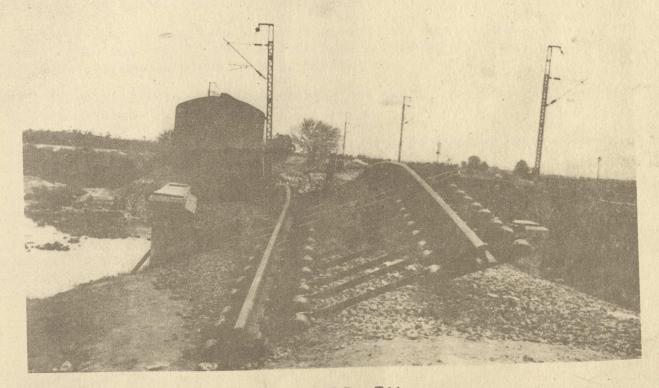


INDIA METEOROLOGICAL DEPARTMENT DISASTROUS WEATHER EVENTS, 1984 A REPORT



OFFICE OF THE ADDITIONAL DIRECTOR GENERAL OF METEOROLOGY

(RESEARCH)

PUNE - 411005

Cover Photo: Damage to Railway bridge near Pandluru Railway gate in Nellore District due to tropical cyclone in November - 1984.

DISASTROUS WEATHER EVENTS OF 1984

Nearly all the weather events caused damage to life and property during year 1984. The most noteworthy among them were the following:-

- (i) Severe flooding in many rivers of the country during the southwest monsoon season took a heavy toll of human lives and livestock. It also affected large areas of cultivated land, damaging kharif crops heavily. The most affected states were Assam, Bihar, Gujarat, Orissa, Tripura, Uttar Pradesh and West Bengal.
- (ii) During the monsoon period moderate to severe drought conditions prevailed in parts of Andhra Pradesh, Karnataka and Maharashtra affecting kharif crops severely.
- (iii) A Bay Cyclone, during 9-14 November crossed the south Andhra coast, took a toll of 658 human lives and 90,650 livestock in Andhra Pradesh and Tamilnadu. Damage to standing crops was estimated at Rs. 232.32 crore.
- (iv) The severe cold wave conditions during 3rd and 4th week of December over Bihar claimed 97 human lives.
- (v) Severe heat wave prevailed over Uttar Pradesh during 3rd week of May and 1st week of June and claimed 33 human lives.
- (vi) A tornado, swept across Pilge village in Ludhiana district of Punjab on 19 February. About 25 persons injured and 15 houses and 2 godowns damaged.

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

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. N.	Date/Period	Area affected	Intensity	Casualties	Domonto
1)	(2)	(3)	(4)	(5)	Remarks (6)
			TABLE - I CAN	The state of the state of the state case case case case case case case cas	(0)
*	points. Loss esti		TABLE - I : SN CRITERIA	OWFALL	
	Vehicular traffic, supply and telecom	Mod Mod	C. Carlot	person died in Phagwara.	
belga	Cation system disk		Heavy :	to 34.9 cm in 24 hrs.	
nam le	4-6 Feb.	a) Jammu & Kashmir	Moderate	35.0 cm in 24 hrs.	
	the telecommunicat	AND	nouel a ce	3 of 1000 stranded passenger died due to frost.	Committee Dillie
					highway disrupted. (ii) Roads in mountaineous
			2 persons Killed an	simir Moderate :	region of Doda and Kishtwar closed.
	(1) Himachal Pradesh	Moderate	. SUBLISHOR TIMES	dion, damaged,
	Dec. (Brd & B	alanche.		ersons died in the State.	(i) Vehicular traffic in
	THE PERSON NAMED IN	achel area	Mandersons died at M	simistic as Nodersto 1 of d	Simla and surrounding areas, disrupted.
nil.		due to avaranche.	(Kupwara district)	46	(ii) Power supply and commu
1	18-20 Feb. Ja	mmu & Kashmir	Heavy (i)	19 porgani li a rinda	
	National highway		To day	12 persons died in Gurez, Tangdhar, Uri and Nowgan.	(i) 8 of the 29 army jawan trapped in snow at 420
	demnu & Silnager ((ii)	10 Jawans reported missing and suspected dead in	metre high Janiagali
				blizzards in Rajouri area.	(Poonch district), resc by helicopter.
			Bokas	CRITERIA	(ii) Thousands of passenger
		to 7°C, below normal.	Wight temperature 6		stranded for about 4 d as the national highwa
		> 8°C. below normal.			between Jammu and
	co-SL Dec.		Oue person died in		Srinagar, blocked at several places.
			and	Andrew mini Severe	(iii) Telecommunication syst
18	8-25 Feb. Hir	nachal Drade 1	2 parsons died.		disrupted.
		nachal Pradesh		25 persons died when aval-	(i) Kinnaur district cut of
		Hacchiwara.	One person died at	anche swept away their houses.	from rest of the state.
		various parts	57 persons died in		(ii) Several roof tops of temporary dwellings bloom
			of the state.	Severe	away due to icy gales.

(iii) National and State high- ways damaged at several points. Loss estimated (be Rs. 3 crore. (iv) Vehicular traffic, power supply and telecommunication assumed at a several points. Loss estimated (be Rs. 3 crore. (iv) Vehicular traffic, power supply and telecommunication assumed at a several points. Loss estimated (be Rs. 3 crore. (iv) Vehicular traffic, power supply and telecommunication for the telecommunication lines. 15 Mar. Jammu & Kashmir Moderate 2 persons killed and one person injured at Rang Payen (Kupwara district) due to avalanche. (iv) Ranguara district of the telecommunication lines. (iv) Vehicular traffic, power supply and telecommunication lines. (ii) Banihal area worst affected. (iii) National highway between deman & Srinagar cut off. CRITERIA Moderate: Night temperature \$ 8°C. below normal. Severe: Night temperature \$ 8°C. below normal. Severe: Night temperature \$ 8°C. below normal. Moderate to Severe: Night temperature \$ 8°C. below normal. Moderate to Severe: One person died in Jalal village. 2 persons died. Moderate to Severe: One person died at Macchiwara. 4. 15-31 Jan. Uttar Pradesh Moderate to 37 persons died in various.	(1) (2) (3)			1985 BERN BERN BERN BER	
ways damaged at several points. Loss estimated to be Rs. 5 crore. (iv) Vehicular traffic, power supply and telecommunication system disrupted due to uproofing of many trees and snapping of the telecommunication lines. 4. 15 Mar. Jammu & Kashmir Moderate 2 persons killed and one person injured at Rang Payen (Kupwara district) due to avalanche. 5. 17 Mar. Jammu & Kashmir Mederate 2 persons died at Machel area (Kupwara district) due to avalanche. 6. 50 & 51 Dec. Jammu & Kashmir Heavy (i) Banihal area worst affected, (ii) National highway between Ammu & Srinagar cut off. TABLE - II : COLD WAVE CRITERIA Mederate : Night temperature 6 to 7°C. below normal. Severe : Night temperature > 8°C. below normal. One person died in Jalal village. 2. 2-9 Jan. Chandigarh Mederate 2 persons died. Moderate to 37 persons died in various.			(5)		(6)
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Moderate 2 persons died at Machel area (Kupwara district) due to avalanche. 6. 30 & 31 Dec. Jammu & Kashmir Heavy (i) Banihal area worst affected. (ii) National highway between dammu & Srinagar cut off. CRITERIA Moderate: Night temperature 6 to 7°C. below normal. Severe: Night temperature > 8°C. below normal. 1. 2 Jan. Punjab Moderate to Severe 2 persons died at Machel area (Kupwara district) due to avalanche. (ii) Banihal area worst affected. (iii) National highway between dammu & Srinagar cut off. One person died in Jalal village. 2 persons died. 3 11 Jan. Punjab Moderate One person died at Macchiwara. 4 15-31 Jan. Uttar Pradesh Moderate to 37 persons died in various.	4. 15 Mar. 18wide Jammu & Kashmir	Moderate	Injured at Kang Paven (Kunyana		the telecommunication lines.
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3. 11 Jan. Punjab Moderate One person died at Macchiwara. 4. 15-31 Jan. Uttar Pradesh Moderate to 37 persons died in various.	2. 2-9 Jan. Chandigarh	Moderate to Severe	One person died in Jalal village.	11.	
	3. Punjab 4. 15-31 Jan. Uttar Pradesh	Moderate Moderate	ar pradech Heavy	amacha	16-25 Fob H

(1)	(2)	(3)	(4)	(5)	(6)
5.	17 Jan.	Haryana	Moderate	One person killed at Jhamarheri (Karnal district).	
6.	8 Feb.	Punjab	Moderate	One person died in Phagwara.	valuerea. Polymosas and acess
7.	16 Feb.	Chandigarh	Moderate Daniel	One person died.	
8.	22 Feb.	Madhya Pradesh	Moderate		Vegetable and pulses damaged in Malwa region of Indore division.
9.	29 Feb.	Madhya Pradesh	Moderate	Moderate One pe	Opium crop in Banpura, Kideswar, Budwa areas of Mandasaur divi- dion, damaged.
10.	Dec. (3rd & 4th week)	Bihar	Severe Severe	97 persons died in the State, death toll reported as follows:	with all the many it was the company of the many of the company of
led		HAMARISHTAA		Gaya - 40 Mokameh Barouni Industrial Belt - 32	
					anwalsh) calou."
	Say.		os died (5 in Khamw t and 2 cach in Kri Massau districts)	Bokaro - 1 Hajaribagh - 1 Aurangabad - 1	
11.	20-31 Dec.	Punjab	Severe	4 persons died (2 in Amritsar and one each in Bhatinda and Sarala).	Crops damaged due to frost.
12.	22-25 Dec.	North-West Uttar Pradesh	Severe	10 persons died.	than suglar

(1)		(3)			මත මත යන කො යන නිස් යන මා ද ය	O AND SEC COS AND
peter sale and any sale of	the fact that the contract the fact and the same and the contract the fact was also				□□ = = C = = E = = E	(6)
			· (folan	TABLE - III : HEAT WAVE CRITERIA	Нагуала	17 Jan,
1.	14-20 May.	bagwara.	died in F	Mcderate: Day Temperature 6 to 7°C. above Severe: Day Temperature > 8°C. above	normal.	.det 8
	le and mulees damage	Uttar Pradesh	Moderate	10 27 910 40 70		
2.0018	17 May. al to main	Vidarbha region	Moderate	radesh. Moderate		120 Peb
J 1.1	20 May. The same and the same a	Punjah	Moderate	One person died in Mehta (Kapurthala district).		
4.	22 May.	Marathwada region (Maharashtra)	Moderate	4 persons in Nandod 9798		
5.	24 May.	Madhya Pradesh	Moderate	2 persons died and several other admitted in hospital in Balaghat district.	45°C. to	emperature recorded phat.
6.	25 May.	Marathwada region (Maharashtra)	Moderate	6 persons died in Aurangabad district.		
7.	26 May.	Andhra Pradesh	Severe	9 persons died (5 in Khammam district and 2 each in Krishna and Prakasam districts).		
8.		Punjah	Moderate	2 persons died in Sangana 1		
9.	1 L T	Uttar Pradesh	Moderate d Severe			1. 20-31 Dec.
			s died.			

(1)				(5)		(6)
1,0016		ANDHRA PRADESH All districts (except Srikakulam, Visakhapatnam and Vizianagaram) KARNATAKA	TABLE - IV:	DROUGHT	par wor (ii) The	alaseema, Telangana and some ts of coastal Andhra Pradesh st affected. dry spell damaged Kharif crop th about Rs. 830 crore.
2.	Aug. (2nd week)to Sep. (3rd week)	All districts (except Chickmagalur, Kodagu, Dakshina Kannada, Uttara Kannada and Shimoga districts)	Moderate to Severe		(ii) 60% dro (iii) 7,3 and lab (iv) Mor	of the cropped area affected by sught. 7,655 small and marginal farmers 1.03 million agricultural courers affected. re than 5 million cattle affected to shortage of fodder.
3.	Aug. (2nd week) to Sep. (1st week)	MAHARASHTRA Marathwada and Vidarbha regions and Ahmednagar, Dhule, Nashik, Sangli and Satara districts in Western Maharashtra	Moderate to Severe	na injured when felt on their in Asurem coases;	(i) 23. lan (ii) Nan whe wit (iii) Hea baj (iv) Acu	awada region, 77 lakh hectares of cultivated ad affected. aded district worst affected, ere crops in 1185 villages thered. avy damage to groundnut and jra crop reported. ate drinking water shortage corted. In Latur district jara river gone dry.

In Vidarbha region,

Kharif crop particularly Paddy damaged. The loss of crop, pulses, and cotton reported as follows:

			- b - z -			
(1) (2)	(3)	(4)	(5)		(6)	and and the same and the same that the same
	(1) Reyalaceens, Telan		TABLE IV STRUCTURE	Cotton 9 lakh bales valued around Rs.230 crore	Crop 2.1 million tonnes valued around Rs.330 crore	0:1 seeds 0.375 tonnes valued around Rs.200 crore
ged Enarif eres	and line or after the day of the state of th			villages throu	on people in 18 ighout Maharas to poor kharif	htra
	RAJASTHAN		of clareful.			. But
4. 12-27 May	South Rajasthan	Moderate to Severe	100 villagers died due to water borne diseases as there was acute shortage	shortage	conditions and of drinking w d in South Raj	ater

of drinking water.

(ii) Many villagers forced to

migrate to cities.

(1)	(2)	(3).	(4)	(5)	(6)
	19 Feb.	Marion (Remain) depr	CRITERI	V: SQUALLS A e: Surface wind speed (in g : Surface wind speed (in g	usts) upto 80 kmph. usts) ≥ 80 kmph.
1.	5 Apr.	Cachar and Karimganj	Severe (100 kmph)	3 persons died and 50 injured.	Power supply and telecommunication services disrupted.
2.		New Delhi	(70 kmph)	4 persons including 2 children electrocuted. One child injured when he touched a live wire fallen due to the storm.	15 Mar. Koshikode (Kerala)
3.	12 & 13 May	Cuddapah and Kurnool (Andhra Pradesh)	Moderate		Market-yard, weavers' colony and R.T.C. garden at Nandikothur and Proddatur badly damaged.
4.	19 Jun. begand		Moderate	3 persons injured when a tree fell on their house in Ashram colony.	

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(1)	(2)		(4)			(6)
				TABLE - VI : GALE CRITERIA		TO SEE SO CO SE DE CO SE
1.	2 & 3 Feb.	Ernakulam (Kerala)	Strong	Strong : Wind speed ≥ 75 kmph.	(i)) Several houses and shops in Kumbanadu and Pattimuttam areas damaged.
2.	15 May.	Kozhikode (Kerala)		A woman killed under a fallen	(111)	Standing crop badly damaged. 2 big trees uprocted.
3	and Production	i) Quilon (Kerala)	Strong	a 10 workers in/tile factory		Several houses damaged and many trees uprooted.
4.	(ii)) Alleppey Cannanore (Kerala)	Strong	A woman died at Thannarmukkam when a tree fe Il over her. 2 persons died in a house collapse.		30 houses damaged.
				TABLE - VII : DUSTSTORM CRITERIA		Damage to public property estimated to be Rs. 20 lakh.
				Moderate: Wind speed between 39 to horizontal visibility upt Severe: Wind speed ≥ 75 kmph. visibility upto 50 metres	to 500 1	h and metres. orizontal
		NO DU	STSTORM EV	THUC LEDE DESCRIPTION		

NO DUSTSTORM EVENTS WERE REPORTED FROM ANY PART OF THE COUNTRY.

				(6)
(1)	(2)	(3) (4)	(5)	
	A series and the series of the	TABLE	E - VIII : LIGHTNING	
1.	19 Feb.	Bhatinda (Punjab)		
2.	28 Mar.	Quilon (Kerala) Sieri ede ni mai de ser		
3.	20 Apr.	Malappuram (Kerala)	3 women killed in Vallikunnu and Tiruangadi villages.	
4.	21 Apr.	Shimoga (Karnataka)	injured in Gandhi and Ghatnanall	
5.	12 May	Mahabubnagar (Andhra Pradesh)	One person and 2 bullocks killed in Goppambally village near Achampet.	
6.	13 May	Guntur (Andhra Pradesh)	 (i) 2 persons injured. ii) 280 goats and 4 buffaloes killed at Gundalapalli near Narasaraopet. Loss estimated around Rs. 1.2 lakh. 	
7.	17 May	(a) Alleppey (Kerala)	A woman killed at Mavelikara.	
		(b) Trivandrum (Kerala)	A 9-year old girl at Karakulam killed and 7 other injured at Varkala.	
8	18 May	Cannanore (Kerala)		
9.121	10 Jun.	Ahmednagar (Maharashtra)	6 persons killed in Parner taluka.	
10.	13 Jun.	Buldhana (Maharashtra)	2 persons killed and 2 seriously injured in Dahid village.	
11.	16 Jul.	Nanded (Maharashtra)	2 persons killed.	
12.		Durg (Madhya Pradesh)	A child killed at Sundongari village.	
			(1) 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	

		(5)
(1)	(2)	$\binom{3}{2}$
13.	22 Aug. 23 Sep.	Jabalpur (Madhya Pradesh) Killed Parbhani (Maharashtra) Parbhani (Maharashtra) Parbhani (Maharashtra)
14.	2) Sep.	while working in the field. (Maron) working
15.	27 Sep.	(a) Buldhana (Maharashtra) 4 persons killed in Rukhed (Maharashtra) Tukadi village.
		(b) Nashik (Maharashtra) 3 persons killed.
16.	8 Oct.	Aurangabad (Maharashtra) 1 ightning struck a school building at Khuldabad.
17.	17 Oct.	Raigad (Maharashtra) village of Karjat taluka.
		TABLE - IX: THUNDERSTORM CRITERIA
		Moderate: Loud peals of thunder with frequent lightning flashes, moderate to heavy
		rains and maximum wind speed 29 to 74 kmph. Severe: Continuous thunder and lightning, heavy rains and maximum wind speed > 75 kmph.
1.	7 Feb.	Karaikal (Pondicherry) Severe One person died in hut A tornado swept Budhanur, 17 km. (Tornado) collapse. from Karaikal at 0910 hrs IST.
2.	19 Feb.	Ludhiana (Punjab) Severe About 25 persons injured. (i) A tornado hit pilge village and subsided at Mangli village affecting an area of radius 2 km. (ii) 15 houses and 2 godowns damaged. Several roof tops of temporary constructions blown off.
		(iii) Many electric poles and trees uprooted.

-	(9)	er dagt fann mer sjill jone som men dan den den sen som men men met met men den den sen den den me	(5)	- 11 - (4)		(1)(2)(1)
(1) (2)	(3)	(4)4072018	H : X = MICA(5)	(6)
3.	26 8 27 Mar.	Jorhat (Assam)	xed with rain.		families home	apsed rendering many less.
4.		(a) Bangalore (Karnataka)	Severe solutions and severe seems and severe seems.	2 persons killed due to e rocution and 3 other inju- when a tin sheet fell on crowd watching a football	the	rost-tops and nuts ore pulses uprested r and completely franch
pur . 0	the crop in Kutar Badnagar and Bijar es destroyed. ones weighing 50-2 eported. Llages affected.	(b) Calcutta (West Bengal)	Severe Maderate de la	9 persons injured in two separate incidents of was collapse.	paralysed. (ii) Several trees	rupting power supply.
	eported at Kanpur gms at Jelaun and	and 50	Severe	One man died and 12 in when a thatched structur collapsed at Koramangala	e - red il ekombini	Personal mad to the versel of the versel of the contract of th
6.	26 May dans	Cuttack (Orissa)	Severe	One person killed and ot injured at Athagarh in h collapse.	cher nouse	thing and belegate the cation and are the State Ele-
7.	stimated around	Greater Bombay	Moderate	One person injured due t electrocution in central Bombay.	in the horse ten an	
	hagamab vibac	iv OO1 (1) ibasM sm (agorO, (11)	e perished to Ra a district.	derate Many pattl	Bhatiada, Faridhot) Mod Ferosapin and Ludhiana (Panjab)	- 18-20 February
			darana Hamiro	lerate 2 persons l district.		
	of roof tops of d houses blown awaremapuram village giri taluk.	thatche at Site in Udai	killed.	erace (i) bne person (ii) Several cal		report in terms

TABLE - X: HAILSTORMS CRITERIA Slight : Sparse, usually small in size and often mixed with rain. Moderate : Fall abundant enough to whiten ground. Heavy : Includes at least a proportion of large stones. 1. 10 Jan. Khandva (Madhya Moderate : Fall abundant enough to whiten ground. Heavy : Includes at least a proportion of large stones. 2. 12 Jan. Raisen (Madhya Moderate : (i) One 5-year old girl died. (ii) 2 buffaloes killed in Migagar willages affect village. (ii) 25 buffaloes killed in Migagar willage. (ii) 125 villages affect to Heavy Pradesh) 4. 12 Feb. Raisen (Madhya Heavy : Pradesh) 5. 18-20 Feb. Bhatinda, Faridkot, Perozepur and Indihana (Panjab) : In Bhatinda district. 6. 19 Feb. Faixabad and Hamirpur Moderate (Vuttar Pradesh) : Moderate (Vuttar Pradesh) : In Bhatinda district. Crops badly damaged (Vuttar Pradesh) : In Crops badly damaged to that the Andrea Pradesh) : Several cattle perished. (I) Number of roof tops thatched houses lone at Sitaraparam village. (I) Mimber of roof tops thatched houses lone at Sitaraparam villages and salt sitaraparam villages. (I) Number of roof tops thatched houses lone at Sitaraparam villages and salt sitaraparam villages. (I) Number of roof tops thatched houses lone at Sitaraparam villages. (I) Mimber of roof tops thatched houses lone at Sitaraparam villages.	
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in Udaigiri taluk. (ii) Considerable damage crop reported.	+0

(1)	(2)	(3)	(4)	(5)	(6)
8.	26 & 27 Mar.	Basti, Gorakhpur and Kheri (Uttar Pradesh)	Moderate	2 persons died in Basti district.	 (i) Hailstones of size of medium potato reported at Lakhimpur-Kheri. (ii) Mango and other standing crops
		uprovied disrup			badly damaged. (iii) Large number of roof-tops and huts blown **12 away.
					(iv) Electric/telephone poles uprooted disrupting power and communication
				Moderate	ada system.
9.		Ferozepur (Punjab)	Moderate	Large number of sheep and goats perished.	(i) 19 villages in Fazilka tehsil affected.
		Standing crop b			(ii) Crops and orchards extensively damaged.
10.			reins		Crimis al & duntal
	leated.	Visakhapatnam (Andhra Pradesh)	Moderate		(i) Yellamanchili, Paravada, Chodavaram and Anakapalli villages badly affects
		(44) Standing crop in			(ii) Banana plantation and mango orchards suffered heavy loss.
		,			(iii) Electric instalations and telephone
	10.200	Vientury and Heavy	raiss	A polynomic Column in a second	lines snapped. Loss to State Ele- ctricity Board estimated around Rs. 1 lakh.
11.	28 Apr.	Bengaigaon (Assam)	Heavy	Abe-stay.	(i) Birjhora tea estate completely damaged.
		SAUGEN ON THE SERVICE		t personner monuntrag	(ii) Several thatched houses blown off.(iii) Extensive damage caused to vegetable crop.
2.	5 May	West Godavari (Andhra Pradesh)	Moderate		100 huts and 50 tiled houses des- troyed in Chintalapudi taluka.
3.	12 May	Jammu (Jammu & Kashmir)	Moderate		Power and water supply in Jammu city and its surroundings disrupted

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(1)	(2)	(3)	(4)	(5)	(6)
14.	17 May	Trivandrum (Kerala)	Moderate	ererstoll	 (i) About 1000 houses damaged in Niyyatinkra taluka. (ii) Many trees/electric/telephone poles uprooted disrupting power supply. (iii) Broadcast from AIR Trivandrum remained disrupted for more than 4 hours.
15.	22 May	Bangalore (Karnataka)	Moderate bus goods to redden egyst		Damage worth Rs. 25 lakhs occurred to Aero-Engine division of Hindusts Aeronautics Ltd. and New Gowt. Electronics Factory.
16.1	. 26 Aug.	Baramulla and Badgam (Jammu & Kashmir)	Moderate	Mederato	Standing crop badly damaged.
	o ognan ino i	Jammu & Kashmir	Heavy		 (i) 505 villages affected. (ii) Standing crop in 24,291 hectares of land extensively damaged.

S.No	. Date/Period	Area affected	Intensity (_river_)	Casualties .		Remarks //
			TABLE - XI :	FLOODS & HEAVY RAINS		g. Joy (und week) Darreng Gralpare.
	were Dhubri; Coa.	ANDHRA PRADESH	hile k sibers inci		i gao	ishnors, Dibrogard, Dibrogard, Lakhimpor and Nove
doa	13-17 Feb.	(a) Nallore	Heavy rains	5 persons died		Paddy crop in 15466 hectares and coconut in 8097 hectares completely damaged. Chilli crop in 1619 hectares partially damaged. Total loss estimated to be worth Rs. 15 crore.
		(b) Prakasam	Heavy rains	Severe Se		Paddy crop in 2530 hectares, Tobacco in 1200 hectares, Corriander in 2500 hectares and Red gram in 2100 hectares completely damaged. Loss estimated to be Rs. 1 crore.
		(c) Chittor	Heavy rains	200 sheep and 50 cattle perished.	e	Paddy crop in 1269 hectares and groundnut crop in 4771 hectares completely damaged while paddy crop in 8261 hectares, groundnut crop in 587 hectares and chilli in 1215 hectares of land partially damaged. Loss estimated to be worth Rs. 7 crore.
	10 Sep.		Heavy rains	4 persons injured in a wall collapse in Pandurangapuram area of the city.	f	Several thatched houses damaged.
1.	13-17 May	Cachar and Karimganj	Severe (flash floods)	4 persons including 3 children died.		Highway link between Assam and Tripura disrupted.
	Jun. (2nd week)	March the Karry d	(Brahmaputra and its tributaries)	(al) the solding and	(ii)	Standing crops in large tract of low lying reverine areas damaged. Many villages in Upper Assam submerged under flood water. Some parts of Kaziranga National park in Jorhat district inundated by flood waters and animals forced to take shelter to safer places.

(1) (2) dramed	(3)	. (4) 11 (4)	(5)	hotochia and (6) hotogyatan
Dhu Laki	rang, Goalpara, bri, Dibrugarh, himpur and Nowgong	(Brahmaputra and its tributaries)	3 persons drowned in Marigaon sub-division while 4 others includ- ing 2 children washed	(i) One lakh people in 200 villages affected. The worst affected districts were Dhubri, Goalpara and Lakhimpur.
17500 bactares and nocount res completely damaged. a 1519 bectares partially at less certamated to be crore.	in 8097 bectar	(ii)	away in Char village (Darrang district). A 10-year old child died in Dibrugarh district.	 (ii) In Dhubri district 140 villages badly affected. (iii) More than 50 houses washed away. (iv) Standing paddy and jute crop damaged.
2530 hertares, Tebacce				(v) Road communication completely disrupted.
4. Jul. (4th week) Barr Lakh	peta, Dibrugarh,	Severe (Brahmaputra, Tista	28 persons died.	(i) 1832 villages with 6 million population affected.
Tenn hectures and grounding		and their tribut- aries)		(ii) Entire 800 km. long valley from Dibrugarh to Dhubri submerged under flood water.
rop in 8261 becames, ground of tend party of your damaged. at tend party of your damaged. d do ne worth his Forger.	while paddy e aut crop au 5 1215 hectores . Loss estimate			 (iii) In Lakhimpur district one lakh people affected and 20,000 families rendered homeless. (iv) Road communication in several parts of the State remained cut off.
5. Aug. (4th week) phuk		Severe (Brahmaputra and its tributaries)		(i) 20 villages covering 50 sq.km. area washed away, (ii) Standing jute crop badly affectiii) Damage to property and crop estimated around Rs. 4 crore.
4th week) Darr Goal Kamr	esgalicy rank (fi) w funit volum to examp ence (fif) exacts forces	(Brahmaputra and its tributaries) (ii)	43 persons died and many reported missing. Hundreds of cattle perished.	(i) In Lakhimpur district 119 villages with population more than one lakh affected while in Barpeta district 1.5 lakh peop affected. In Goalpara district 250 villages with population more than 2 lakh affected. In Kamrup district about 20,000 families in Nalbari and Rangiy
estaw joseff od begombning sy os ne konte enna es becare the state of	alaman ban			Kamrup district about 20,000 families in Nalbari and Rangi sub-division affected. Total number of persons affected: About 2 million

About 2 million.

(ii) 3000 families rendered homeless and thousands marconed. (iii) Paddy crop in 600 sq.km.area completely damaged while Sali bas agreefty) Stendingserop in 1.46 million hectcrop badly damaged. (iv) Entire north-eastern region cut off for 2 days (16 & 17 Sep.) from the rest of the country. (v) Flood water breached roads, railway tracks and embankments disrupting road/railway communication. (vi) Several houses washed away. Sendone of emb batter BIHAR at various points in Gandak embank Jun. (2nd to Bhagalpur, Severe
4th week) Darbhanga, East (Chanan, Ganga, Jun. (2nd to 14 persons died. (i) 3 million people in 1200 villages affected: 300 families Champaran, West Gandak, Kosi and rendered homeless. and Champaran and Narayani) (ii) Worst affected district was Munger Darbhanga. A population over 1.5 lakh from this district affected. (iii) Crop worth Rs. 15 crore damaged. (iv) 15,000 houses destroyed. (v) 3 km long embankment of Gandak breached, affecting 49,000 people in 30 villages of Madhuban and Thakarha block. (vi) 3 km stretch of Piprasi-Pipraghat embankment washed away by swollen Gandak along Bihar-Uttar Pradesh border. (vii) Road communication disrupted due to change in course of river Chanan in Bhagalpur district.

Bhagalpur-Dumka road inundated.

ed.

Jul. (2nd to Bhagalpur, East Champaran, Severe 22 persons (i) Over 6000 villages affected. 4th week and West Champran, Katihar, (9 major rivers died. (ii) 9 million persons affected, 50,000 Aug. (1st week) Madhubani, Munger, Samastipur, viz.Bagmati. persons marconed and shifted to Siwan, Muzaffarpur, Saran, Chanan, Gandak. safer places. Patna, Darbhanga, Sitamarhi, Burhi Gandak. (iii) 45,000 houses collapsed. Saharsa, Begusarai, Khagaria, Ganga, Kamala (iv) Standing crop in 1.46 million hect-& Bhojpur Balan and are area submerged under flood water. Mahananda) Loss estimated to be worth Rs. 90 crore. (v) Madhubani district cut off from the rest of the State as the flood water submerged more than ten periphery roads, suspending the vehicular traffic. (vi) 80 villages in West Champaran district affected due to breaches at various points in Gandak embankment. (vii) The Chanan river in Bhagalpur district changed its course breaching Babua embankment, inundating entire Jagdishpur block. (viii) In Madhubani district 5 lakh people affecting while in Katihar 300 sq.km. area submerged under flood water affected 4 lakh people. (ix) Vehicular and railway services disrupted on N.E.Railway as Sitamarhi-Darbhanga section submerged under flood water. Muzaffarpur-Raxaul National Highway breached at two places. Severe Aug. (3rd and Aurangabad, Bhojpur, (Gandak, Pun Pun (i) 52 persons died. (i) 86 lakh people in 7739 villages 4th week) East Champaran, West

(ii) 35 cattle peri-

shed.

in 188 blocks, and 1902 panchayats,

(ii) Darbhanga district worst affected.

affected.

and Son

Champaran, Darbhanga, Gaya,

Muzaffarpur, Palamau,

Patna, Saran and Siwan

(1)	(2)	(3)	(4)	(5)	(4)	(6) 763
t off t off t off d under d under do under to to to col. col. febsana febsana col. febsana	districts on of the stat of the state of the state of the state of the of the of the of the state of the of the of the of the state of the of	Gaya different variation of the second of t	Severe (Flash flood in Lilajan) Severe (Bagmati, Ganga and Kosi) Severe (Daroaha) Severe (Mahananda) Severe (Mahananda)	4 persons drown boat capsized in Bharampur (Site bandaria)	when a country in Bagmati near amarhi district) (so) when a boat (shidma)	Flash flood washed away diversion bridge on chatra-Gaya road disrupting vehicular traffic. (i) In Saran and Vaishali districts 3 lakh people affected. In Vaishali district flood water of Ganga submerged 130 villages in 5 blocks. (ii) In Saharsa district the turbuler Kosi river inundated more than 80 villages, 20 villages under Nauhatla block worst affected. (iii) Crop worth Rs. one crore damaged (iv) 3 km. long stretch of Sonpur-Chapra main road submerged under flood water, disrupting vehicular traffic (v) Kosi river breached its eastern embankment submerging approachable road and 1 km streatch of rail track. Flood water entered Katihar tow due to a breach right embankmen of river Mahananda. Flood water entered its embankmen of river Mahananda. (i) Kamla Balan breached its embankment near Luakaha (Madhubani district) inundating vast areas 500 people rescued to safer places. (ii) 25,000 people marooned in Saharsa district. (iii) All educational institutions closed indefinitely. (iv) Road and railway communication completely disrupted.

(1) (2) (3)	(4)	(5)	
GUJARAT 1. Jun. (3rd week) Bhavnagar 2. Jul. (1st week) Saurashtra region	Severe Severe	6 persons died and 3	Property worth Rs. 10 lakh at a ship yard near Bhavnagar, damaged.
Jul. (2nd week) Valsad, Dangs and Surat. Tehnic Spatia Valsad Surat. Teh	Severe (Ambika, Auranga and Purna)	injured. 17 persons swept away.	 (i) All these three districts cut off from other parts of the state. (ii) 51 km. stretch of a road between Vaghai and Saputara submerged under flooded nullah near Baj village disrupting vehicular traffic to Maharashtra. Baj bridge suffered extensive damage. (iii) 45 km. stretch of a road between Ahwa and Saputara damaged due to landslide. Extensive damage to
Flood water entered Natchar town due to a breachtrichit empankment of river Manananas.	wned when a boat offen Darosha.	a) . capsized in aw	atleast 5 bridges reported, causing a loss of several lakhs of mpees. (iv) Estimated damage of Rs. One crore to public property including culverts, bridges and roads reported in Dangs district alone. (v) Standing crop washed away. Many houses damaged.
4. Aug. (1st week) Banaskantha, Junagadh, Mehsana	Severe (Kheri, Pushpavati and Rupen)	3 persons including 2 boys died and 3 injured in house collapse.	 (i) Heavy loss of property from Mehsan district reported. (ii) 6 houses collapsed. (iii) A car swept away on Ahmedabad - Delhi National highway near Mehsan (iv) Railway and road traffic disrupted

(1)	(2)	(3)	(4)	(5)	(6)
		Panchmahals and	Severe (Narmada and its tributaries)		 (i) Flood water entered low lying area of Bharuch and Ankaleshwar towns along south bank of the river. ii) People from many villages along the Narmada embankment shifted to
reibni	r point to Sr	(i) Number of houses		(ii)	safer places. ii) People living in slums along the bank of Sabarmati in Ahmedabad shifted to safer places.
6.	r city.	week) Bharuch	Severe (Narmada)		(i) 21 villages affected. (i) More than 7600 people and nearly 10,000 cattle rescued.
7.	Sep. (2nd w	veek) Saurashtra region	Severe (Flash flood in Kalwa)	(Figure Carrett	i) 180 villages threatened due to flash flood as 18 irrigation dams overflown.i) All the low lying areas in
1.	trix wires	JAMMU & KASHMIR		Heavy rains	Junagadh town submerged.
lore	17 Jul.	Jammu weld f secret alages (iii) to erologes bas	Heavy rains	(i) 15 houses collapsed and many other damaged.
2.	10 Aug.	Kargil rd?	Cloud burst	(i	i) All vehicular traffic disrupted. Srinagar - Leh National highway
3.	14 Aug.	Kargil	plantation workers died a madsive landslide in		breached between Kargil and Mulbekh.
		The second secon	Cloud burst 14 pec		6 houses washed away in Sachey Karoor village.
4.	24 Aug.	Kargil	Heavy rains 2 pers	sons and several injured in Chokaten ge, 70 km. from	

(1)	(2)	(3)	(4)	(5)		(6)
be kong	27 Aug.		Cloud burst	Several (Samada, and area area area area area area area are	bus a	Vehicular traffic on National Highway No.1 connecting Srinagar with the rest of the country, disrupted. Two km. stretch of highway near Barsoo village, 49 km.from Srinagar submerged under 3 metre of water.
6.	28 Aug.	Barmulla	Cloud burst	12 cattle perished at Noorpur.		
7.Ven		Poonch KARNATAKA	Cloud burst	6 people (including 3 women) killed at Gagrian Sawian village.	(i) (ii)	Number of houses damaged. Main water supply point to Srinagar city badly damaged disrupting water supply to Srinagar city.
1.00 smab n	15 Jun.	Kodagu	Severe (flash flood in Cauvery)	One person washed away near Napeklu.		Article Constitution of the Constitution of th
		Dakshina Kannada		Heavy rains	(ii)	Several houses and roof tops collapsed. Many trees, electric wires blown off. Mangala Express between Bangalore and Mangalore cancelled due to landslide between Yedekumari and
Evaned	With Level the	194 - Aug 9198		. danid burst		Shrivagilu.
3.	2 & 3 Jul.	(a) Chimagalur	Heavy rains	13 plantation workers died in a massive landslide in Mudigere taluka.		The state of the s
,		(b) Shimoga	Heavy rains	Two workers killed in a landslide.		

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(1)	(2)	(3)	(4)	(5) 	· · · · · · · · · · · · · · · · · · ·
4.	week)	Chikmagalur, Kodagu and Shimoga	Tunga and Kabini)	at Madikere.	 (i) Vast stretch of Paddy field flooded. (ii) Vehicular traffic between Chikmagalur and Shimoga disrupted.
5.		Bangalore and as aid	del	One person died in house collapse.	Several huts collapsed.
L.	-23 Apr.	KERALA Malappuram	Severe (Flash flood in Perinathalamann	3 women drowned.	produce serve de spepting relative e
2.	15 Jun.	(a) Kottayam	Heavy rains	25 people injured when a bus overturned in Murattupazha.	(i) Low lying areas submerged. (ii) Several roads damaged.
		(b) Wynad	Heavy rains	A family having 8 members died when their house submerged under water at Futhupaddy, 40 km east of Kozhikode.	Several roads washed away.
3.	16 Jun.	(a) Kezhikode	Heavy rains	2 fishermen drowned in sea.	Widespread damage occurred to agricultural property.
		(b) Palghat	Heavy rains	2 boys killed in a house collapse at Karimba near Mannarghat.	Standing crops extensively damaged.
4.	17 Jun.	(a) Alleppey	Heavy rains	2 fishermen drawned at Punnapara.	Extensive damage to agricul- ture reported.
		(b) Cannancre	Heavy rains	2 persons drowned and one woman electrocuted in Tellichery.	Fin Vehicus and the convenience
		(c) Malappuram	Heavy rains	One person died and 4 injured in Perinthalamanna.	called (a)

(1)	(2)	(3)	(1)		
inches a company			(4)	(5)	(6)
5.	17-28 Jun.	Ernakulam	Heavy rains	17 persons died.	Syntamore of the same of the s
6.	18 Jun.	Alleppey	Heavy rains	au hadakero.	(i) Paddy and other crops in about 1000
7.	1-3 Jul.	Mercia d			hectares land badly damaged. (ii) Hundreds of trees uprooted.
G.	and the same of th	Wynad	Heavy rains	16 people died.	(i) 50 hectares of land buried under the debris as huge mass of rock and earth crushing down from the hill on 2nd.
E W					Vengapally.
8.	5 Oct.	Alleppey	Heavy rains	samana (e)	(iii) Plantation crop in 41 hectares sub- merged in Mundakayil estate.
		Sarvi wud (1)	Heavy Tarins	A 60-year old man and 2-year old boy drowned when a country boat cap- sized in Vembanad lake	To the Harry Da
9.	6-8 Oct.	Kozhikode	Heavy rains	off Thuravur.	
	16 dres Bas Kao		neavy rains	17 people killed in landslide.	(i) Many huts collapsed.(ii) Widespread damage to roads and crops reported.
		MADHYA PRADESH			The state of the s
1.	23 & 24 Jul.	Indore	Heavy rains	6 persons including 2 children died in separate incidents of house collapse.	
2.	3 Aug.	(a) Indore	Heavy rains	Shearness green angel	
		(b) Ujjain	Heavy rains,	Tura_	Many houses collapsed.
3.	5 Aug.,	(a) Balaghat	Heavy rains	3 women drowned in river Vainganga 12 km, from Balaghat.	(i) 3 kutcha houses damaged. (ii) One tea stall swept away. (iii) Many trees uprooted.

(1)	(2)		(3)	(4)	(2)	(1)	(6)
		(b)	Ratlam	Heavy rains	One person drowned in Name nullah.	hi enter veel	8. 130 Angis commission of the
		(c)	Ujjain	Heavy rains	One person drowned in Bhunnullah.	rinkhal	an line completely proclypes
4.	11 Aug.	(a)	Bhopal	Heavy rains	5 persons died in a be	enter Arrai) State capital cut off from all the important towns.) The road connecting to Indore,
97	. 8 to 10 char	h Rs.	row quro litada becama hama	edilde	al e of beth spected d	lood in	Gwalior, Sagar, Jabalpur submerged under water disrupting vehicular traffic.
		(b)	Rewa	Severe(Son)	12 persons drowned.	-med bue ms	
	danaged.	(c)	Vidisha	Heavy rains		SELET LAIRS) Vidisha town cut off from Sironj, Baroda, Sagar and Gyaraspur.
					Douse collapse.	enter (ii) Betwa bridge near Vidisha sub- merged under 0.6 metre of water.
5.	12 Aug.	(a)	Dewas	Heavy rains	One person died and anoth jured in a house collapse Jabran colony.	ner in-	2. 27 Anger Majara Santa R
		(b)	Ratlam	Heavy rains	aword exelland male 21	anias vyps	12 houses collapsed.
6.	rupted.	flood to dis	Balaghat ansis gaivi well itters assessed value assessed	Nanai nailan,	103 people died and 108 i when 5 bogies of Jabalpur passenger train fell into Nahar nullah.	r-Gondia	Touther Greater Combas E
7.			Bhopal Hilled of				6 houses collapsed:
			Khandwa	Heavy rains	A 24-year old woman an old airl sashed away wi crossing dullah at Suk villa e. 8 km from Am		i) Khandwa town cut off from rest of the state. i) Vehicular traffic completely disrupted.
		(c)	Raipur	Heavy rains	4 persons died and 12 in house collapse.	jured in	

				- 26 →	
<u>(1)</u>	(2)	(3)	(4)	(5)	(6)
8.	19 Aug.	Jabalpur	Heavy rains	 (i)5 persons died when a bus fell into a nullah near Jabalpur city. (ii)0ne person died when water entered into the house. 	THE THE STATE OF T
9.	20 Aug.	Hoshan gabad	Heavy rains	5 persons died in a house collapse.	
10.	21 Aug.	Ratlam	Severe (Flash flood in Gandhisagar dam and Chambal river)	6 persons died in a landslide at Rampuria.	Kharif crop worth Rs. 8 to 10 crore damaged.
11.	22 Aug.	(a) Raigarh	Heavy rains		TVOVE CARACTER C
	nien en err	(b) Raipur	Heavy rains	2 women and a child killed in a house collapse.	A bridge at Pelykhedi damaged.
12.	27 Aug.	Ujjain MAHARASHTRA	Heavy rains	ensilos samera di benut	One bridge badly damaged.
1.	9 Jun.	Pune	Heavy rains	12 slum dwellers drowned on Shankarseth road.	event male as (d)
2.	15 Jun.	Greater Bombay	Heavy rains		(i) Low lying areas flooded. (ii) Vehicular traffic disrupted. (iii) Airflights delayed or diverted
3.	30 Jun.to 2 Jul.	(a) Amravati	Heavy rains	A 24-year old woman and 11-year old girl washed away while crossing nullah at Sukali village, 8 km. from Amravati.	to Delhi. Low lying areas in the city remained submerged under water for two days.
				ber bost to de de de daler	

(1) (2) (3)	(4)	(5)	(#)	(6)
between (b) Greater Bombay and send and send some and some some some some some some some some	verhead (ii) buts buts bombay (iii)	other injured when an over the set and the	(ii) (iii) anis (iv) (v)	Century's second highest rainfall 54.0 cm in a day recorded by Colaba observatory on 2nd July. Normal life completely paralysed. All low lying areas on both sides of railway lines and a large number of roads submerged under water disrupting railway and vehicular traffic. Telecommunication system disrupted. All principal markets closed.
Bombay harbour. Several tow lying areas flooded.	Moderate (Panchaganga)	3 persons swept away in Shir	ol	Vehicular traffic on Ichalkaranji - Nipani, Kolhapur - Sadoli Khalsa and Gadhinglaj - Nesari, routes, suspended.
Two fishing weeks capsized off Raiged coast Raiged coast Chocked with about 500 trasfers Showbay - Goa Wabsonal Highway closed for traffic due to landslide near Nadgao, 6 km, from Mahad.		5 persons died (3 at Chiplun in Raigad district and 1 eac in Sindhudurg and Ratnagiri districts.	h (iii) (iii) (iv)	Area under Sangameshwar, Chiplun and Rajapur Police Stations inundated. Sangameshwar market submerged under water. Kubadwadi village encircled by water. Heavy damage to crops reported. Vehicular traffic on Gargoti-Ratnagiri and Gargoti-Chandgad suspended as the connecting roads badly damaged. Bombay-Goa National Highway blocked
150 viilages in Vasat Palgbar, Dahano Bhivandi Mokhada talukas with a fand population of more than 5 million affected. Maximum damage scaused talkada and Vasai talukas, where 1500 hertares of cultivated land damaged.		12 persons and several creported washed away.	bas (vi)	for 3 days due to landslide near Dhamani.
(e) Nasik 4. 1-4 Jul. Pune	Heavy rains	2 persons died in a wall collapse at Mahasrul village One person died in the out- skirts of Pune city while 15 other washed away in the different parts of the distr		All the low lying areas in Pune city inundated.

		- 000 MM are 470 cm 570 cm are an col 000 cm are an col 000 cm			
(1)	(2)	(3)	(4)	(5)	(6)
	corded by Colonal laly, aly paralysed, on both ardes of large uprier of ar water disting	Greater Bombay	ado por (in) 16 (in) mu	6 slum-dwellers died and many other injured when an overhead H.T. cable fell on their huts at Antop hill in north Bombay on 3rd.	 (i) All low lying areas inundated. (ii) Long distance train from Bombay V. ran indefinitely late and some trains cancelled. Thousands of passengers stranded. (iii) 9000 telephones reported dead due to 36 cable faults.
6.	14 Jul.	Nagpur		3 persons died.	
	17 & 18 Jul.	Greater Bombay	1043 N.S.	11 fishermen reported missing, feared to be drawned.	 (i) Two fishing trawlers 'Almadani' and 'Wageshwari' capsized across Bombay harbour. (ii) Several low lying areas flooded. (iii) Vehicular traffic disrupted.
8.	17-19 Jul.	Konkan region	Severe (Vashisthi) (i) (ii)	12 persons swept away in flood water. 300 people and a large number of cattle reported missing.	 (i) Two fishing vessels capsized off Raigad coast. (ii) Sassoon dock in Colaba remained chocked with about 500 trawlers. (iii) Bombay - Goa National Highway closed for traffic due to landslide near Nadgao, 6 km. from Mahad.
9.	Jul. (3rd week)	Thane	Severe (Tansa and Vaitarna)	12 persons and several cattle reported washed away.	 (i) 150 villages in Vasai, Palghar, Daham Bhivandi/Mokhada talukas with a fand population of more than 5 million affected. (ii) Maximum damage caused in Wada and Vasai talukas, where 1500 hectares of cultivated land damaged. (iii) Several Adivasi families rendered homeless in Vasai taluka. (iv) Property worth lakhs of rupces damaged. (v) Several villages in Vasai and Bhivandi talukas submerged under water for 48 hours.

(1)	(2)	(3)	(4)	(5)		(0)
	ress flooded chemicals Bunder,	Project of the projec	tier (ve.5 200 (i) Several (ii) 50 drams cought (iii) Several reported	2 cyclistsyashed awa; in swoll nullah neaf Rasta Peth. One person injured: A 7-year old girl died and her mother and brother rajored in annowae deilagae in dume city.	(vii) (viii) (ix)	Many people trapped on tree tops at Ghateghi and Shairam villages. 70 houses submerged and 7 houses collapsed. 8 fully loaded trucks washed away on Bombay-Ahmedabad road near Tansa bridge, 75 km.from Bombay. 50 boats anchored along the riverside swapt away and 20 more vessels damaged. 10 shops and 30 houses collapsed
	astas ui t				(ii)	in Ajra taluka. Normal life in interior Kolhapur district completely paralysed. Vehicular traffic disrupted.
	aes coblaps amaged agar block					21 houses and 7 shops washed away. Normal life in Amravati city completely paralysed.
12.	3 Aug.	Nagpur	Heavy rains	des very tell bilb anarreg (2(1)	(a) (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	Costly equipments including giant cranes of the 'Central National Project Construction Corporation' at 'Pench Hydroelectric Project, about 80 km.from Nagpur washed away. Loss estimated to be worth several lakh rupees.
		Nashik Magamel	(111) 7008 he	(Johnst Mosting at bedrooms as tentiferry of been green bar green bar green bar green bar green bar green bar the come came against the bare come can be bare come and an accompany of the company of the	Indravavageof a Koiah Subers	Many low lying areas in Nashik city submerged under water. Residents of these areas evacuated to safer places. Culvert connecting Nashik and Panchwati submerged under water.
14.	9-12 Sep.	Jalna	Heavy rains	One boy died and another injured	d	

at Golatgaon village.

(11)

<u>(1</u>) (2)	(3)	(4)	(5)	
.15	5. 11 Sep.	Pune	Heavy rains	2 cyclistswashed away in swollen nullah near Rasta Peth.	
16	水管 表表質與物質。與著名數或算	Greater Bombay	Heavy rains	One person injured.	(i
					(i:
17	7. 8 Oct.	Pune Pune	Heavy rains	A 7-year old girl died and her mother and brother injured in a house collapse in Pune city.	
	interior Bollings	ORISSA			
1.	12 & 13 Jun.	Koraput	Heavy rains		
2.	13 Jun.	Ganjam	Severe (Vamshadhara)		
		emqimpe virson -			(
					(i
	tool out which is hee				
3.	week) to Sep. (1st	Balasore, Cutt- ack, Dhenkanal, Ganjam, Keonjhar	(Baitarni, Brahmani, Devi,)27 persons died (highest toll recorded in Cuttack district)	. (
	week)	Koraput, Puri & Baudh Khandmals	Kolab, Subar-)459 cattle perished.	1.136
		Corporation outline (narekha)		(i (
			Sexus	ini remana una died not emmer ini	

(i) Several low lying areas flooded.

(ii) 50 drams containing chemicals cought fire at Haji Bunder.

(iii) Several cases of short-circuits reported.

800 people evacuated to safer pl

(i) 5000 people affected and 1000 pe marooned. 1000 houses collapsed 3school buildings damaged.

(ii) 7 villages in Kasinagar block su

merged.

(iii) Many country boats washed away.

(iv) Road traffic through Ganupur dis rupted as a wooden bridge on riv Vamshadhara washed away.

(i) 35,11,177 people in 6137 village affected.

(ii) Paddy, vegetables and oilseed cr badly damaged. 352448 hectare of tivated land damaged.

iii) 7908 hectares of land sandcast.

(iv) 37 houses swept away while 3709 pletely and 15648 partially coll 9700 school and collage building affected in flood.

(v) 4740 km. stretch of road damaged.

(vi) 4756 telecommunication lines aft

(1)	(2)	(3)	(4)	(5)		(6)
inda al e	Sep. to and	Jullundur and	Heavy rains	nr sansing tracking williams	(i) S c (ii) R (iii) 9 S	tanding paddy crop in these distrits badly damaged. ail and road traffic disrupted. metre stretch of Kapurthala- ultanpur Lodhi road near Fathidh-
5.8		RAJASTHAN	Gantuz)	d persons willed in ter		nga village submerged.
1.	20 Jul.	Ajmer long 000 or	Heavy rains	14 teenaged children and a female teacher of a primary school, killed in a house collapse; 7 other children seriously injured.		ngar-Turviper bund am Palein tree-
		TAMIL NADU				river breached to hatte of the
1.	16 & 17 Feb.	Madras city and Suburban area.	Heavy rains	8 persons died in hour collapse.	E	Extensive damage caused to buildings
2.	4-6 Mar.	Tiru nelveli		12 persons died.		Salah Sphoted . 60 atklases
3.	teased.	Madurai and North Arcot	Severe (Flash flood in Vaigai and its tribut- aries)	Somemara and Some area of the form of the	(ii) S	Several buts on either side of Vaigai river in Madurai city washed away. Standing Paddy and groundnut crop in 32000 hectare area damaged.
4.	6 Mar.	Tiruchirapalli	Heavy rains	3 children in age group 8-12 years died and 40 other belonging to the same family injured in a house collapse in Laxminakantapuram near Turaiyur.		and submitted. Ing publicity and colleged in Palraca The publicity and colleged in Palraca and far in guare floor thanks one
5.	30 Apr.	Madurai	Heavy rains	4 persons died and 49 injured when a cinema hall at Vandiyur near Madurai, collapsed.		William Formare word alstract for a constant tellowing a openion in the guara Narabur embandment.

(1) (2) (3) (4) (5) (6) 6. 3 & 4 Oct. Coimbatore Severe (Flash (i) 7 persons including 4 (i) 4000 people rendered	
6. 3 & 4 Oct. Coimbatore Severe (Flash (i) 7 persons including 4 (i) 4000 people rendere	the same was not true and the part and part date held follows the same and
flood in San- ganur Pallam) women and one child died in a flash flood. (ii) About 1000 huts lood areas and on the ba away. Many buildin collapse in Coimbatore city. Sanganur, Rathnapuri and Podanur.	cated in low lying ank of river washed ngs collapsed. d huts and houses in
Severe (Flash 26 persons died. (i) 2.05 lakh people reflected in Howrah, blide beganned at the second relief camps. Manu) regarded and plant response died. (ii) Standing crop badly estimated to be well and standard response died. (iii) Assam-Agartala reaction and the second relief camps. (iii) Assam-Agartala reaction at seven landslide.	shelter in 47 y damaged. Loss rth Rs. 14 crore. d blocked for wchicu eral points due to
2. 16-18 Jun. North Tripura Severe (Deo 12 people buried and 20 (i) Heavy landslide on	
and West and Manu) be other reported missing road in Atharamuga	ranges rendered
Sonumura sub-division, ereve vehicular traffic. 80 km. from Agantala. b (ii) An important bridge	e at Paratia in
que de de la company de la com	hed away. collapsed.
(v) Large area of Kamal Schildren in age group 8-12 submerged under flo	lpur sub-division
1. 19-25 Jun. Basti, Deoria Severe (Flash of the state due to bridge on river Kiwano) wind the state due to bridge on river Kiwano).	marconed. from the rest of reaches in the

(1)	(2)	(0)	(4)	(5)	(2)	(6)
2.	29 Jun.	Nainital	Heavy rains	6 persons and large number of cattleheads perished in a landslide.		affected and byto houses colleges.
3.	2 Jul.	Almora	Heavy rains	9 persons killed in a lar slide in Jagthana village		3 houses damaged.
4.	11 Jul.	Deoria granosto ne	Severe (Burhi Gandak)	, (v) As	erieted erieste	About 84 villages marooned.
5.	30 Jul.	Nainital	Heavy rains	8 persons killed in Puran village on Nainital road.		chant 2 lake houtare destroyed. Con-
	Jul. (4th of week)	Azamgarh, Bahraich, Ballia, Bara Banki, Basti, Bijnor, Budaun, Deoria, Faizabad, Fatehpur, Gonda, Gorakhpur, Hamirpur, Kheri, Pithoragarh, Rampur	Severe (Ganga, Ghagra, Jamuna, Rapti and Sarju) Occo (t) bus the day of the	91 persons died. beilid noereq end (2) sais die no beib eros at (1200) de ceation of the ceatio	(iii) (iv) (v)	Srinagar-Turtipar bund in Ballia district breached endangering about 150 villages. Rapti river breached 16 metre of its embankment in Mehdawal area and marooned 40 villages. It also washed away a road bridge near Kusraulkhurd village disrupting road traffic. River Sarju affected 300 villages of 3 lakh population in Ballia district. Thermal power station at Faizabad faced immediate threat as Ghagra river changed its course. In Deoria district 86 villages completely inundated and 21,000 hectares of land submerged. All the schools and colleges in Padrum and Hata tehsils in Deoria district closed due to grave flood situation.
7.	Aug. (1st, 2nd and 3rd week)	Azamgarh,Ballia Deoria, Gorakhpur and Kheri	Severe(Ganga, Jamuna and their tri- butaries).	9 persons died.	raman gala Ada obilah Sana	Army called in Gorakhpur district for flood relief following a breach in Sohagaura Nalauni embankment. Suheli and Mohana river in Kheri district cut off Dudwa National Park.

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(1)	(2)	(3)	(4)	(5)	(6)
8.	31 Aug.	Varanasi	Heavy rains	13 people died in house collapse incidents in Modanpur and Adampura localities.	29 Jan. Nainital Heavy rains
9.	5-11 Sep.	Bahraich, Mirzapur and Varanasi	Severe(Ganga and its tri- butaries)	33 persons died.	(i) Vast stretch of low lying areas submetunder flood water. (ii) Road communication snapped at many place (iii) Sudden discharge of water from Abraura embankment caused flash flood in Mirza
		Basti Sranagar-Turtipar bund rict breached endanger villages	Heavy rains	8 persons killed paran village on Nainital road.	district. (iv) 500 houses damaged in Mirzapur district. (i) All connecting roads submerged under was (ii) A local Women Hospital closed and the pients asked to leave due to waterlogging.
, pand	3-6 Jun.	WEST BENGAL Calcutta, Howrah and 24 Parganas	Heavy rains (i)	One person killed and 10 injured on 5th.	(i) 9000 people marconed in the second in th
	at Farsebay t as Chagra	River Sarja affected of 3 lakh population district. Thermal power station faced namediate threa river changed its cou	(wi)	18 more died on 6th due to house collapse and electrocution.	Parganas districts affected. 10,000 people rescued to safer places. (iii) Train and air service completely disrup (iv) 30,000 telephone sets went out of gear. (v) Extensive damage was caused by the floo
J t	Jun. (2nd to 4th	Bankura, Birbhum,	Severe (i)	33 people died in Cooch Behar, West Dinajpur and	of Metero Railways tunnel due to heavy during 1st week of June 1984. (i) One lakh people marooned and 100 willed

Hooghly and Howrah.

(Ajoy, Behar, West Dinajpur and Behar, Darjeeling, Bagmati, Jalpaiguri districts. Jalpaiguri, Howrah, Damodar, (ii) 19 people died and 9 Hooghly, Malda, Darakeshwar, reported missing in Midnapur, Nadia, Bankura, Birbhum, Burdwan,

Mayurakshi, West Dinajupur and Meghana, 24 Pargans. Mundeshwari,

Silavati and district out off Dudwa National Park.

(i) One lakh people marooned and 100 villages submerged in Birbhum district.

(ii) In Malda district 3.35 lakh people in an area of 270 sq.km. affected. Aman and Soro crops in 10121 hectares of land damaged. Loss to crop and property estimated same) are to be worth Rs. 10 crore. 12,000 people rendered homeless. their tri-And Khert on Atent

		or and any of the and the second state of the second secon					
(1)(2)	(3)	(4)	(5)		(6)	(2) (1
	ying areas sub- ying areas sub- yice disrupted. in Silipuri and ie to landslide iri. tween Silipuri an tween Silipuri an	where distant and transfer. and transfer out transfer during the community and communi	enegal Large n harmorged (a) Millos Darjeel disrupt Darjeel (ii) Vehical	it one shild droumed it so, but entire perished o minarry.	(iv)	7 lakh people in Arambagh sudistrict affected and 2000 has 15,000 hectares of cultivate Crop worth Rs. 1.25 crore da In Midnapur district, one mand 7000 sq.km. area submeradestroyed while crops on 75 damaged. Loss estimated to Agriculture products worth Aman and Aus seedbeds, Jute an area about 2 lakh hectarwise break-up as follows:	houses collapsed. ed land inundated. amaged. illion people affect ged. 21,000 houses, 000 hectares of lan be Rs. 14 crore. Rs. 70 crore damaged and Betel vines ove
			dol 2 1 Mark		accted, ev	Type of crop Area in	thousand hectares
	ned. Ting 8 blocks of stelly submerged	d peoples riscu	(11) 700 aq.		ed tehns be injures	(i) Aman (ii) Aus (iii) Jute (iv) Betel vines	41 32 2
		· 8	homeles			(v) Vegetables Many places within Durgapur	4
	Cumedpar damaged	dige near t				coke oven, foundry and powe	r plant submerged
				well callager nea		under water,	
				(ii) A b -year eld muc	进工会员	Ghatal town in Midnapur dis the district as Silavati ri	ver inundated 5
-		gtok remained de at many ple		when in fell is no sever at Babb Eco Singh Mark	(viii)	causeways on the Ghatal-Cha Dantan town in Midnapur dis a culvert on a road near Ne	strict isolated as
		iver washed av silway bridge.		(111) T labourers research state	(ix)	from Midnapur town, breache Entire Juliadanga village i	ed. In Burdwan district
	Of woods bus h			persons died in Midnapur	()	engulfed by swollen Bagmati Rainfall recorded between 2	23 and 25 June
		ople rendered delication of the an 3 labb reop	randaria (ii) More th	istrict. 5 other died in Malda istrict when a ferry boat apsized in swollen	(xi)	in Birbhum district was rep the past 100 years. Army and Airforce helicopte rescue operations.	ers employed for
	idnapor-Kesupur		ngsobiM(TH)	epsiged in swollen bagirathi at Arjunpur esr Farakka.	(xii)	A railway bridge, 13 km. fr Tista river, threatened by	rom Siliguri on flood.
					(xiii)	Rail traffic connecting non other adjacent States disru	

the series when denotes the factor when the	Well an open for the second party of the		- 36 -		
(1) (2)	(3)	(4)	(5)	£ 1)	
4. 9 Jul.	Calcutta	15,000 bectares Crop worth Rs. (+c) Ic Midnepur dis	MARINE AND ALBERTA	(ii)	(6) Large number of low lying areas submerged under water. City bus and tram service disrupted.
5. Jul. (2nd and 3rd week) 6. Jul. (4th	West Dinajpur, Malda and Midnapur	Severe (Aitrye, Ganga, Mahananda, Punarnava and Tamon)		(ii) (ii) (iii)	Bill cart road linking Siliguri and Darjeeling blocked due to landslide disrupting road communication between Darjeeling and Siliguri. Vehicular traffic between Siliguri and Gangtok disrupted due to landslide at Lekhubhir in Kalimpong area. 1.5 lakh people affected, 15,000 marooned people rescued. 300 sq.km. area covering 8 blocks of Malda district completely submerged rendering more than 2 lakh people homeless. Railway bridge near Kumedpur damaged disrupting railway service beyond Malda.
7. Aug. & Swax Sep(1st week)	(b) North Bengal Bankura, Birbhum, Burdwan, Hooghly, Howrah, Malda, Midnapur, Murshidabad and XX Mar gnas.	Severe (Tista) Severe (Bhagirthi Kangsavati and Ganga) (i)	4 persons died in Midnapur district. 15 other died in Malda district when a ferry boat capsized in swollen Bhagirathi at Arjunpur near Farakka.	(i) (i) (ii) M (iii) M r	Road communication between Kalimpong and Gangtok remained cut off due to landslide at many places. Tista river washed away 3 spurs near Sevok railway bridge. 6 lakh people marooned and about 10 lakh people rendered homeless in KANDEREN Midnapur district. More than 3 lakh people affected in Hooghly district. Midnapur-Ghatal and Midnapur-Keshpur roads submerged under water disrupting vehicular traffic. Kangsavati river broaded in the second of

(iv) Kangsavati river breached its embankment at 11 places. (v) One million people rendered homeless.

(1)	(2)	(3)	(4)	(5)	(6)
8.	Sep. (2nd week)	Cooch Behar and Jalpaiguri	Severe (Diana and Radhika)	(Masters with in Sign)	 (i) Paddy crop worth Rs. 2.3 crore, vegetables worth Rs. 13.72 crore and Jute worth Rs. 45 lakh damaged. (ii) 2000 families rendered homeless while 9000 people evacuated to safer places. iii) Train service between Haldibari in Cooch Behar and New Jalpaiguri and Siliguri disrupted. (iv) 15 metre stretch of road in Kolabari washed away by Diana river.
j a		DELHI			test thout 1215 northern of pinci
1.	23 Aug.	Entire Union Territory	Heavy rains	(ii) 15 other persons injured	 (i) Many low lying areas flooded. Life in Delhi city completely paralysed. (ii) H.T. wires snapped at many places and several electric poles uprooted disrupting power supply and telephone services. (iii) 100 vehic les stranded.
2.	1 Sep.	Entire Union Territory	Heavy rains	ali Market. (ii) A 60-year old man died	 (i) Residents of hutment colonies walk affected. (ii) Many vehiccles marooned. (iii) 10,000 telephones snapped and 25 fires due to short-circuit reported. (iv) Power supply to many areas disrupted.
		GOA DAMAN AND DIU	one) Over nort an foliang	ADIDES GLORE GLOR	Treaton (113) 150 500 Noncon completely of 50,545 - Suraged had his lable between
1.	1 & 2 Jul.	North Goa	Heavy rains		 (i) Low lying areas in Bicholim and Saquelim flooded. (ii) 200 commercial establishments in Saquelim and Bicholim bazar affected. (iii) Several huts collapsed. (iv) Several trees/electric poles uprooted.

MAN THE RESIDENCE AND THE PARTY HAS BEEN AND THE PARTY AND							
(1) (2)	(3)	(4)	(5)			(6)	
	aciated to safer vice between Bild New Jainstguri	(11) 2000 fam people ev (111) Frakuleer Seber and pred, (11) 15 metre	One child drouned, 50.000 catale reported or oliver periahed or missing.			way and vehicular	traffic
lysed. 'places and '' 'outed disrupting	one delephone		One person electrocuted and another drowned in a swellen nullah, 15 other sersons injured under a wall collapse.	(21)	Beary		
and 25 firet due		(iii) Makey vebi	Two persons died under stall collecte mear Bengali Market. A 60-year old ran died when he foll into an ope sewer at Baba Kherak Singa Marg. I Labourers seriously injured when factory wall fell on Shankar read.	(111)		Entire Cates Territory	
ents in Saqueira	areas in fichol		ACCEPTANT OF THE PARTY OF THE P		Week aniax		

S. No. Date/Period Area of Formation/Dissipation Intensity Casualties Remarks TABLE - XII : CYCLONIC STORMS BAY CYCLONES GWT 8d1 afidw bemares correspond to the 12-15 Oct. Formation : North-West Bay Severe 10 people injured In Orissa. (Maximum wind- in Midnapur dis-Landfall : Just north of (i) Rajkanika, Rajnagar and Aul speed 120 trict(West Bengal) Chandbali. blocks of Cuttack districts, kmph.) affected. Dissipation 3 100 km North-(ii) 3300 hectares of Paddy and Biri West of Chandbali. crop completely damaged in Rajkanika block. (iii) About 1215 hectares of Biri crop in Aul block damaged. (iv) In Rajnagar block, large number of roof tops of thatched houses blown away and telephone lines disrupted. In West Bengal, (i) Bhagwanpur, Egra, Kanthi, Patashpur and Ramnagar taluka in Midnapur district affected. (ii) 500 huts and many trees uprooted. (iii) Vehicular traffic on Digha-Kharagpur road disrupted. Severe Formation : South-West Bay In Andhra Pradesh, In Andhra Pradesh, (With core of Hurricane(i) 604 people killed. Landfall : South Andhra (i) Chittoor, Cuddapah and Nellore Coast, north of Sriharikota of which 527 from districts affected. winds). (Nellore district). Nellore district (ii) 18.31 lakh population in 1264 alone. villages affected. Dissipation : Over north (ii) 90,650 livestock (iii) 1,50,523 houses completely Tamil Nadu and adjoining including 26,346 damaged and 1,71,894 houses Andhra Pradesh. cattle perished. partially damaged.

Formation : South-West Bay. 29 Nov. to Landfall: North of Karaikal 2 Dec.

Dissipation : At 11.5°N 77°E

(iv) Crops in 2.07 lakh hectares affected. Loss of crop estimated around Rs. 232.32 crore.

(v) 356 PWD irrigation tanks and 258 minor irrigation sources damaged while 168 PWD roads damaged.

(vi) 638 Panchayat Raj drinking water sources and 800 Panchayat Raj roads damaged.

(vii) Two railway bridges between Sullurpet and Tada washed away disrupting railway service between Nellore and Madras.

(viii) Sriharikota island cut off from the main land for many days.

In Tamil Nadu.

(i) Chingleput and Madras districts affected.

(ii) 84,000 people rendered homeless in Madras city alone.

(iii) 3669 huts completely damaged and 1,23,244 partially damaged. Loss estimated around Rs. 3 crore.

(iv) Several thousands of trees uprooted disrupting vehicular traffic, power and telephone services.

(v) Air service cancelled and train services disrupted due to heavy damage to tract on the Madras-Calcutta and Madras-Renigunta (trunk routes).

(vi) The ship 'Vishwa Anurag' drifted and grand grounded while the ship "Madhujaya" carrying fatty acids to Madras from Singapore ran around near Kovalam.

In Tamil Nadu,

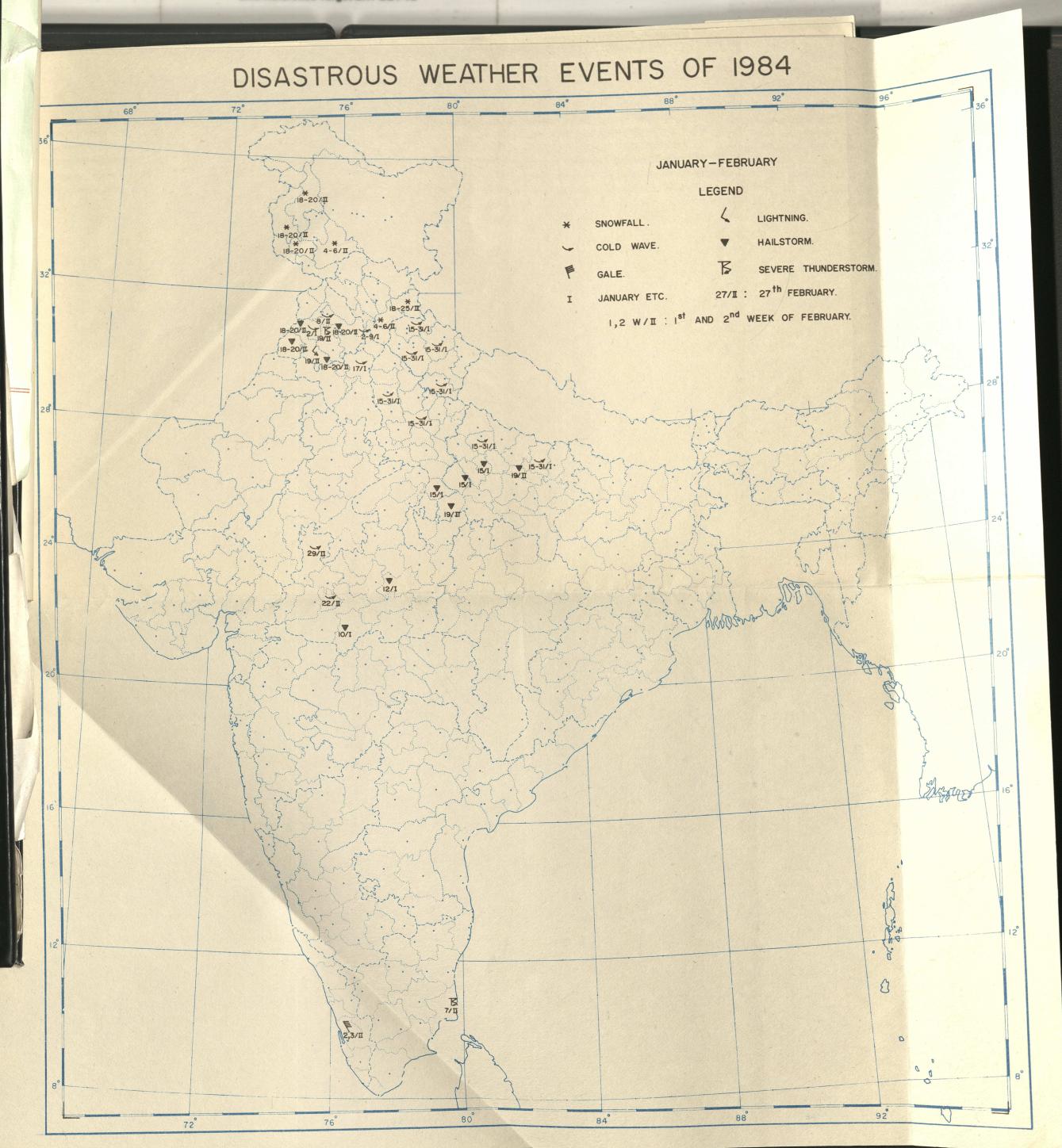
- (i) Thanjavur and South Arcot districts affected.
- (ii) 15,000 people in Thanjavur and 20,000 in South Arcot districts, affected.
- (iii) Standing crop in 20,242 hectares in Mayiladuthurai and Nagapattinam taluka of Thanjavur district submerged due to heavy rains.

In Tamil Nadu,

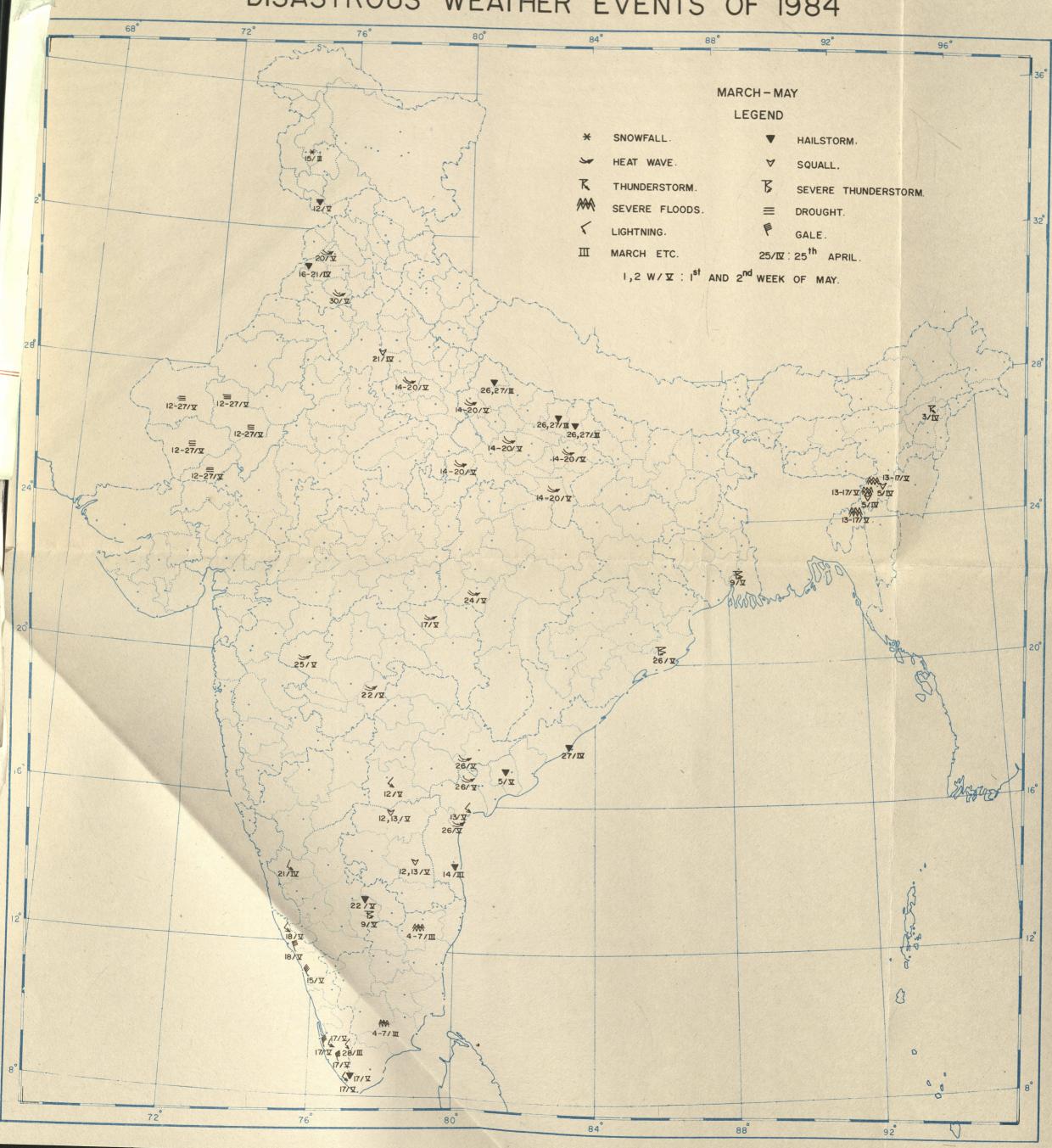
54 persons (3 in Chingleput district and 19 in Madras) died.

(iv) Erosion by sea-water near Thirumullai-vasal (Thanjavur district) and Marakkanam and Nalladu (South Arcot district) reported. (v) Two villages marooned.

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DISASTROUS WEATHER EVENTS OF 1984



DICASTROUS WEAT DISASTROUS WEATHER EVENTS OF 1984 JUNE - SEPTEMBER LEGEND MODERATE FLOODS. SEVERE FLOODS DROUGHT. HAIL STORM HEAT WAVE. 28/IX 58/IX SQUALL. LIGHTNING. THUNDERSTORM 20/VI : 20th JULY. JUNE ETC. 1,2 W/ VI : I ST AND 2 MEEK OF AUGUST. M. ₩ 4W/VII 1-47 XI 4W/XII 2-4W/XI M 2-4W/XI - 2-4W/X 3,4W/VIII IW/VIII M 2-4W/YI 2-4W/YI MA 2-4W/YI 2-4W/YI MA 2-4W/YI 2-4W/YI MA 25\AII W/ VI W/ VI M IW/VI 2W/VIII-IW/IX = 20/VIII-2W/VIII-IW/IX = 20/VIII-2W/VIII-IW/IX = 2W/VIII-IW/IX = 2W/VIII-IW IM AII IM AII 2W/VII - IW/IX 2W/VII - IW/IX 2W/VIII-IW/IX 2W/VIII-IW/IX 2W/VIII-IW/IX 2W/VIII-IW/IX 2W/VIII-IW/IX 2W/VIII-IW/IX 2W/VIII-JW/IX VIII, IX 2W/VIII-IW/IX 2W/VIII-JW/IX VIII, IX 2W/VIII-IW/IX 2W/VIII-JW/IX VIII, IX 2W/VIII-JW/IX 2W/VIII-JW/IX VIII, IX 2W/VIII-JW/IX 2W/VIII-3W/IX ZIII-3W/IX ZIII, IX 2 W/VIII-3W/IX 2 W/VIII-3W/IX WI WE-MY W

DISASTROUS WEATHER EVENTS OF 1984 OCTOBER - DECEMBER LEGEND SNOWFALL DEPRESSION COLD WAVE CYCLONIC STORM LIGHTNING SEVERE CYCLONIC STORM SEVERE FLOODS POINT OF DISSIPATION OCTOBER ETC POSITION AT 0300 GMT 21/XI: 21st NOVEMBER POSITION AT 1200 GMT 20-31/20 POSITION AT 03 AND 12 GMT 1,2 W/XII : IST AND 2nd WEEK OF DECEMBER 20-31/XII 22-25/MI 22-25/MI 3,4W/XII 3,4W/XII 3,4 W/ XII 15 Q 12 OCT. 14 NOV. 2 DEC. 28 E TO 30 M 88