheads perished.	(i) Normal life completely paralysed.(ii) 25 houses collapsed in Etawah.
5.	21 Aug.	Bahraich, Bara Banki, Faizabad, Gonda and Gorakhpur	Severe flood (Ghagra)	(i) 18 persons died.(ii) Hundreds of cattleheads perished.	Several houses collapsed.
6.	Aug. (4th week)	Allahabad, Ballia, Banda, Etawah, Ghazipur, Garhwal, Gorakhpur, Hamirpur and Varanasi	Severe flood (Ganga, Yamuna, Ghagra and their tribut- aries)	12 persons drowned in which 2 from Dumbri village in Varanasi district.	(i) 29 districts affected.(ii) Vast areas inundated by overflowing rivers.(iii) Army deployed for rescue operations in Hamirpur.(iv) Badrinath pilgrims stranded.
7.	13 Sep.	Hardoi	Heavy rains	(i) One person died.(ii) 3 cattleheadsperished in wallcollapse.	
*	Whole year	1.124 million hectares		(i) 311 human lives los (ii) 1232 cattleheads perished.	st.(i) 7.220 people affected. (ii) Crop in 0.678 million hectares worth Rs. 678 crores damaged. (iii) 70,818 houses worth Rs. 70 crores damaged.
		WEST BENGAL			
1.	19 & 20 Jun.	Calcutta	Heavy rains	5 persons injured.	(i) Normal life paralysed.(ii) Low lying areas flooded.(iii) One house on Ashutosh Mukherjee road collapsed(iv) Vehicular traffic completely disrupted.

S.N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
2.	23 Jun.	Bardhaman	Heavy rains	One woman died and 2 other including a child injured due to wall collapse.	
3.	12 & 13 Jul.	Coochbehar, Darjeeling, and Jalpaiguri	Severe flood	About 100 people died.	(i) 5,50,000 people affected while one lakh people rendered homeless.(ii) In Kalinpong, heavy damage of roads reported due to land slides. 18 houses collapsed.
4.	Jul. (3rd week)	Dakshin Dinajpur	Severe flood	7 persons died.	
5.	7 Aug.	Calcutta	Heavy rains	•	(i) Normal life paralysed.(ii) Low lying areas flooded.(iii) Tram/Train services and road traffic in the suburbs affected.
6.	9 & 10 Aug.	Hooghly, Murshidabad and Nadia	Flash flood (Bhagirath and Jalangi)	2 boys reported missing.	(i) More than one lakh people marooned in Murshidabad while 10,000 people marooned in Nadia district.(ii) 3 lakh people marooned in Hooghly district.(iii) 2000 mud-houses collapsed in Hooghly district.
7.	13-15 Aug.	Nadia	Severe flood		(i) Large area of Santipur flooded.(ii) 25,000 people affected.
8.	21 Aug.	Calcutta	Heavy rains	One person died.	(i) Normal life in city paralysed.(ii) Low lying areas flooded.(iii) Train services in Howrah and Sealdah divisions disrupted.
9.	27 Aug.	Malda and Murshidabad	Severe flood		(i) In Malda district, one lakh people affected and 1,940 houses washed away.(ii) In Murshidabad, 1,43,000 people marooned and 6000 houses collapsed.

S.N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
10.	30 Aug.	South 24 Parganas	Flash flood		More than 20,000 people rendered homeless in Sunderban area.
11.	31 Aug.	Malda and Murshidabad	Severe flood	6 persons died in Malda district.	(i) 4008 mud houses collapsed.(ii) More than 3 lakh people affected.(iii) In Murshidabad, 8,394 houses damaged.
12.	26 & 27 Sep.	Calcutta	Heavy rains	One person drowned and one girl died.	(i) Low lying areas flooded.(ii) Vehicular traffic completely disrupted.(iii) One tree uprooted.
13.	27 Sep.	North 24 Parganas	Heavy rains		(i) 500 houses destroyed. (ii) 1000 ft. long embankment of Ichamati river breached.
14.	27-29 Oct.	(a) Calcutta and neighbourhood	Heavy rains		(i) Normal life paralysed.(ii) Low lying areas inundated.(iii) Tram/Bus/Train services disrupted.(iv) One lakh telephone unserviceable due to water logging.
		(b) Howrah, Medinipur, Nadia and North 24 Parganas	Severe flood (Ichchamati, Kalindi and its tribut- aries)	(i) 2 persons died at Nadia.(ii) 25 fishermen reported missing in Nadia.	(i) 16,000 people affected.(ii) 90 houses washed away.(iii) 69 fishing trawlers, 22 country boats and 5 speed boats reported missing.(iv) 80% paddy crop damaged in Howrah district.
		UNION TERRITORIES			
		CHANDIGARH			
1.	21 Oct.	Chandigarh	Heavy rains		(i) Standing crop damaged.(ii) Harvested paddy and cotton crop affected.(iii) 50,000 bags of paddy in Mandi badly affected.

S.N.	Date/period	City/Area affected	Intensity (river)	Casualties	Extent of damage
		DELHI			
1.	24 Jun.	Delhi	Heavy rains	2 persons died due to wall collapse in Ambedkarnagar.	
2.	25 Jun.	Delhi	Heavy rains	8 persons died in different incidents of roof/wall collapse and short circuing.	

S.N.	Date/period	Area of formation/ Dissipation	Intensity	Casualties	Extent of damage
			TABLE -XII : CY	CLONIC STORM	
		ARABIAN SEA CYCLONES			
				In Mahai	rashtra
1.	17-20 Jun.	FORMATION: At Lat.20.0°N, & Long. 70.5°E about 100 km south of Veraval on 18th evening LANDFALL: Crossed south Gujarat coast close to Diu during 2200 and 2300 UTC of 19. DISSIPATION: Over southwest Rajasthan by evening of 20.	Severe Cyclonic Storm	(i) 14 persons died. (ii) 31 cattleheads perished.	 (i) Mumbai, Thane, Ratnagiri and Satara districts worst affected. (ii) 1611 houses damaged. (iii) 90 cattle sheds damaged. (iv) In Mumbai, more than 150 trees uprooted. (v) Vehicular and railway traffic disrupted. (vi) Public property worth Rs. 1.34 crores lost. (vii) Total loss of Rs. 1.58 crores reported.
				In Gujara	at
				(i) 33 persons died. (ii) 2082 cattleheads perished.	(i) 5573 villages of 161 talukas in 19 districts affected. (ii) 22.83 lakh population affected. (iii) 2.02 lakh hectares of land affected. (iv) Agricultural crop in 0.08 lakh hectare area damaged. (v) 2930 houses completely and 38,643 houses partially damaged. (vi) Estimated loss of Rs. 1803.52 lakh reported.

S.N.	Date/period	Area of formation/ Dissipation	Intensity	Casualties	Extent of damage		
		BAY CYCLONES					
				In Andhra	Pradesh		
1.	12-16 Jun.	FORMATION: Near Lat. 14.0°N & Long. 80.5°E LANDFALL: Near Visakhapatnam coast around 0500 UTC of 16. DISSIPATION: Over north Andhra coast on 16th evening	Cyclonic Storm	95 persons died. In Tamil I	 (i) In all 13 districts affected, of which, Chittoor, East Godavari, Kurnool, and Mehabubnaga worst affected. (ii) 4,877 houses fully and 9003 houses partially damaged. (iii) Crops in 12,932 hectares of land damaged. (iv) 1,743 irrigation cannals either breached or damaged. (v) Total estimated loss of Rs. 82 crores reported. 		
				41 persons died.	 (i) 9 districts affected. (ii) 4 fishing trawlers drowned while 18 machine boats reported missing. (iii) Large number of trees/advertisement boardings uprooted. (iv) High tension wires snapped disrupted power supply. (v) Railway and road traffic badly affected. 		
			In Andhra Pradesh				
2.	5-7 Nov.	FORMATION: Near Lat.16.0°N & Long. 86.0°E. at 0900 UTC of 5. LANDFALL: 50 km south of Kakinada, around 1600 UTC of 6. DISSIPATION: Over south Telangana and neighbourhood by the evening of 7.	Severe Cyclonic Storm with a core of hurricane winds	 (i) 1058 persons died and 1677 fishermen reported missing. (ii) 19,823 cattleheads perished. (iii) 21.98 lakh poultry birds perished. 	 (i) East and west Godavari, Krishna and Khammam affected. (ii) Crop in 1.11 lakh hectares of land affected. (iii) 6800 fishing boats damaged. (iv) 3,15,113 houses fully and 3,33,361 houses partially damaged. A microwave tower of telephone exchange, 13 km of Kakinada, collapsed. (v) 3,367 irrigation cannals breached. (vi) The loss of property estimated to worth Rs. 6126.47 crores. 		

S.N.	Date/period	Area of formation/ Dissipation	Intensity	Casualties	Extent of damage
			In Tamil Nadu		
3.	28 Nov 7 Dec.	FORMATION: Near Lat.14.0°N, and Long. 87.0°E on early morning of 2nd Dec. LANDFALL: Crossed North Tamil Nadu Coast between 1600-1700 UTC of 6. DISSIPATION: Over north Tamil Nadu on 7.	Severe Cyclonic Storm with a core of hurricane winds	7 persons died.	 (i) Coastal region of Tamil Nadu worst affected. (ii) Large number of trees/hoardings uprooted. (iii) 2 lakh acres of Samba crops inundated. (iv) 2500 huts either flooded or damaged.