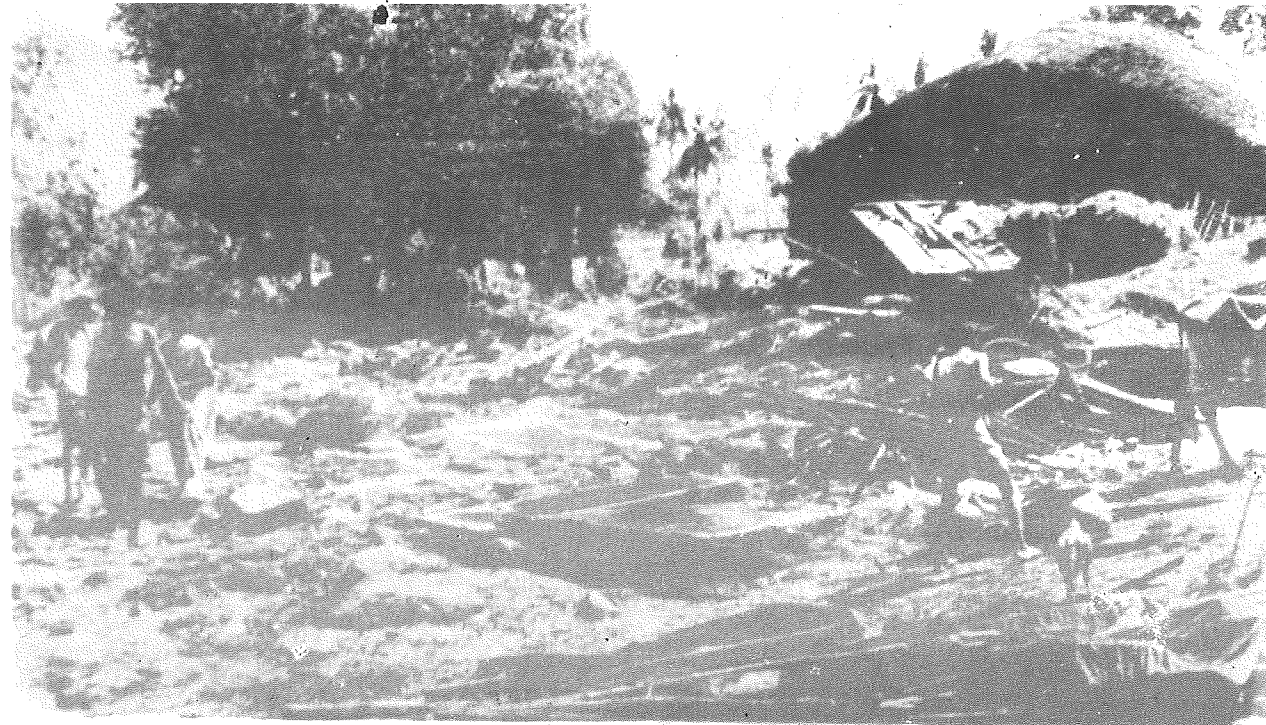




INDIA METEOROLOGICAL DEPARTMENT
DISASTROUS WEATHER EVENTS , 1980
A REPORT



ISSUED BY
OFFICE OF THE DEPUTY DIRECTOR GENERAL OF METEOROLOGY
(CLIMATOLOGY & GEOPHYSICS)
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Cover photo - A picture of ruin-devastation caused by flash floods in Vamsadhara river in Kasinagar
in Ganjam district (Orissa State) during third week of September 1980.

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DISASTROUS WEATHER EVENTS OF 1980

The most striking events of the year were the occurrence of :

- (i) Severe floods in Kutch, Saurashtra and north Gujarat region due to overflowing of several small and medium size irrigation reservoirs on account of incessant widespread rains in the last week of June and first week of July, which resulted in the death of 27 persons in drowning/house collapses and affecting one million people with loss to property estimated at Rs. 15 crores.
- (ii) Severe flooding in all the rivers in U.P. affecting more than 2/3 of the state during July to September, which took a death toll of 1,525 persons and affecting more than 30 million people, with a total loss to crops/property etc. estimated at Rs. 200 crores.
- (iii) Severe floods in Orissa State during the third week of September, which claimed 200 human lives and affected 3 million people. A small bustling town Kasinagar in Ganjam district was reduced to heaps of rubbles.
- (iv) In addition snowfall, cold/heat wave, drought, squall/gale, duststorm, thunder/hail/cyclonic storms also were responsible for the loss of human lives and damage to properties.

The summary of these natural hazards supported by ~~4~~ maps is based on the observations taken by the India Meteorological Department and the press reports.

S.No.	Date	Region of occurrence	Intensity	Casualties/Damages (main features)	Other details
(1)	(2)	(3)	(4)	(5)	(6)

TABLE - I : SNOWFALLCRITERIA

Moderate : 7.6 to 34.9 cm in 24 hrs.

Heavy : \geq 35.0 cm in 24 hrs.

1.	Jan.(1st week)	Kashmir valley, parts of Jammu region, hills of west U.P., Simla, Kalpa and Pangl valley	Moderate to heavy	-	(i) Srinagar-Jammu national highway blocked (ii) Blockade in Banihal ranges, Gulmarg region & Zojila, Rajdhani passes.
2.	Feb.(1st week)	Kashmir valley (Gulmarg & Pahlgam) upper reaches of Jammu (Kistwar Peddar and Doda), Banihal-Qazigund sector, Border-belt of Himachal Pradesh (Kyealong, Kinnaur, Manali, Narkhanda, Lahul valley etc.) and hills of west U.P.	Moderate to heavy	7 people killed when an avalanche hit the Kistwar area	(i) Blockade of roads and national highways. (ii) In Kistwar three houses swept away by avalanche.
3.	Feb.(4th week)	Upper reaches of J&K, Simla and surrounding areas, Pangl, Sangla and Chouri valleys	Moderate	-	Blockade of roads
4.	Mar.(1st week)	a) Kargil district (J&K)	Moderate to heavy	(i) 7 persons killed (including 3 children and 2 security personnel) (ii) 5 heads of cattle and 10 sheep buried.	A bridge was severely damaged
		b) Badrinath, Kedarnath, Upper reaches of Garhwal hills, Upper reaches of Jammu hills, Pangl valley & Dhauladhar ranges	Moderate to heavy	-	(i) Okhimath-Mandla-Gopeshwar road blocked. (ii) Heaviest snow at Badrinath and Kedarnath in the past 10 years.

(1)	(2)	(3)	(4)	(5)	(6)
5.	27 Nov.	Kashmir valley	Moderate to heavy	-	(i) Heavy snowfall ranging from 50 cm in Srinagar to 100 cm in Gulmarg and Sonamarg. (ii) Disruption of normal life. (iii) Road/air traffic dislocated
6.	23-25 Dec.	J&K, higher reaches of Himachal Pradesh and Pangi valley	Moderate to heavy	-	(i) Jammu-Srinagar national highway closed (ii) Cancellation of air-flights.

TABLE - II : COLD WAVE

CRITERIA

Moderate : Night temperature 6 to 7°C below normal
Severe : Night temperature \geq 8°C below normal

1.	1 Jan.	Ghazipur district	Moderate	2 persons died	-
2.	4 Jan.	Ballia, Bareilly	Severe	Death toll - 6 at Ballia and 3 at Bareilly	-
3.	5 Jan.	(a) Alwar district	Moderate	5 deaths reported	-
		(b) Bahraich, Banda, Bareilly, Deoria, Gorakhpur and Kanpur	Moderate	Total deaths - 9	-
4.	6 Jan.	(a) Bahraich, Ballia, Basti, Deoria, Gorakhpur and Pithorgarh	Severe	Total deaths - 19	-
		(b) Bundelkhand	Severe	Several hundred heads of cattle perished	-
		(c) Kumaon and Garhwal hills	Severe	Large number of birds died.	-
5.	10 Jan.	Ballia, Bara Banki, Ghazipur, Gonda, Jhansi, Shahjahanpur	Moderate	8 persons died	-
6.	Jan. (1st & 2nd week)	(a) Hazaribagh	Moderate to severe	7 persons died	-
		(b) Monghyr	Moderate to severe	3 persons died	-
		(c) Samastipur	Moderate to severe	2 persons died	-

(1)	(2)	(3)	(4)	(5)	(6)
7.	Jan. (3rd and 4th week)	(a) Mokameh-Barauni Industrial complex (b) Nawadah	Moderate to severe Moderate to severe	17 persons died 19 persons died	- -
8.	6 Feb.	(a) Azamgarh district (b) Moga (Ferozepur district)	Severe Severe	7 deaths reported 1 person died	-
9.	10 Feb.	Banda district	Severe	8 deaths reported	-
10.	13 Dec.	Banda district	Moderate to severe	3 deaths reported	-
11.	26 Dec.	Ballia district	Severe	5 deaths reported	-
12.	Dec. (3rd and 4th week)	(a) Mokameh-Barauni Industrial complex (b) Nawadah (c) Hazaribagh	Moderate to severe Moderate to severe Moderate to severe	36 persons died 19 persons died 2 persons died	-
13.	Dec. (4th week)	Nasik district	Moderate	-	Severe damage to grape-vine yards
14.	Dec. (4th week)	Dhar district	Moderate to severe	4 beggars died	-

TABLE - III : HEAT WAVE

CRITERIA

Moderate : Day temperature 6 to 7°C above normal

Severe : Day temperature \geq 8°C above normal

1.	Apr. (7-10)	Banda district	Moderate to severe	5 persons died of sunstroke.	-
2.	Apr. (19-30)	Jhansi division	Moderate to severe	18 people died.	-
3.	Apr. (3rd and 4th week)	Gaya, Mokameh, Nawadah, Samastipur and Vaishali	Moderate to severe	17 people died	-
4.	Apr. (3rd and 4th week)	Midnapore district	Moderate to severe	7 people died and 300 suffered from sun-stroke.	-
5.	Apr. (21 & 26)	Nagpur	Moderate to severe	2 persons died in hot spell	-
6.	May (1st and 4th week)	Agra and Banda districts	Moderate to severe	Total death toll : 41	Highest temperature of 47°C recorded at Agra on 5, 26 & 27 and at Banda on 4, 8 & 27.

(1)	(2)	(3)	(4)	(5)	(6)
7.	May. (14 & 27)	Nagpur	Moderate to severe	2 infants and a nine year old girl died of sun-stroke	-
8.	May. (19 - 25)	Coastal Andhra Pradesh and adjoining Telangana, north Tamilnadu	Moderate to severe	63 persons died of sun-stroke	-

TABLE - IV : DROUGHT

CRITERIA

Mild : Weekly aridity anomaly \leq 25%
 Moderate : Weekly aridity anomaly 26 to 50%
 Severe : Weekly aridity anomaly exceeding 50%

1.	Aug. (2nd, 3rd & 4th week) and Sep.	(a) Rajasthan (entire state)	Severe	-	(i) Nearly 2/3 of Rajasthan comprising 19,000 villages with a population of 1.34 crores people affected. (ii) Scarcity of cattle fodder.
		(b) Bijapur, Kolar & Raichur districts	Moderate	-	(i) Shortfall of 30% in the production of foodgrains and pulses (ii) Some people began to dig up and eat 'Agave' roots. (iii) Many tanks dried up. (iv) Shortage of water for drinking and irrigation.
2.	Oct.	(a) Chingleput district	Severe	-	Rainfed groundnut crop in 1,01,175 hectare area hit by dry spell.
		(b) North Arcot district	Severe	-	(i) Widespread failure of paddy and cash crops. (ii) Scarcity of drinking water.
3.	Oct. & Nov.	Anantapur, Chittoor, Cuddapah, Nalgonda, Nellore, Ranga Reddy and Warangal districts.	Severe	-	

(1)	(2)	(3)	(4)	(5)	(6)
<u>TABLE - V : SQUALLS</u>					
1.	12 Mar.	Kondakkal (Ranga Reddy district)	Severe	Uprooted an old 'Tamarind' tree which fell on a lorry, resulted in killing of 9 persons and injuring 13 persons of a marriage party.	-
2.	25 Mar.	Shillong and Khumbhirgram	Severe	-	(i) Many trees, electric/telephone poles uprooted. (ii) Tin-roofs blown off. (iii) Telecommunication link cut off. (iv) Shillong was in darkness for 6 hours.
3.	1 May.	Pune	Moderate (60 kmph)	Three persons killed	(i) Many trees uprooted. (ii) Several electric poles bent.
4.	9 May.	Poonch & Rajauri	Moderate	-	Uprooted many trees.
5.	14 Jun.	(a) Chandigarh	Severe (107 kmph)	9 persons including three children lost their lives in roof collapses	(i) Number of trees uprooted. (ii) Disruption of power and dislocation of telephone lines. (iii) Windowpanes of several high buildings including state secretariat in Chandigarh smashed.
		(b) Delhi	Severe	-	Many trees uprooted.
		(c) Kurukshetra	Severe	-	Several trees uprooted.
		(d) Ropar	Severe	Two persons killed under a shed of a new Bus-stand.	-
6.	2 Sep.	Delhi	Moderate (59 kmph)	A roof of a factory collapsed injuring three persons, two of them seriously.	Many trees uprooted and disruption of traffic.
7.	11 Oct.	Lucknow	Moderate (72 kmph)	-	Damage to houses.

TABLE - VI : GALECRITERIAStrong : Wind speed \geq 75 kmph.

1.	16 & 19 Feb.	Cuttack district	Strong	-	(i) Roof-tops of two school buildings blown away in Kendrapara sub-division. (ii) 21 houses fully collapsed, 41 houses partly collapsed, 167 houses & 3 primary school buildings partly damaged in Jajpur sub-division.
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(1)	(2)	(3)	(4)	(5)	(6)
2.	29 Feb.	(a) Keonjhar district (b) Mayurbhanj district	Strong	-	(i) Roof-tops of 106 houses partly blown away (ii) 4 villages in Ghatagaon block affected.
3.	10 Mar.	Cuttack district	Strong	Number of livestock died : 6	(i) Two villages affected. (ii) Many houses in Salipada block either damaged or collapsed.
4.	10 Apr.	Cuttack district	Strong	One human life lost and 4 heads of cattle perished in Sadar sub-division	(i) 8094 hectare cropped area affected in Sadar sub-division. (ii) 2 houses fully collapsed, 3 partly collapsed and 1200 partly damaged in Sadar sub-division. (iii) 7 houses completely collapsed, 2 partly collapsed and 26 partly damaged in Athagarh sub-division. (iv) 108 villages affected.
5.	11 Apr.	Malappuram district	Strong	-	(i) Two villages affected. (ii) 7 houses partly collapsed and 6 partly damaged in Jajpur sub-division.
6.	12 Apr.	Mayurbhanj district	Strong	Loss of livestock : 63	(i) 6 houses collapsed and 13 houses partly damaged. (ii) Banana plantations and trees worth Rs.5 lakh damaged in East Ernad Taluk.
7.	15 Apr.	Cuttack district	Strong	(i) Loss of human life : 1 (ii) Loss of livestock : 10	(i) 12 houses completely damaged and 26 partly in Khunta block. (ii) 3 villages affected.
8.	20 Apr.	Kolhapur district	Strong	One person died under a falling tree.	(i) 10 villages in Athagarh sub-division affected. (ii) Two houses partly collapsed, 61 partly damaged.
9.	25 Apr.	Cannanore district	Strong	-	Trees uprooted, disrupting the power supply.
10.	27 Apr.	Mayurbhanj	Strong	-	(i) Many houses either destroyed or partly damaged. (ii) Thousands of banana plantations and trees got uprooted.
					Some houses collapsed in two villages in Raruan block.

(1)	(2)	(3)	(4)	(5)	(6)
11.	1 May.	Chitradurga district	Strong	15 women swept away by strong whirl winds and drowned in Tungabhadra river from Harihar side.	
12.	1 & 2 May	Cannanore district	Strong		Plantain crops damaged in Payyannur.
13.	3 May	Balasore district	Strong	One human life lost.	
14.	10&13 May	Bhavnagar district	Strong	Two persons died in Palitana taluk.	
15.	11 May.	Calcutta	Strong	Gale blew a man of his feet from the terrace.	Uprooted many trees and lamp posts.
16.	16 May.	Goa	Strong	-	Some of the plantations damaged.
17.	20 May.	(a) Cuttack district	Strong	(i) One human life lost (ii) 3 heads of cattle perished	(i) Many houses damaged (ii) 113 villages affected
		(b) Dhenkanal district	Strong	4 persons died	(i) Many houses in 188 villages affected (ii) Estimated loss to property Rs.5 lakhs.
		(c) Keonjhar district	Strong	One boy died	-
18.	18 May.	Kolar	Strong	A buffalo was electrocuted	(i) Considerable damage to property (ii) Several trees uprooted, power failure.
19.	28 May.	Bangalore	Strong	5 persons died due to electrocution	(i) Severe damage to electric and telephone lines. (ii) Tin roofs blown off. (iii) Several dilapidated houses collapsed.
20.	21 Jun.	Bhopal	Strong	-	(i) Uprooting of trees, telecommunication link snapped. (ii) An electric transformer of State Electricity Board burnt.
21.	25 Sep.	Kottayam district	Strong	-	(i) 25 houses completely damaged, 100 houses and 4 school buildings partially damaged. (ii) Number of trees uprooted.
22.	8 Oct.	Palghat district	Strong	-	(i) In Mundoor, 44 houses partly damaged. One Cinema theatre collapsed, many trees uprooted. (ii) Loss estimated Rs. 10 lakhs.

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

TABLE - VII : DUST-STORM

CRITERIA

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

Severe : Windspeed 75 kmph and horizontal visibility upto 50 metres.

1.	25 Apr.	Alkananda valley	Severe	One person killed	(i)Roof-tops of houses/shops/cattle sheds blown off. (ii)Many trees uprooted.
2.	5 May.	Azamgarh,Basti,Deoria, Faizabad,Gonda and Gorakhpur districts	Severe	(i) 150 persons killed and thousands injured (ii) 500 cattle perished.	(i)Telephone service, water and electric supply disrupted. (ii>About two lakh trees uprooted. (iii)118 villages affected.
3.	7 May.	Delhi	Moderate	5 persons in a taxi injured when a tree and an electric pole fell on it.	Many 'Gulmohar' trees damaged.
4.	11 May.	Srinagar	Severe	-	(i)Few houses and cow sheds damaged. (ii)Scores of trees uprooted.
5.	19 May.	Ahmadabad	Severe	One man and two children injured in house collapse.	(i)Roof-tops of 8 houses blown off and that of 40 houses damaged. (ii)Several trees uprooted.

TABLE - VIII : LIGHTNING

1.	29 Feb.	Varanasi	-	Two persons killed and two injured.	-
2.	11 Apr.	Baramulla	-	One peasant reported killed.	-
3.	8 May.	Jhunjhunu district	-	Two residents killed at Gadla village.	-
4.	14 May.	Karnal district	-	Claimed 8 lives at Bansa-Ballaha and Songara villages.	-
5.	3 Jun.	(a) Diva(Thane district) (b) Bombay	-	-	Electric sub-station at Diva struck by lightning, crippled rail-traffic in Bombay. Four houses collapsed.
6.	11 Jun.	Vaijapur (Aurangabad district)	-	Two youths killed and one injured.	-
7.	12 Jun.	Jamnagar	-	A 70 year old man killed on the spot.	-

(1)	(2)	(3)	(4)	(5)	(6)
8.	14 Jun.	Akola		In a marriage party, a young man of 25 years killed when a bolt of lightning activated a microphone in his hands.	-
9.	28 Jun.	Kanpur district		Two persons killed.	-
10.	6,10,18-20 Jul.	Basti, Deoria, Gonda and Lalitpur districts		Total death toll : 11	-
11.	22 Aug.	Bilaspur (M.P.)		Two persons killed while taking shelter under a tree.	-
12.	25 Sep.	Thanjavur		Two persons killed instantly and four injured while engaged in transplantation of paddy.	-

TABLE - IX : THUNDERSTORM

CRITERIA

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

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

1.	19 Mar.	Dibrugarh	Severe	(i) One person killed and three injured. (ii) Several cattle-heads perished.	Several dwelling houses damaged.
2.	24 Mar.	Rangaiya (Assam)	Moderate	-	(i) Extensive damage to houses and crops. (ii) Roof-tops of houses in municipal board sweeper colony blown off.
3.	2 Apr.	(a) Valleys in J&K (b) Bijapur district	Moderate Severe	- 110 sheep died in Yadahalli village	Damaged almond blossoms. (i) Cotton crops damaged. (ii) Total loss Rs. 2 lakhs.
4.	3 Apr.	(a) Mussoorie hills and Doon valley (b) Garhwal hills (c) North Lakhimpur	Severe Moderate Severe	- One person killed	(i) Rabi crops, flowering mango and Lichi fruits damaged. (ii) Electric poles uprooted. (iii) Telecommunication system disrupted. Apple crops damaged. 600 families and 31 educational institutions in 40 villages affected.

(1)	(2)	(3)	(4)	(5)	(6)
5.	4 Apr.	Silchar	Moderate	-	(i) Disrupted electricity and telephone communication services. (ii) Electric poles bent.
6.	5 Apr.	Dubri	Moderate	-	(iii) Many people rendered homeless. Damage to houses, shops & police department buildings.
7.	6 Apr.	Guntur district	Severe	A calf and a dog lifted up and came down dead.	(i) A tornado affected the outskirts of Todigiripadi village in Tenali Taluk. (ii) A transformer of state electricity board pulled down. (iii) A cart lifted up and tossed to the ground completely broken.
8.	8 Apr.	Kolhapur	Moderate	-	Falling of trees and snapping of electric wires.
9.	12 Apr.	Cachar	Moderate	-	(i) Disrupted electricity and telephone services. (ii) Damage to houses.
10.	18 Apr.	Dibrugarh	Moderate	5 persons injured	300 families and parts of a tea garden badly affected.
11.	23 Apr.	Golaghat	Moderate	-	Number of buildings including educational institutions damaged.
12.	24 Apr.	Dibrugarh	Moderate	-	Telephone and electric services paralysed.
13.	8 May.	Nowgong	Severe	5 persons killed, several injured.	(i) Extensive damage to standing paddy crops, jute and vegetables. (ii) Several houses damaged, trees uprooted.
14.	9 May.	24 Parganas district	Severe	Primary school building collapsed killing 8 children in Madhan-kati 70 km south-east of Calcutta.	-
15.	10 May.	(a) Burdwan and Nadia districts	Severe	7 bogies of a train blown off the rails, 18 persons killed, 365 persons injured.	Thousand houses and 8 police stations damaged.
		(b) Rampurhat (125 km from Calcutta)	Severe	15 persons aboard a Calcutta bound IA boeing, injured when caught by thunderstorm.	-
16.	11 May.	(a) Hoogly	Severe	One girl killed	-
		(b) Midnapore	Severe	3 persons killed & 100 injured.	Thousand mud houses collapsed.

(1)	(2)	(3)	(4)	(5)	(6)
17.	12 May	Sombal & Sanwari (J&K)	Moderate	(i) One person killed. (ii) Several cattle perished.	-
18.	26 May.	Calcutta	Severe	-	(i) Telephone, teleprinter and telex services disrupted. (ii) Transport services dislocated.
19.	1 Jun.	Nasik	Moderate	-	(i) Many trees uprooted. (ii) Power supply and telephone lines snapped.
20.	9 Jun.	Mussoorie & Doon valley	Severe	-	(i) Trees uprooted, telecommunication system dislocated. (ii) Fruit crops damaged.
21.	12 Jun.	Wankaner (Rajkot district)	Severe	9 persons injured	(i) Telephone wires snapped. (ii) Power supply disrupted.
22.	17 Jun.	Nagpur	Severe	-	(i) Several trees & hoarding boards uprooted. (ii) Telephone poles twisted.
23.	26 Jun.	Pahlgam	Severe	(i) 7 shepherds killed. (ii) Number of cattle heads perished.	-
24.	16 Jul.	Poonch & Rajauri	Moderate	(i) 3 persons killed. (ii) 30 cattle perished.	-
25.	5 Sep.	Nagpur district	Severe	2 persons died in Palora village.	-
26.	25 Sep.	(a) Dhule district	Severe	7 persons died in house collapse.	-
		(b) Surat	Severe	5 students killed and 20 injured when roof of a school building fell on them.	-

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.	5 Mar.	(a) Bhatinda, Patiala and Rohtak districts	Heavy	12 cattle died in Bhatinda	(i) Standing rabi crop in many villages damaged. (ii) Number of mud houses collapsed.
		(b) Bhilwara, Churu, Jaipur, Nagaur and Sikar districts	Heavy	-	Standing crops damaged
		(c) Solan (H.P.)	Heavy	-	Fruit crops heavily damaged.

(1)	(2)	(3)	(4)	(5)	(6)
2.	6 Mar.	Bhilwara, Mainpuri and Mussoorie	Moderate	-	Standing crops damaged.
3.	9 Mar.	Cuttack district	Heavy	Loss of livestock - 7	(i) 345 hectares of cropped area in 41 villages affected. (ii) 35 houses partly collapsed and 12 completely. (iii) Damage to 5 public utilities.
4.	13 Mar.	Ahmadnagar	Heavy	Some chicken and goats killed	(i) Hailstones of berry-size reported. (ii) Roof-tops of 40 houses blown off. (iii) Few electric/telephone poles bent.
5.	27 Mar.	Sikar district	Moderate	-	Standing crops damaged.
6.	29 Mar.	(a) Solan (H.P.) (b) Nainital (c) Bareilly and Najibabad	Heavy Heavy Moderate	- - -	Vegetable and fruit crops badly hit. Fruit orchards suffered considerable damage Mango-groves in flowering stage suffered considerably.
7.	6 Apr.	Cooch-Bihar district	Heavy	6 persons killed	Widespread damage to standing wheat crops, houses and school buildings.
8.	7 Apr.	Shillong	Heavy	-	(i) Normal life paralysed. (ii) City remained in darkness. (iii) Low lying areas covered with thick layer of hailstones.
9.	15 Apr.	Athagarh sub-division (Orissa)	Heavy	(i) One person killed. (ii) Loss of livestock : 10	Two houses partly collapsed, 61 partly damaged.
10.	17 Apr.	Darjeeling	Heavy	-	(i) Extensive damage to tea plantation, standing crops and vegetation. (ii) Telecommunication services disrupted. (iii) Normal life paralysed.
11.	10 May.	Doddaballapur (Bangalore district)	Heavy	-	(i) Hails bigger than marbles lashed the city (ii) Mango crops damaged.
12.	14 Jun.	Simla	Heavy	-	Hail of size of Tennis ball damaged Maize crops and littered the entire area with broken tree branches and leaves, vehicular traffic suspended.

(1)	(2)	(3)	(4)	(5)	(6)
13.	8 Oct.	(a) Poonch & Rajouri	Heavy	40 persons including 11 children and 9 women and 12,000 sheep killed when walnut size hailstones fell on them. One policeman killed while leading a rescue party.	-
		(b) Ambala, Bhatinda Kurukshetra and Sonapat districts	Heavy	Many birds killed	(i) Many trees uprooted disrupting road traffic/power supply and telecommunication services. (ii) About 90% of standing crops damaged.
14.	28 Dec.	Akola, Dhule, Nanded, Nasik and Parbhani districts	Heavy	(i) Two persons killed in Nanded district. (ii) One bull, 70 goats and thousands of chicken killed in Baglon Taluk of Nasik district. (iii) Many birds perished.	(i) 20 towns in these districts affected. (ii) 3-4 thousand quintals of onions spoiled. (iii) Sugarcane, wheat and grape vine yards damaged. (iv) Rabi crops in 364 hectares completely damaged.

TABLE - XI : CYCLONIC STORMS

1.	16-19 Oct.	<u>SOUTH ANDHRA COAST</u> (Landfall between Masulipatam and Kakinada on 18th morning)	Severe	-	<p>(i) <u>West Godavari district :</u> Following heavy rains, paddy crop in 1400 hectares, banana in 175 hectares and sugarcane in 985 hectares affected, loss of paddy yield estimated at 4 to 6 bags per hectare.</p> <p>(ii) <u>East Godavari district :</u> Paddy crop in 9389 hectares valued at Rs. 52 lakhs damaged. Banana crop in 1214 hectares valued at Rs. 12 lakhs damaged due to gale. Salt bags worth Rs. 4 lakhs completely destroyed.</p> <p>Other losses :</p> <p>(a) Roads - Rs. 35 lakhs (b) Buildings - Rs. 6 lakhs (c) Hutments - Rs. 2 lakhs (d) Major irrigation sources Rs. 6 lakhs.</p>
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(1)	(2)	(3)	(4)	(5)	(6)
2.	3-7 Dec.	<u>SOUTH WEST BAY OF BENGAL</u> (The storm dissipated over west-central Bay)		-	Heavy to ^{very} heavy rains in Tamilnadu on 5th.
3.	12-17 Dec.	<u>SOUTH ANDAMAN SEA</u> (The storm dissipated in Gulf of Mannar)		-	Exceptionally heavy rains in Andaman-Nicobar islands.

TABLE - XII : FLOODS AND HEAVY RAINS

		<u>ANDHRA PRADESH</u>			
1.	Sep. (3rd week)	Srikakulam district	Flash floods in river Vamsadhara	(i) 85 people died and 30 reported missing. (ii) 3100 heads of cattle perished. (iii) Loss of poultry and ducks - 19,000	(i) 187 villages marooned. (ii) About 1.5 lakh people affected. (iii) 4047 hectares of paddy crop damaged. (iv) The bund of Vamsadhara barrage washed away. (v) A stretch of 18 km rail track and two bridges damaged, train services disrupted. (vi) Fodder loss : 2146 tons. (vii) Thousands of mud huts collapsed. (viii) Loss to roads : Rs. 50 lakhs. (ix) Extensive loss to electricity system. (x) Estimated loss : Rs. 488 lakhs.
		<u>ASSAM</u>			
2.	Jun. (3rd & 4th week)	Darrang & Dibrugarh districts	Severe floods in Brahmaputra, and Barak and their tributaries, Subansiri & Beki	-	Vast tracts of human habitation and cropped lands submerged.
3.	Jul. (2nd & 3rd week)	Darrang and Sibsagar districts	Severe floods in Brahmaputra and its tributaries	One boy and several heads of cattle washed away.	(i) Over 500 sq.km. area covering 200 villages flooded affecting more than 1.9 lakh people. (ii) Extensive damage to standing Ahu paddy and jute crops. (iii) A large number of people rendered homeless. (iv) The Kaziranga national park abode of world famous one-horned rhinos flooded and several animals shifted to safer places. (v) Hundreds of houses / Govt. buildings damaged.

(1)	(2)	(3)	(4)	(5)	(6)
4.	Aug. (2nd & 3rd week)	Darrang, Dibrugarh, Goalpara, Kamrup, Lakhimpur, Nowgong and Sibsagar districts	Severe floods in Brahmaputra and its tributaries	(i) 23 persons lost their lives (ii) Hundreds of cattle washed away	(i) 2300 villages with a population of 1.3 million people affected. (ii) Standing crops in 4.9 lakh hectares damaged. (iii) The embankments breached at several points (iv) Rail tracks submerged at several places resulting in the suspension of train services. (v) 4200 houses partially/completely damaged (vi) Majuli the largest fresh water island submerged.
<u>BIHAR</u>					
5.	Jul. (3rd week)	Bhagalpur, east Champaran, west Champaran, Darbhanga and Saharsa districts	Floods in Mahananda, Ghagara and Kosi rivers	-	(i) Kharif crop extensively damaged. (ii) 10,000 people removed to safer places.
6.	Aug. (2nd week)	Begusarai, Bhagalpur, Bhojpur, east/west Champaran, Darbhanga, Katihar, Madhubani, Monghyr, Muzaffarpur, Patna, Purnea, Saharsa, Santal Parganas, Saran, Sitamarhi, Siwan and Samastipur districts	Floods in Ganga, Poon-Poon, Kosi and Burhi-Gondak rivers	18 persons died	(i) Nearly 6 million people badly affected. (ii) Standing crops in 8.42 lakh hectares damaged. (iii) 37 thousand houses destroyed. (iv) Road communication disrupted at several places.
7.	Aug. (4th week)	Nawadah district	Moderate floods in Sakri river	(i) 3 persons drowned (ii) 500 cattle perished.	(i) 225 villages inundated. (ii) Most of the roads under waist-deep of water.
<u>GUJARAT</u>					
8.	Jun. (4th week) & Jul.	Amreli, Bhavnagar, Jamnagar, Junagadh, Kutch and Rajkot districts	Severe floods due to incessant, widespread, heavy rains	(i) 27 persons washed away in drowning (ii) Many heads of cattle washed away.	(i) A large number of small dams breached. (ii) As many as 37 irrigation reservoirs overflowed. (iii) Many villages downstream of the dams/reservoirs marooned. (iv) One million people affected. (v) Groundnut crop in 1619 hectares washed away. (vi) Extensive damage to roads and bridges. (vii) Large stretches of rail tracks washed away.

(1)	(2)	(3)	(4)	(5)	(6)
10.	31 Aug.	Bharuch	Moderate floods in Narmada river	-	(viii) 1500 hutments and 500 houses collapsed (ix) Salt worth Rs. 50 lakhs washed away. (x) Estimated loss to crops/buildings/roads/bridges etc. - Rs. 15 crores. Main business centre flooded.
<u>HARYANA (including NEW DELHI & CHANDIGARH)</u>					
11.	Jul. (2nd, 3rd & 4th week)	Ambala, Jind, Karnal, Kurukshetra & Sonapat district.	Flash floods due to heavy rains in catchment areas of Yamuna, Ghaggar & Markanda rivers.	3 persons died	(i) 200 villages affected. (ii) Crops in 80,000 hectares lost, especially paddy and fodder crops destroyed. (iii) Hundreds of dwelling houses washed away. (iv) Several important roads inundated at many points. (v) Electric installations damaged extensively (vi) Estimated loss to crops/public works and property Rs. 20 crores/40 crores respectively.
12.	1 Jul.	New Delhi	Heavy rains	One infant drowned in swollen nullah	(i) Low lying colonies inundated. (ii) Vehicular traffic and telephone services disrupted.
13.	Jul. (2nd, 3rd & 4th week)	New Delhi and neighbourhood	Heavy rains	(i) 3 persons swept away by swollen "Yamuna" (ii) One person electrocuted.	(i) Population of 5 villages affected. (ii) Many colonies water logged.
14.	Jul. (2nd & 3rd week)	Chandigarh and neighbourhood	Moderate floods in Tangri and Markanda rivulets	3 children died in house collapse.	(i) 5 villages marooned. (ii) Low lying areas flooded. (iii) Vehicular traffic disrupted.
<u>HIMACHAL PRADESH</u>					
15.	12 Jul.	Kinnaur district	Moderate floods in "Pangi Nullah" near "Kalpa"	4 persons swept away.	The Mebar power house and two saw-mills washed away.
<u>JAMMU & KASHMIR</u>					
16.	Jul. (2nd & 3rd week)	Jammu district	Heavy rains	A scooterist with his scooter washed away, in a flooded nullah, near Kaluchak.	-

(1)	(2)	(3)	(4)	(5)	(6)
<u>KARNATAKA</u>					
17.	2 Jul.	(a)Chickmagalur district	Moderate floods in Bhadra river	Several heads of cattle washed away	(i)A mini dam breached in Kudremukh stock-pile area. (ii) 15 huts collapsed.
		(b)South Kanara district	Moderate floods in Netravadi and Ghurpur rivers	-	(i)Inundation of large tracks of land. (ii)Dislocation of vehicular traffic. (iii)Disruption of telecommunication system (iv)Bandtal taluk marooned completely. (v)Total loss estimated : Rs. 2 lakhs.
18.	5 Jul.	North Kanara district	Moderate floods	-	(i)Paddy crop in 2500 hectares damaged. (ii)100 coconut palms washed away in Honavar.
19.	Jul. (1st week)	Dharwar district	Heavy rains	Two persons drowned, 1 girl killed and two seriously injured in house collapse.	(i)10,117 hectares of cultivable land under flood waters. (ii)Extensive damage to paddy and coconut gardens. (iii)Loss estimated : Rs. 70 lakhs.
20.	Aug. (2nd week)	(a)Coorg district	Heavy rains	-	(i)457 families affected due to house collapses. (ii)800 hectares of land damaged. (iii) Loss estimated : Rs. 5 lakhs.
		(b)North Kanara district	Moderate floods in Sharavati river	(i)Three women drowned (ii)800 heads of cattle washed away.	(i)20 villages with 10,000 population marooned in Honavar. (ii)Power generation in Sharavati hydel project affected. (iii)Total damages estimated :Rs.25 lakhs.
21.	Aug.(4th week)	Gulbarga district	Heavy rains	7 persons died in house collapse	-
<u>KERALA</u>					
22.	Jun. (3rd week)	Cannanore, Malappuram, Kozhikode, Quilon and Trivandrum districts	Heavy rains	(i)A child washed away and two died due to electrocution (ii)Three children injured in house collapses.	(i)Severe damage to paddy crops and buildings (ii)Low lying areas inundated. (iii)Several houses washed away. (iv)Two barges capsized. (v)Fishing implements damaged. (vi)Telephone system and power supply disrupted.

(1)	(2)	(3)	(4)	(5)	(6)
23.	Jun. (4th week)	Palghat district	Heavy rains	-	Traffic disrupted due to landslides.
24.	Jul. (1st & 2nd week)	Alleppey, Cannanore, Kottayam, Kozhikode, Malappuram, Palghat and Trichur districts.	Heavy rains	(i) 8 persons died. (ii) 5 fishermen sustained injuries.	(i) Severe damage to paddy crops in several hectares. (ii) Low lying areas flooded. (iii) Many huts washed away. (iv) Severe damage to houses. (v) A large number of families rendered homeless, and evacuated to safer places. (vi) Roads damaged at several points.
25.	Aug. (4th week)	Alleppey, Kozhikode, Quilon, Trichur and Trivandrum districts	Heavy rains	Two persons died and two injured.	(i) Severe sea erosion in coastal areas. (ii) Many fishing crafts and nets destroyed. (iii) Several coconut trees uprooted. (iv) Several houses partially/completely damaged. (v) Nearly 1000 huts washed away.
26..	Sep. (4th week)	Kottayam district	Heavy rains	-	(i) 25 houses completely damaged and hundred partially damaged. (ii) Many trees uprooted. (iii) Crop worth rupees 10 lakhs damaged.
27.	Oct. (1st week)	Kozhikode	Heavy rains	-	(i) Land-slides occurred in some places resulting in damage to crops. (ii) Estimated loss : Rs. 2 lakhs.
<u>MADHYA PRADESH</u>					
28.	Jul. (1st week)	Raipur district	Heavy rains	-	(i) 3 irrigation dams breached. (ii) Low lying areas inundated.
29.	31 Aug.	Jabalpur district	Moderate floods in Narmada river	Six members of a family drowned when a taxi carrying them fell in swollen Narmada. 1 child died	300 houses damaged.
30.	Sep. (3rd week)	Raipur district	Heavy rains	(i) 12 persons died (ii) 10 persons drowned (iii) 120 cattle perished	(i) Many villages affected (ii) Paddy crop in 3175 hectares valued at Rs. 90 lakhs damaged.
31.	Sep. (3rd & 4th week)	Bilaspur and Raigarh districts	Severe floods in Mahanadi & its tributaries and Sighnath and Arpa		

(1)	(2)	(3)	(4)	(5)	(6)
<u>MAHARASHTRA (INCLUDING GOA)</u>					
32.	15 Jun.	Bombay	Heavy rains	One girl died and two persons injured in wall collapse	(i) City life paralysed. (ii) Rail tracks and low lying areas flooded. (iii) Transport services disrupted. (iv) Telephone services went away.
33.	Jul. (1st week)	Bombay	Heavy rains	Two persons died and 5 injured in house collapse	(i) Low lying areas flooded. (ii) Vehicular traffic disrupted. (iii) Rail track on the Ambernath, Badlapur, section washed away. (iv) A fishing trawler sank in rough seas off Bombay coast, but the fishermen narrowly escaped from death.
34.	4 Aug.	Bombay	Heavy rains	One woman and a cow died on the spot due to electrocution	(i) Low lying areas flooded. (ii) Rail tracks submerged dislocating train services. (iii) Vehicular traffic came to a standstill. (iv) Loading/unloading operations in the docks suspended.
35.	21, 22 Aug.	Bombay	Heavy rains following a cloud burst	45 persons lost their lives due to drowning/house collapse/electrocution.	(i) The tiny streams of Dahisar and Paoisor inundated surrounding residential areas, many slums flooded. (ii) 600 people rescued from trees/roof tops by fire-brigade. (iii) Suburban trains services suspended. (iv) 300 huts washed away.
36.	Jul. (1st week)	Goa	Heavy rains	-	(i) Several trees uprooted. (ii) Vehicular traffic disrupted.
37.	Jul. (1st week)	Ratnagiri district	Moderate floods in Narangi and Vasishthi rivers	-	(i) Normal life in Chiplun, Rajapur and Khed towns paralysed. (ii) Road traffic between Pune and Konkan region disrupted.
38.	4 Aug.	Thane district	Severe floods in Malyan creek	22 passengers in a bus killed when it plunged in the swollen creek in Dahanu.	

(1)	(2)	(3)	(4)	(5)	(6)
39.	18 Aug.	Dhule	Moderate floods in Panzara river	-	Trees uprooted, disrupting road traffic, telephone and power lines.
40.	Aug. (3rd week)	(a) Akola district	Severe floods in Adan river	(i) 4 persons drowned & swept away (ii) 40 cattle heads killed.	(i) More than 1300 hectares of cultivable land submerged. (ii) 80 houses damaged.
		(b) Aurangabad district	Heavy rains	9 persons died in house collapse	(ii) Due to bursting of a percolation tank many houses collapsed and standing crops damaged.
41.	Aug. (3rd & 4th week)	(a) Amravati & Wardha districts	Severe floods in Bhogavathi, Kolar, Sahanur rivers	8 persons drowned and 4 electrocuted	(i) Many houses collapsed. (ii) 300 families rendered homeless. (iii) Damage to property and standing crops estimated at Rs. 9.5 lakhs.
		(b) Ahmednagar	Heavy rains	-	Standing cotton and Bajra crops in 50,000 hectares badly damaged.
		(c) Nanded and Parbhani districts	Severe floods in Kayadhu, Poorna, Godavari, Doodhna and Karpara rivers.	2 women and a kid lost lives in house collapses.	(i) Large tracts of standing crops destroyed. (ii) Many roads, huts and bridges washed away. (iii) Transport and communication services completely paralysed.
42.	Jul. (4th week)	Kolaba district	Heavy rains	-	Considerable damage to paddy crops in 6000 hectares.
43.	31 Aug.	Yavatmal	Heavy rains	7 persons died	(i) Bridges and nullahs submerged. (ii) 45 families rendered homeless. (iii) City's normal life thrown out of gear. (iv) Property worth Rs. 50,000 damaged.
44.	Sep. (1st week)	Chandrapur, Nagpur, Amravati, Wardha and Yavatmal districts	Heavy rains	21 cattle heads washed away	(i) Crops in nearly 4000 hectares damaged. (ii) 171 houses destroyed. (iii) 2000 persons rendered homeless. (iv) Estimated loss Rs. 22 lakhs.

(1)	(2)	(3)	(4)	(5)	(6)
MANIPUR					
45.	5 Oct.	Manipur central district	Flash floods in Imphal and Iril rivers	Several heads of cattle swept away.	(i) 3 lakhs people marooned. (ii) 80 villages completely washed away. (iii) Heavy loss to standing crop and property. (iv) Ekou bridge on Imphal river completely washed away.
ORISSA					
46.	Aug. (1st week)	Puri district	Heavy rains	-	(i) Several villages marooned (ii) Crops damaged (iii) Paddy seedling lost.
47.	Sep. (3rd week)	(a) Koraput and Ganjam district	Severe floods in Vamsadhara river	194 people died and several heads of cattle perished. Corpses of men and women and carcasses of animals scattered.	(i) H.T. towers washed away disrupting power supply. (ii) Through rail communication between Calcutta/Madras severely affected due to breaches in rail tracks at several points. (iii) National Highway No.5 snapped at many places. (iv) Gunupur & Gudari towns in Koraput districts and Kasinagar in Ganjam district worst affected. (v) A wall of water roared into the Kasinagar town during night, sweeping people to death and wrecking everything in its path thus a bustling town turned into heaps of rubbles.
		(b) Cuttack, Puri & Sambalpur districts	Severe floods in Mahanadi and its tributaries (Highest ever floods.)	26 deaths reported	(i) Embankment breached at several points inundating about 2000 sq.km. area. (ii) Nearly 4 million people affected. (iii) Widespread damage to rail-tracks and bridges and consequent cancellation of train services. (iv) Thousands of houses collapsed. (v) About 3.4 lakhs hectares of cropped land inundated. (vi) Unprecedented power crisis brought the industrial units to a grinding halt.
PUNJAB					
48.	25 Jun.	Gurudaspur district	Flash floods in Ravi river	-	(i) Many villages inundated causing land erosion. (ii) Huge stocks of wheat lying in open yards damaged.

(1)	(2)	(3)	(4)	(5)	(6)
49.	Jul. (2nd & 3rd week)	Gurudaspur, Hoshiarpur, Kapurthala, Ludhiana and Patiala districts	Flash floods in Ravi and Beas rivers	21 people died	(i) 125 villages marooned. (ii) Several thousand people rendered homeless. (iii) Underground telephone cables damaged. (iv) Several roads washed away. (v) Rail tracks breached at several points.
50.	Jul. (3rd & 4th week)	Bhatinda district	Flash floods in Ghaggar river.	-	(i) 18 villages inundated. (ii) Normal life paralysed.
<u>RAJASTHAN</u>					
51.	Jul. (2nd & 3rd week)	Alwar district	Heavy rains	27 persons died when a bus washed away in flash floods in a nullah	(i) Train services disrupted. (ii) Vehicular traffic suspended.
<u>SIKKIM</u>					
52.	Aug. (4th week)	Sikkim	Heavy rains	-	Gangtok cut-off from rest of the country following heavy land slides on national highway.
<u>TAMILNADU</u>					
53.	Jul. (1st week)	Coimbatore district	Moderate floods in Cauvery river	One girl swept away near Erode.	150 huts along the bank of river washed away.
54.	12 Nov.	Chingleput district	Flash floods in Kudur river	A driver of a bus washed away while crossing the causeway of the river near Sathyavedu.	
55.	Nov. (3rd week)	Madras	Heavy rains		(i) Several areas inundated. (ii) Telephone services disrupted. (iii) 15,000 people rendered homeless. (iv) Normal life paralysed.
<u>UTTAR PRADESH</u>					
56.	25 Jun.	Uttarkashi district	Heavy rains due to cloud burst	(i) 25 persons killed in massive land-slides in Gyansu village, 3 missing & 7 injured. (ii) Hundreds of cattle killed.	(i) Vast areas inundated. (ii) The entire Gyansu village situated on the banks of Bhagirathi river destroyed.

(1)	(2)	(3)	(4)	(5)	(6)
57..	8 Jul.	Basti district	Moderate floods in Ghagra river	8 persons drowned in a boat capsize.	-
58.	Jul. (2nd week)	(a)Chamoli, Tehri-Garhwal & Uttarakashi districts.	Moderate floods in Alaknanda and Bhagirathi rivers	4 persons swept away in floods and 22 killed in landslides	(i)Many houses washed away. (ii)Electrical lines damaged. (iii)Vehicular traffic to Badrinath-Kedarnath dislocated due to several breaches.
		(b)Ballia district	Flash floods	20 persons drowned in a boat capsize in a swollen nullah	-
		(c)Dehra Dun	Flash floods in Tons river	-	Three hydel power stations completely closed resulting in sudden drop in power supply.
		(d)Pratapgarh district	Heavy rains	3 persons killed in house collapse	500 houses damaged.
59.	Jul. (3rd & 4th week)	Bahraich, Ballia, Bara-banki, Bareilly, Basti, Bulandshahr, Deoria, Fatehpur, Gonda, Gorakhpur, Hamirpur, Hardoi, Jaunpur, Lucknow, Nainital, Pilbhit, Shahjahanpur, Saharanpur, Sitapur, Rai-Bareilly and Uttar Kasi districts.	Severe floods in Ganga, Ghagra, Yamuna, Gomati, Gandak & Sai rivers	130 persons killed in drowing/house collapses/landslides	(1)3600 villages with a population of 3.5 lakhs affected. (ii)Amuakhas bund in Deoria district washed away causing extensive inundation. (iii)Thousands of people rendered homeless. (iv)80,940 hectares of agricultural land and 5829 hectares of cropped area submerged. (v)1000 houses collapsed.

(1)	(2)	(3)	(4)	(5)	(6)
60.	Entire Aug. & Sep. (1st, 2nd and 3rd week)	Allahabad, Azamgarh, Bahraich, Ballia, Banda, Bara-banki, Basti, Budaun, Bulandshahr, Dehra Dun, Deoria, Etah, Etawah, Faizabad, Farrukabad, Fatepur, Garhwal, Gazipur, Gonda, Gorakhpur, Hamirpur, Jaunpur, Kanpur, Kheri, Lucknow, Mainpuri, Mathura, Mirzapur, Moradabad, Muzaffarnagar, Pilibhit, Pithorgarh, Pratapgarh, Rai Bareilly, Saharanpur, Sitapur, Sultanpur, Unnao, Uttarkashi, and Varanasi districts.	Severe floods in Ganga, Ghagra, Betwa, Rapti, Yamuna, Sarada, Ramganga, Tons, Sai, Gomati & Gandak rivers.	(i) Total death toll 1313 due to drowning/house collapses/land-slides and boat tragedies. (ii) 5239 cattle perished.	(i) 29 million people in 43,000 villages reeled under the impact of floods. (ii) Total area affected 5.6 million hectares due to extensive inundation and water logging. (iii) 3 million hectares of cropped area affected. The maize, jowar and Bajra crops suffered almost total loss. (iv) Several bunds washed away. (v) 7 million people rendered roofless. (vi) Number of houses collapsed/damaged : 1.8 Million. (vii) Inter district highways/national highways/rail tracks breached at many points paralysing traffic communication facilities. (viii) Most of the towns in the state plunged into darkness following power failure intermittently. (ix) Water supply, telecommunication channel disrupted in many districts for several days. (x) Total loss to property estimated at Rs. 200 crores.
<u>WEST BENGAL</u>					
61.	Sep. (1st week)	Darjeeling	Heavy rains	60 persons mostly tea garden workers died due to landslides.	(i) 250 houses badly damaged. (ii) 450 families rendered homeless. (iii) Many roads damaged disrupting vehicular traffic. (iv) Roads/bridges washed away.

