



INDIA METEOROLOGICAL DEPARTMENT

DISASTROUS WEATHER EVENTS, 2008



ISSUED BY
NATIONAL CLIMATE CENTRE
OFFICE OF THE
ADDITIONAL DIRECTOR GENERAL OF METEOROLOGY (RESEARCH)
PUNE - 411005

Cover Photo : The normal life was thrown out of gear of many villages as the flood waters receded in most places in the Mahanadi delta region, due to river embankment breached at about 100 points.

(Courtesy : The N. Bharat Times, dt. 25 Sept. 2008)

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भारत सरकार

GOVERNMENT OF INDIA

भारत मौसम विज्ञान विभाग

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The most striking disastrous weather events of 2008 were the following:

1. Cold wave conditions prevailed over northern parts of the country and claimed 114 human lives.
2. Heat wave swept major portion of Orissa and a few pockets in Andhra Pradesh and claimed 111 human lives.
3. During summer monsoon of 2008, floods and heavy rains have claimed 1800 human lives apart from loss of large number of live stock and extensive damage to public/private property.
4. Cyclonic Storm RASHMI during 25-27 October 2008 crossed Bangladesh coast near Long.89.5⁰E as cyclonic storm between 2200-2300 UTC and weakened into low pressure area over Meghalaya on 27th evening and caused loss of 13 human lives in India and also caused extensive damage to public / private property in Meghalaya and Arunachal Pradesh.
5. Cyclonic Storm KHAIMUKH during 13-16 November 2008 crossed south Andhra coast close to north of Kavali as a deep depression between 2200-2300 UTC of 15th November, caused extensive damage to crops, fisheries and public property.
6. Cyclonic Storm NISHA during 25-27 November 2008 crossed Tamil Nadu coast north of Karaikal between 0000-0100 UTC near Lat. 11.3⁰N and 79.8⁰E and weakened into deep depression at 0900 UTC of 27th November and caused loss of 100 human lives and also caused extensive damage to paddy crops in 55,250 hectares.

The summary of these natural hazards is based on various reports of the India Meteorological Department and press information. The areas affected by the adverse weather conditions are depicted season wise on four maps.

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S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
TABLE - I : SNOWFALL					
CRITERIA					
Moderate : 7.6 to 34.9 cm in 24 hrs.					
Heavy : \geq 35.0 cm in 24 hrs.					
1.	8-11 Jan.	a) Baramulla and Srinagar (Jammu & Kashmir)	Heavy	22 persons including 7 soldiers and 8 labors died.	i) Avalanche reported. ii) Valley remained cut-off for 2 days due to NH blockage after avalanche& snowfall.
		(b) Kinnaur (Himachal Pradesh)	Moderate		i) Apple orchard destroyed due to avalanche in the Pawri area. ii) Vehicular traffic and normal life disrupted when Kinnaur-Sangale road blocked at 30 places due to avalanche
2.	17 Jan.	Kinnaur (Himachal Pradesh)	Heavy	4 persons died and 2 injured.	i) Normal life paralysed. ii) Loss of nearly 2.75 crore has been reported.
3.	20 Jan.	Kinnaur (Himachal Pradesh)	Heavy	3 persons died.	Electric supply disrupted.
4.	5 Feb.	Anantnag (Jammu & Kashmir)	Moderate		i) Many huts buried due to avalanche. ii) Srinagar-Jammu NH blocked and 500 vehicles stranded.
5.	8 Feb.	(a) Keylong (Himachal Pradesh)	Heavy	2 persons buried due to avalanche.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
		(b) Shimla (Himachal Pradesh)	Heavy		93 buses stranded due to road blockage.
		(c) Anantnag, Bandipura and Srinagar (Jammu & Kashmir)	Heavy	25 persons died and 2 persons injured due to avalanche in Jammu- Srinagar Highway.	6 houses buried under snow.
6.	21 Feb.	Srinagar (Jammu & Kashmir)	Heavy	15 persons died and 50 injured.	Electric poles destroyed.
7.	28 Feb.	Chamba (Himachal Pradesh)	Heavy		Loss of property of Rs. 1 crore and 30 lakhs reported due to house collapse.
8.	17 Mar.	Manali (Himachal Pradesh)	Heavy	6 persons died and 8 injured due to landslide after snowfall.	
9.	31 Mar.	Leh (Jammu & Kashmir)	Heavy	2 children died.	Landslide reported.
10.	4 Jun.	Dehradun (Uttaranchal)	Heavy	One person died and 9 others injured.	Avalanche reported at Gurumukh.
11.	20 Nov.	Kashmir Valley (Jammu & Kashmir)	Heavy		Hundreds of Apple and Walnut trees uprooted.

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
TABLE – II : COLD WAVE					
CRITERIA					
(A) When; Normal minimum temperature is 10 ⁰ C or more.					
Cold wave : Night temperature 5 ⁰ C to 6 ⁰ C below normal.					
Severe cold wave : Night temperature 7 ⁰ C or more below normal.					
(B) When; Normal minimum temperature is less than 10 ⁰ C.					
Cold wave : Night temperature 4 ⁰ C to 5 ⁰ C below normal.					
Severe cold wave : Night temperature 6 ⁰ C or more below normal.					
1.	1 Jan.	Allahabad, Jaunpur and Pratapgarh (Uttar Pradesh)	Cold wave (B)	8 persons died.	
2.	2 Jan.	Jaipur (Rajasthan)	Cold wave (B)	One person died.	
3.	2 & 3 Jan.	Srinagar (Jammu & Kashmir)	Severe cold wave (B)	9 persons died.	
4.	4 Jan.	Nagaur (Rajasthan)	Cold wave (B)	One person died.	
5.	7 Jan.	Chitrakoot and Jaunpur (Uttar Pradesh)	Cold wave (B)	2 persons died.	
6.	12 Jan.	Kangra (Himachal Pradesh)	Cold wave (B)	One person died.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
7.	14 Jan.	Sriganganagar (Rajasthan)	Cold wave (B)	One person died.	
8.	Jan. (2 nd to 4 th week)	(a) Bhatinda, Ferozepur Jalandhar, Mohali Panchkula, Phagwara and Sangrur (Punjab)	Severe cold wave (B)	10 persons including one women and a child died.	
		(b) Alwar, Dausa Jodhpur, Jaisalmer, Pali, Tonk and Udaipur (Rajasthan)	Severe cold wave (B)	3 persons died.	Mustard, Gram and vegetable crops damaged.
		(c) Many districts of Uttar Pradesh	Severe cold wave (B)	11 persons died including one woman and 4 children died.	
		d) Ambala and Jind (Haryana)	Severe cold wave (B)	One person died.	Potato crops severely damaged.
		(e) Ranchi (Jharkhand)	Severe cold wave (B)	37 persons died.	
9.	31 Jan. – 2 Feb.	(a) Fatehabad and Gurgaon (Haryana)	Cold wave (B)	i) 2 persons died. ii) 5000 chickens died.	
		(b) Hoshiarpur (Punjab)	Cold wave (B)	One person died.	
10.	1 Feb.	(a) Chandigarh (U.T.)	Cold wave (B)	One person died.	
		(b) Mahoba (Uttar Pradesh)	Cold wave (B)	One person died.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
11.	1-2 Feb.	Giridh, Palamu and Ranchi (Jharkhand)	Severe cold wave (A)	8 persons died.	
12.	3 Feb.	Gondia (Maharashtra)	Cold wave (A)	2 persons died.	
13.	5 Feb.	Bhilwara (Rajasthan)	Cold wave (A)	One person died.	
14.	6 Feb.	Ambala (Haryana)	Cold wave (B)	One person died.	
15.	8 Feb.	Chamba (Himachal Pradesh)	Cold wave (B)	One person died.	
16.	9 Feb.	Bhatinda (Punjab)	Cold wave (B)	2 persons died.	
17.	24 Sep.	Kullu (Himachal Pradesh)	Severe cold wave (A)	One person died.	
18.	11 Dec.	Srinagar (Jammu & Kashmir)	Cold wave (B)	One person died.	
19.	21 Dec.	Dausa (Rajasthan)	Severe cold wave (B)	One person died.	
20.	24 Dec.	Jaunpur and Varanasi (Uttar Pradesh)	Severe cold wave (A)	6 persons died.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
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TABLE – III : HEAT WAVE

CRITERIA

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

Heat wave : Departure from normal is 5°C to 6°C.

Severe heat wave : Departure from normal is 7°C or more.

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

Heat wave : Departure from normal is 4°C to 5°C.

Severe heat wave : Departure from normal is 6°C or more.

1.	18 Mar.	Yavatmal (Maharashtra)	Severe heat wave (A)	One person died.
2.	21 Mar.	Buldhana (Maharashtra)	Severe heat wave (A)	One person died.
3.	1-24 Apr.	Orissa (Entire State)	Severe heat wave (A & B)	23 persons died.
4.	22 Apr.	Kolkata (West Bengal)	Severe heat wave (A)	One person died.
5.	27 Apr.	(a) Bardhaman (West Bengal)	Severe heat wave (A)	6 persons died.
		(b) Bhavnagar, Narmada & Rajkot (Gujarat)	Severe heat wave (A)	3 persons died.

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
6.	29 Apr.	Mathura (UttarPradesh)	Severe heat wave (A)	8 persons died.	
7.	3 May	Singhbhum (Jharkhand)	Severe heat wave (A)	One person died.	
8.	5-7 May	Krishna (Andhra Pradesh)	Severe heat wave (A)	14 persons died.	
9.	May (Whole month)	Many districts of Orissa	Severe heat wave (A & B)	53 persons died.	

TABLE – IV : SQUALL

A sudden increase of wind speed by at least 29 kmph (16 kts), the speed rising to 40 kmph (22 kts) or more and lasting for at least one minute

CRITERIA

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

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

1.	13 May	New Delhi (U. T.)	Severe	6 persons died.	i) Many trees uprooted. ii) Power supply disrupted.
2.	10 Aug.	Bengaluru, Udipi (Karnataka)	Moderate		i) Trees, plants and electric poles uprooted. ii) Part of hoardings damaged.
3.	30 Aug.	Chandigarh IAF (U.T.)	Moderate	One person died.	Trees, plants and electric poles uprooted.

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
4.	5 Sep.	(a) Ambala, Faridabad and Yamuna nagar (Haryana)	Severe	3 persons died.	<ul style="list-style-type: none"> i) Electric poles uprooted breaking feeder lines. ii) Many vehicles damaged. iii) Hundreds of trees uprooted. iv) Roofs of the houses blown away. v) Airtel mobile tower damaged.
		(b) Mohali, Patiala and Roop Nagar (Punjab)	Moderate	3 persons injured due to roof collapse.	Few trees uprooted.
		(c) Solan (Himachal Pradesh)	Moderate		Few trees uprooted. Few houses damaged.

TABLE – V : GALE

CRITERIA

Strong : Wind speed \geq 75 kmph

1.	17 & 18 May	Gurgaon & Mahendragarh (Haryana)	Strong	14 persons died due to wall collapse and 26 injured.
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S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
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TABLE – VI : DUSTSTORM

CRITERIA

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

Severe : Wind speed \geq 75 kmph and horizontal visibility up to 50 metres.

1.	14 May	Etah, Fatehpur, Farurukhabad, Jalaun, Kanpur, Kannauj, Orraiya and Unnao (Uttar Pradesh)	Severe	45 persons died.	i) Many trees uprooted. ii) Electric poles twisted. iii) Mango crops badly affected.
2.	26 May	Lucknow (Uttar Pradesh)	Moderate		Trees/hoardings/electric poles uprooted.
3.	28 May	Unnao (Uttar Pradesh)	Severe	5 persons died.	Damage to property of few lakhs reported.

TABLE – VII : LIGHTNING

1.	19 Mar.	Jashpur (Chattisgarh)		One person died.	
2.	21 Mar.	Hooghly, Malda, Medinipur and Nadia (West Bengal)		5 persons died and many cattle heads perished.	
3.	23 Mar.	(a) Aurangabad (Maharashtra)		4 persons died.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
		(b) Ranchi (Jharkhand)		One person and 6 cattle heads perished.	
		(c) Thiruvananthapuram (Kerala)		6 persons and one cattle perished.	
4.	24 Mar.	(a) Jabalpur (Madhya Pradesh)		2 persons died.	
		(b) Thiruvananthapuram (Kerala)		2 persons died.	
5.	25 Mar.	(a) Gulbarga & Udupi (Karnataka)		3 persons died.	
		(b) Jaipur (Rajasthan)		2 persons died and 3 injured.	
6.	26 & 28 Mar.	Thiruvananthapuram (Kerala)		2 persons died 2 injured.	
7.	30 Mar.	Nagpur (Maharashtra)		One woman died.	Damage to orange orchard reported.
8.	31 Mar.	Alwar, Jhalawar and Pali (Rajasthan)		4 persons died and 7 injured.	
9.	2 Apr	Vizianagaram (Andhra Pradesh)		2 persons died.	
10.	2, 3 & 5 Apr.	Medinipur, Nadia and Uttar Dinajpur (West Bengal)		6 persons died and 3 injured.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
11.	3 Apr.	Chandauli, Jaunpur, Mirzapur, Sitapur and Unnao (Uttar Pradesh)			14 persons died.
12.	4 Apr.	Bharatpur and Bundi (Rajasthan)			i) 2 persons died. ii) 2 cattle heads perished.
13.	6 Apr.	Akola, Amravati, Wardha and Washim (Maharashtra)			i) One person died and 30 injured. ii) 44 cattle heads perished.
14.	1-7Apr.	(a) Many districts of Andhra Pradesh			34 persons died and 1643 cattle heads perished.
		(b) Ahmednagar, Aurangabad, Beed, Kolhapur and Nashik (Maharashtra)			i) 10 persons died and 2 injured. ii) 3 cattle heads perished.
15.	9 Apr.	(a) Satara and Thane (Maharashtra)			3 women died.
		(b) Tuticorin (Tamil Nadu)			One person died.
16.	11 & 16 Apr.	Thiruvananthapuram (Kerala)			2 persons died.

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
17.	18-24 Apr.	Bijapur, Chitradurga, Davanagere, Dharwad, Gadag, Koppal, Raichur and Shimoga (Karnataka)		12 persons died, 4 injured and 30 cattle heads perished.	
18.	21 & 26 Apr.	Alappuzha, Eranakulam, Kannur, Kasargode and Thiruvananthapuram (Kerala)		5 persons died and 8 others injured.	
19.	7 & 8 May	Ferozpur (Punjab)		5 persons died and 6 others injured.	
20.	8 May	(a) Dindigul, Salem and Vellore (Tamil Nadu)		2 persons died and 500 livestock died.	
		(b) Malda (West Bengal)		10 persons died	
21.	10 May	Jaipur (Rajasthan)		One person died.	
22.	13 May	Sundergarh (Orissa)		5 children died.	
23.	14 May	Mathura (Uttar Pradesh)		i) 5 persons died. ii) Many cattle heads perished.	
24.	15 May	Tiruvallur (Tamil Nadu)		2 persons died.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
25.	18 May	(a) Mysore (Karnataka)		2 persons died.	
		(b) Fatehgarh Sahib (Punjab)		One person died.	
26.	21 May	(a) Ahmednagar, Beed and Latur (Maharashtra)		i) 8 persons died and 6 others injured. ii) 3 cattle heads perished.	
		(b) Malda (West Bengal)		3 persons died.	
27.	22 May	Ranchi (Jharkhand)		2 persons died and 3 others injured.	
28.	23 May	(a) Chitradurga, Gulburga, Kolar and Raichur (Karnataka)		6 persons died.	
		(b) Katihar (Bihar)		3 persons died.	
29.	25 May	Kozhikode (Kerala)		One person died.	
30.	26 May	(a) West Singhbhum (Jharkhand)		5 persons died and 6 others injured.	
		(b) Sivaganga (Tamil Nadu)		2 children died.	
		(c) Pune (Maharashtra)		One person died and 2 others injured.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
31.	27 May	Satara (Maharashtra)		2 persons died.	
32.	28 May	Chikmagalur, Davanagere and Shimoga (Karnataka)		5 persons died and one injured.	
33.	1 Jun.	Tiruvallur (Tamil Nadu)		2 persons died.	
34.	2 Jun.	(a) Belgaum, Bijapur, Chitradurga, Haveri and Raichur (Karnataka)		14 persons died and 5 others injured.	
		(b) Birbhum and Nadia (West Bengal)		7 persons died.	
35.	3 Jun.	Thiruvananthapuram (Kerala)		One person died.	
36.	4 Jun.	(a) Aurangabad & Pune (Maharashtra)		2 persons died.	
		(b) Dumka (Jharkhand)		7 persons died and 5 others injured.	
37.	5 & 6 Jun.	Bhandara, Buldhana, Chandrapur, Gadchiroli Jalgaon, Pune and Yavatmal (Maharashtra)		14 persons died and 8 others injured.	
38.	8 Jun.	Badwani and Betul (Madhya Pradesh)		3 persons died.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
39.	9 Jun.	Sholapur (Maharashtra)		One person died.	
40.	12 Jun.	Faizabad, Sant Kabir Nagar and Siddharthnagar (Uttar Pradesh)		5 persons died.	
41.	13 Jun.	(a) Gorakhpur (Uttar Pradesh)		5 persons died and 11 others injured.	
		(b) Aurangabad (Bihar)		2 persons died.	
42.	14 Jun.	Malda (West Bengal)		4 persons died.	
43.	15 Jun.	Balia, Deoria, Gonda and Sonbhadra (Uttar Pradesh)		6 persons died.	
44.	1 & 2 Jul.	Datia (Madhya Pradesh)		5 persons died and one injured.	
45.	2,5,12,20,27 Jul.	Many districts of West Bengal		9 persons died.	
46.	6 Jul.	Jind and Panchkula (Haryana)		3 persons died.	
47.	8 Jul.	Hazaribagh, Ramgarh and Silli (Outskirt of Ranchi) (Jharkhand)		11 persons died.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
48.	9 Jul.	Jaipur (Rajasthan)		2 women died.	
49.	17, 22, 26, 28 Jul.	Dumka and Ranchi (Jharkhand)		4 persons died.	
50.	19 Jul.	Pudukottai (Tamil Nadu)		One woman died.	
51.	22 Jul.	Villupuram (Tamil Nadu)		5 persons died.	
52.	29 Jul.	(a) Bhandara (Maharashtra)		One person died.	
		(b) Hassan (Karnataka)		One person died.	
53.	31 Jul.	Gadchiroli (Maharashtra)		2 women died.	
54.	3 Aug.	Bhind (Madhya Pradesh)		9 persons died and 2 others injured.	
55.	4 & 5 Aug.	Bhandara, Chandrapur and Wardha (Maharashtra)		4 persons died and 3 others injured.	
56.	6 Aug.	Tikamgarh (Madhya Pradesh)		8 persons died.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
57.	9 Aug.	Chandrapur (Maharashtra)		2 persons died and one injured.	
58.	10 Aug.	Rohtas (Bihar)		4 persons died and 2 others injured.	
59.	11 & 13 Aug.	Medinipur, Nadia and Purulia (West Bengal)		7 persons died.	
60.	13 Aug.	Kapurthala (Punjab)		One person died.	
61.	26 Aug.	Pakur (Jharkhand)		9 persons died and 14 others injured.	
62.	27 Aug.	Malda (West Bengal)		6 persons died and 2 others injured.	
63.	28 Aug.	Mandya (Karnataka)		One person died and one injured.	
64.	29 Aug.	Satara (Maharashtra)		2 persons died.	
65.	31 Aug.	Perambalur and Vellore (Tamil Nadu)		4 persons died.	
66.	1, 14 & 20 Sep.	Dhanbad, Giridih and Ranchi (Jharkhand)		5 persons died.	
67.	2 - 4 Sep.	Akola, Bhandara, Buldhana, Nashik and Satara (Maharashtra)		9 persons died and 5 women injured.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
68.	4 Sep.	Belgaum and Gulburga (Karnataka)		3 persons died and 6 others injured.	
69.	4, 8 & 13 Sep.	Medinipur, Purulia and South 24 Parganas (West Bengal)		8 persons died.	
70.	9 Sep.	(a) Akola, Wardha and Washim (Maharashtra)		2 persons died and 2 injured.	
		(b) Chittorgarh (Rajasthan)		2 persons died and one injured.	
71.	10 Sep.	Nagpur (Maharashtra)		One person died and one injured.	
72.	13 Sep.	Nandurbar (Maharashtra)		One person died.	
73.	23 Sept	Munger (Bihar)		3 persons died and 2 others injured	
74.	24 & 29 Sep.	Kancheepuram (Tamil Nadu)		4 persons died.	
75.	4,5 & 7 Oct.	Chandrapur, Nagpur and Wardha (Maharashtra)		14 persons died and 20 others injured.	
76.	5 Oct	Lohadaga (Jharkhand)		One boy died and 25 persons injured	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
77.	6 Oct.	Ropar (Punjab)		9 persons injured.	
78.	8 Oct.	Gadag (Karnataka)		One woman died.	
79.	9 Oct.	Tirunelveli (Tamil Nadu)		3 persons died.	
80.	10 Oct.	(a) Bidar, Bijapur, Gadag and Gulberga (Karnataka)		10 persons died and 10 others injured.	
		(b) Pathnamthitta (Kerala)		One woman died.	
		(c) Beed, Nanded, Osmanabad and Parbhani (Maharashtra)		8 persons died and 11 others injured.	
81.	11 Oct.	(a) Kozhikode and Malappuram (Kerala)		3 persons died and 5 others injured.	
		(b) Dharmapuri (Tamil Nadu)		4 women died and one person injured	
82.	14 Oct.	Cuddalore (Tamil Nadu)		One person died.	
83.	18 Oct.	Kancheepuram (Tamil Nadu)		3 persons died.	
84.	21 Oct.	Krishnagiri (Tamil Nadu)		One person died.	
85.	10 & 11 Nov.	Thiruvananthapuram (Kerala)		2 persons died and 5 others injured.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
86.	19 & 20 Nov.	Nagpur and Yavatmal (Maharashtra)		i) 10 persons died and 7 others injured. ii) One cattle perished.	

TABLE -VIII : 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.	18 Feb.	Sonitpur (Assam)	Severe	2 bullocks died.	
2.	14 Mar.	Most of the districts of Assam	Moderate	4 persons injured.	i) Roofs of houses, cattle sheds blown away. ii) Trees, electric/telephones poles uprooted.
3.	24 Mar.	Dhurbi, Jorhat and Sonitpur (Assam)	Severe	2 persons died and 2 others injured.	i) Roofs of houses, cattle sheds blown away. ii) Trees, electric/telephones poles uprooted. iii) Standing crops damaged.
4.	28-31 Mar.	Most of the districts of Assam	Severe	One person died and 19 others injured.	i) Roofs of houses, cattle sheds blown away. ii) Trees, electric/telephones poles uprooted. iii) Standing crops damaged.

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
5.	3 Apr.	Most of the districts of Assam	Moderate		<ul style="list-style-type: none"> i) 150 trees in Guwahati University campus uprooted. ii) Roofs of houses blown away. iii) Electric power and communication disrupted. iv) Standing crops damaged.
6.	6 Apr.	Marigaon (Assam)	Severe	One woman died and 2 others injured.	
7.	12 Apr.	Darang (Assam)	Moderate		<ul style="list-style-type: none"> i) Roofs of dwelling houses, cattle sheds blown away. ii) Trees, electric/telephones poles uprooted. iii) Standing crops damaged.
8.	16 & 17 Apr.	Barpeta, Goalpara, Nagaon, Nalbari and Sibsagar (Assam)	Severe	One person died and a child injured.	<ul style="list-style-type: none"> i) Trees, electric/telephones poles uprooted. ii) Standing crops damaged.
9.	26 & 27 Apr.	Dhubri, Goalpara and Kamrup (Assam)	Severe	2 women and a child died and 8 persons injured.	<ul style="list-style-type: none"> i) More than 100 houses of several villages affected. ii) Standing crop damaged.
10.	2 May	Nagaon and Kamrup (Assam)	Moderate	One woman injured.	<ul style="list-style-type: none"> i) Extensive damage to the crops reported. ii) Several thatched houses, building damaged. iii) Electric power and communication disrupted.
11.	7 May	Kaziranga (Assam)	Moderate		<ul style="list-style-type: none"> i) Several valuable trees in the National Park damaged. ii) NH 37 blocked.
12.	8 May	Wayanad (Kerala)	Moderate		<ul style="list-style-type: none"> i) Extensive damage to agriculture reported. ii) Roofs of houses blown away.

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
13.	10 May	Jorhat, Sibsagar and Sonitpur (Assam)	Severe	One boy died due to house collapse.	<ul style="list-style-type: none"> i) Standing crops damaged. ii) Public schools / Govt. buildings and houses damaged. iii) Bah pandas, trees, telephone / electric poles uprooted. iv) Power / telecommunication disrupted.
14.	18 May	Ambala and Panipet (Haryana)	Severe	4 persons and a child died due to wall collapse.	Trees uprooted and power supply disrupted.
15.	18 & 19 May	Dhubri, Morigaon and Nalbari (Assam)	Severe	3 persons died and 4 others injured.	<ul style="list-style-type: none"> i) Roofs of houses blown away. ii) Trees, electric/telephones poles uprooted.
16.	28 May	Srikakulam (Andhra Pradesh)	Severe	2 persons died.	
17.	3 Jun.	Panchkula (Haryana)	Moderate		<ul style="list-style-type: none"> i) Many trees uprooted in Pinjore area. ii) Electric poles uprooted. iii) Vehicular traffic disrupted.
18.	6 Jun.	Gondia (Maharashtra)	Severe	One person died due to roof collapse.	
19.	18 Jun.	Marigaon (Assam)	Severe	3 persons died.	
20.	4 Jul.	Sonitpur (Assam)	Severe	One person died.	
21.	10 Jul.	Kamrup (Assam)	Severe	One person died.	
22.	3 Aug.	Morigaon (Assam)	Severe	5 persons including one woman died and 4 injured.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
23.	10 Aug.	Dhubri and Sonitpur (Assam)	Severe	4 persons died and 4 others injured.	
24.	14 Sep.	Lakhimpur and Sibsagar (Assam)	Moderate	10 persons injured.	i) Roofs of houses blown away. ii) Trees and electric poles uprooted. iii) Road traffic / telecommunication disrupted.
25.	29 Sep.	Marigaon (Assam)	Severe	One person died and one injured.	
26.	3 Oct.	Barpeta (Assam)	Severe	3 persons died and 15 others injured.	
27.	4 Oct.	Ranchi (Jharkhand)	Severe	5 persons died.	
28.	6 Oct.	Shimla (Himachal Pradesh)	Severe	One person died.	
29.	6 & 7 Oct.	Ranchi (Jharkhand)	Severe	6 persons died.	
30.	13 Oct.	Kamrup (Assam)	Severe	i) 2 persons died and one injured. ii) A cattle perished.	
31.	15 & 16 Oct	(a) Bhatinda, Mohali and Ropar (Punjab)	Severe	One woman and 2 children died.	Extensive damage to paddy crops.
		(b) Una (Himachal Pradesh)	Severe	One person died.	

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
TABLE - IX : HAILSTORM					
CRITERIA					
Slight : Sparse, usually small size and often mixed with rain.					
Moderate : Fall abundant enough to whiten ground.					
Heavy : Includes at least a proportion of large stones.					
1.	22 Feb.	Khurda (Orissa)	Severe	1 persons died	i) Houses in 20 villages damaged. ii) Telephone/Electric poles got snapped.
2.	1 Apr.	Bulandshahr (Uttar Pradesh)	Moderate	Thousands of birds perished.	Thousands of trees uprooted and road traffic disrupted.
3.	5 Apr.	Akola (Maharashtra)	Moderate	14 cattle heads and many birds perished	870 hectares of sunflower and ground nut crops damaged.
4.	31 May	Nagpur (Maharashtra)	Moderate	One person died	
5.	4 Jun.	Nashik and Pune (Maharashtra)	Moderate		i) Extensive damage to crops reported. ii) Many trees and electric poles uprooted.
6.	8 Oct.	Nashik (Maharashtra)	Moderate		2500 hectares of grape plantations damaged.

S.N.	Date/ Period	Area Affected	Intensity	Casualties	Extent of damage
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TABLE - X : DROUGHT

CRITERIA

Moderate : When seasonal (SW monsoon) rainfall departure is between -26% and -50%.

Severe : When seasonal (SW monsoon) rainfall departure is less than -50%.

S.N.	Area affected (Subdivision)	Seasonal rainfall departure (%)	Intensity
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S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
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TABLE XI – FLOODS AND HEAVY RAINS

As per data available from Central Water Commission, total damage for the whole season for entire state has been incorporated

STATES
ANDHRA PRADESH

1.	21-25 Mar.	Most of the districts	Heavy rains	<ul style="list-style-type: none"> i) 8 persons died. ii) Cattle heads perished. 	<ul style="list-style-type: none"> i) Roads, electric motors damaged. ii) Chilli, tobacco, paddy, mango, maize, sunflower etc. crops damaged. iii) Grape gardens grounded. iv) Several kutcha houses damaged. v) Loss of about one crore reported to Krishna dam project. vi) Power disruption in several areas reported.
2.	2 nd Week of Aug.	Adilabad, Cuddapah, East Godavari, Guntur, Hyderabad, Khammam, Krishna, Medak, Nalgaonda, Visakhapatnam, Warangal and West Godavari	Flash flood (Palem)	<ul style="list-style-type: none"> i) 66 persons died. ii) Two women and a child washed away. 	<ul style="list-style-type: none"> i) Thousand acres of farm land submerged. ii) About 1000 houses marooned.
3.	15 & 16 Aug.	Hyderabad, Kurnool and Mahaboobnagar	Heavy rains		<ul style="list-style-type: none"> i) 10,000 acres of crop damaged. ii) 5,000 acres of fields submerged. iii) Cotton, sunflower, onion etc. crops damaged. iv) Vehicular traffic disrupted.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
4.	25-28 Aug.	Hyderabad	Heavy rains		i) Low lying areas submerged. ii) Several houses damaged. iii) Highway badly damaged at many places.
5.	16 Sept.	Srikakulam	Flood (Vansadha)		48 Villages and 22000 acres field submerged.
6.	29 Sept.	Kurnool	Heavy rains		Paddy crops in hundreds of acres submerged.
*	Whole year			i) 148 human lives lost. ii) 6692 cattle lost.	i) 4.433 million population affected. ii) 47239 houses damaged. iii) Crops in 0.432 m. ha. affected.
ARUNACHAL PRADESH					
1.	14-16 Jun.	Papum pare, Subansiri	Severe flood (Jiadhal and Semen)	43 persons died in landslide in and around Itanagar.	i) Landslide reported. ii) Vehicular traffic, telecommunication disrupted.
2.	8 Jul.	Subansiri	Flash flood (Jiadhal and Semen)	37 persons died.	i) Landslide reported. ii) Tezpur – Tawang road cut off at several places.
*	Whole year			8 cattle lost.	i) 0.072 million population affected. ii) 75 houses damaged.
ASSAM					
1.	13 Apr.	Guwahati	Heavy rains	3 persons including a woman died.	i) Landslide reported. ii) Several houses damaged.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
2.	28 May	Lakhimpur	Flash flood (Jaidhal)		i) Road communication completed disrupted. ii) NH 52 submerged at several places.
3.	6 Jun.	Lakhimpur	Flash flood		i) Damage to crops and vegetables reported. ii) Water logged at several places.
4.	14-16 Jun.	Dhemaji, Lakhimpur and Sonitpur	Severe flood (Bharali, Jaidhal, Jia, Semen)	27 persons died.	i) A huge amount of standing crops damaged. ii) About 100 of villages inundated. iii) NH and railway lines breached.
5.	23 Jun.	Lakhimpur	Flash flood (Singra, Gabharu, Pav)		i) A vast area of Ngoboicha revenue area flooded. ii) Damage to standing crops reported.
6.	6 Jul.	Dhemaji and Lakhimpur	Flash flood (Tributory of Ranganadi)		i) More than 11 villages affected. ii) Some parts of NH 52 swept away.
7.	16 Jul.	Darrang	Flood (Mangaldoi)		i) Extensive damage to newly planted paddy and standing crops reported. ii) The super structure of the ongoing RCC bridge connecting NH 52 washed away. iii) At least 30 villages badly affected.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
8.	19 Jul.	Darrang	Flood (Nanoi and Sakotala)		<ul style="list-style-type: none"> i) The embankment of the rivers breached at several places. ii) 20 villages inundated. iii) Extensive damage to standing paddy crops reported.
9.	23-30 Jul.	Jorhat, Lakhimpur and Naibari	Flash flood (Brahmaputra & Kaldiya)	<ul style="list-style-type: none"> i) One person died. ii) 2 cattle heads perished. 	<ul style="list-style-type: none"> i) Due to breach in embankment vast area of Dhakuwakhana subdivision inundated. ii) Extensive damage to standing crops and poultry farms reported. iii) About 17,000 families rendered homeless. iv) Parts of central and lower Majuli inundated.
10.	Aug. (3 rd & 4 th week)	Bongaigaon, Jorhat and Nagaon, Sonitpur	Severe flood (Brahmaputra and Manas, Pachnoi)	3 persons died.	<ul style="list-style-type: none"> i) Animals from Pabitora wild life sanctuary fled away. ii) Extensive damage to paddy and other crops reported. iii) More than 157 families rendered homeless and about 1.5 lakh people affected. iv) 51,000 hectares of farm land affected.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
11.	Sep. (1 st and 2 nd week)	Barpeta, Bongaigaon, Dhubri, Dibrugarh Golaghat, Jorhat, Kamrup, Lakhimpur, Majuli, Marigaon, Nalbari and Nogaon	Severe flood (Brahmaputra and its tributaries)	32 persons died.	<ul style="list-style-type: none"> i) NH 37 submerged. ii) Kaziranga sanctuary, neighbouring villages of district flooded. iii) About 20 lakh people affected due to flood. iv) 60% of Kaziranga National Park submerged.
12.	27 Oct.	Kamrup and Lakhimpur	Flash flood (Puthimeri and Ranganadi)		<ul style="list-style-type: none"> i) A huge amount of standing crops damaged. ii) Several villages submerged.
*	Whole year			<ul style="list-style-type: none"> i) 35 human lives lost. ii) 4257 cattle lost. 	<ul style="list-style-type: none"> i) 2.0 million population affected. ii) 51272 houses damaged. iii) Crops in 0.135 m. ha. affected.
BIHAR					
1.	17, 23 & 24 Jun.	Banka, Patna, Sheikhpura	Heavy rains	6 persons died.	
2.	4 th Week of Aug. – 2 nd Week of Sept.	Araria, Katihar, Madhepura, Purnea, Saharsa and Supaul	Severe flood (Kosi)	131 persons died.	<ul style="list-style-type: none"> i) NH 106 inundated. ii) Crops in 2 lakh 47,000 hectares of land damaged. iii) 22 lakh people in 585 villages affected. iv) Extensive damage to crops & property reported.
*	Whole year			<ul style="list-style-type: none"> i) 262 human lives lost. ii) 873 cattle lost 	<ul style="list-style-type: none"> i) 4.834 million population affected. ii) 387189 houses damaged. iii) Crops in 0.340 m. ha. affected.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
GUJARAT					
1.	17 & 18 Sep.	Ahmedabad and Surindernagar	Heavy rains		i) Low lying areas inundated. ii) Road, rail traffic affected.
*	<i>Whole year</i>			i) 93 human lives lost. ii) 240 cattle lost.	i) 1.760 million population affected. ii) 852 houses damaged.
HARYANA					
1.	16 Jun.	Fatehabad	Heavy rains	2 persons died and 6 other injured.	i) Many villages submerged. ii) Damage to paddy crops reported.
2.	30 Jun.	Panchkula	Flood (Kasushalya)	One boy drowned.	Roads and houses flooded.
3.	6 Jul.	Sonepat	Heavy rains	4 persons died and 3 others injured.	
4.	12 - 14 Jul.	Faridabad & Panchkula	Heavy rains	3 persons including one woman and 2 children died.	Water logged in NH 22 Kalka-Panchkula stretch.
5.	31 Jul.	Kangra	Heavy rains		i) Landslide reported. ii) Vehicular traffic disrupted at many places.
6.	8 Aug.	Bhiwani	Heavy rains	2 persons including one woman died in house collapse.	i) About 40 villages flooded. ii) 90% of city inundated.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
7.	14-18 Aug.	Bhiwani, Sonapat and Yamuna nagar	Heavy rains		i) Standing crop in about 18,000 acres of land submerged. ii) About 12 villages submerged.
8.	22 & 23 Aug.	Panchkula and Rohtak	Flash flood (Ghaggar)	One person swept away.	Standing crop in 14,000 acres of land affected.
9.	19 - 21 Sept	Ambala, Jind, Karnal, Panchkula, Sonapat and Yamuna nagar	Severe flood (Satluj, Yamuna)	5 persons died and 3 others injured.	i) Standing crops in thousands of acres damaged. ii) Satluj, Yamuna canal breached at many places. iii) Many villages flooded.
*	<i>Whole year</i>			i) 5 human lives lost. ii) 3 cattle lost.	i) 0.021 million population affected. ii) 379 houses damaged. iii) Crops in 0.022 m.ha. affected.
HIMACHAL PRADESH					
1.	2-6 Apr.	Shimla and Una	Heavy rains		80% of wheat crop in 30,800 hectares of land damaged.
2.	16 Apr.	Kinnaur	Heavy rains		i) Landslide reported. ii) Highway was blocked at Purbani and Thopari.
3.	23 May	Chamba	Cloud burst	One person died.	Extensive damage to public and private property reported.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
4.	9 Jun.	Chamba, Kulu, Shimla and Solan	Cloud burst	One person died.	i) Landslide reported. ii) Extensive damage to crops reported. iii) About 40 houses damaged.
5.	13 Jun.	Bilaspur	Heavy rains		Landslide reported in Chandigarh-Manali highway.
6.	27-29 Jun.	Chamba, Kangra, Kulu, Mandi, Shimla and Solan	Heavy rains	One girl drowned.	i) Landslide reported. ii) Road traffic to Shimla affected. iii) Low lying areas inundated. iv) Extensive damage to crops reported. v) A large area of agriculture land washed off. vi) Many houses submerged.
7.	13 Jul.	(a) Solan	Cloud burst	One person washed away.	
		(b) Kulu	Flash flood (Beas)	One person washed away.	
8.	31 Jul.	(a) Chamba and Kangra	Heavy rains		i) Landslide reported. ii) Chamba - Pathankot highway disrupted.
		(b) Kulu	Cloud burst		Property of lakhs of rupees damaged.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
9.	5,8 Aug.	Kangra, Shimla and Sirmaur	Heavy rains	3 cattle perished.	<ul style="list-style-type: none"> i) Landslide reported. ii) Extensive damage to property reported. iii) Few houses collapsed and roads blocked.
10.	14 - 18 Aug.	Manali, Mandi, Shimla, Sirmaur and Solan	Heavy rains		<ul style="list-style-type: none"> i) Manali – Chandigarh NH disrupted due to landslide. ii) Crops in 13,000 hectares of land damaged. iii) All major roads blocked due to landslide and hundreds of trucks stranded in the apple belt. iv) Sabathu-Kuthad road damaged.
11.	22-24 Aug.	Bilaspur, Hamirpur, Mandi and Solan	Heavy rains		<ul style="list-style-type: none"> i) Landslide reported. ii) Few of houses collapsed. iii) Extensive damage to crops reported.
12.	19 & 20 Sep.	Shimla and Kinnaur	Heavy rains	39 persons died due to house collapse.	<ul style="list-style-type: none"> i) Landslide reported. ii) NH 21 & 22 was blocked.
*	<i>Whole year</i>			<ul style="list-style-type: none"> <i>i) 46 human lives lost.</i> <i>ii) 147 cattle lost.</i> 	<ul style="list-style-type: none"> <i>i) 0.064 million population affected.</i> <i>ii) One house damaged.</i> <i>iii) Crops in 0.018 m. ha. affected.</i>

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
JAMMU & KASHMIR					
1.	16 Jun.	Doda and Reasi	Flash flood (Rawi and Chenab)	One woman drowned.	
2.	7 Jul.	Srinagar	Heavy rains	3 persons died.	
3.	16 Jul.	Jammu	Flood	One person washed away.	
JHARKHAND					
1.	I st & II nd Week of Jun.	Giridih, Gumla, Hazaribagh and Ranchi	Heavy rains	31 Persons died and few persons injured.	
2.	1,10,12 & 28 Aug.	Palamu and Ranchi	Heavy rains	i) 11 Persons died. ii) 28 cattle heads perished.	
*	<i>Whole year</i>			i) <i>One human lives lost.</i> ii) <i>One cattle lost.</i>	<i>0.025 million population affected. 1411 houses damaged.</i>
KARNATAKA					
1.	26-31 Mar.	Bengaluru, Gadag and Haveri	Heavy rains	One boy washed away.	i) Extensive damage to crops reported. ii) About 260 houses collapsed. iii) Several trees / electric poles uprooted.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
2.	1 & 2 Jun.	Bengaluru, Belgaum and Uttara Kannada	Heavy rains		i) Extensive damage to crops reported. ii) Electric poles uprooted. iii) Few houses damaged.
3.	14 & 15 Jul.	Bengaluru and Mysore	Heavy rains	One person died.	i) Low lying areas inundated. ii) Electric poles / trees uprooted.
4.	20-22 Jul.	Bengaluru and Mysore	Heavy rains	3 persons including a woman and girl died.	i) Low lying areas flooded. ii) Electric poles / trees uprooted.
5.	25-31 Jul.	Belgaum, Chikmagalur, Gulburga Dakshina Kannada, Kodagu, Mysore, Shimoga and Uttara Kannada	Flash flood (Ghatprabha, Hiranyakeshi, Kaveri, Tunga and many other rivers)	3 persons died and 3 others injured.	i) Extensive damage to crops reported including 600 acres of Tobacco. ii) Electric poles uprooted. iii) Few houses damaged. iv) Paddy fields waterlogged.
6.	25-31 Aug.	Bengaluru, Bellary, Chamarajanagar, Davangere, Gulbarga, Hassan and Mysore,	Heavy rains	i) 5 persons died. ii) 10 cattle perished.	i) Thousand acres of crop damaged. ii) Low lying areas inundated. iii) Many houses, bridges and buildings damaged. iv) Trees / electric poles uprooted.
7.	1 st Week-4 th Week of August.	Bellary	Flood		i) Standing crops of paddy, maize, sunflower, sugarcane, banana, bajara & cotton in 7260 acres of land in 69 villages of Hadagali, Hospet & Siruguppa taluks damaged. ii) Loss estimated to worth Rs. 4.52 crores.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
8.	1-7 Sept.	Bagalkote, Bengaluru, Belgaum , Bellary, Bidar,Bijapur, Chikodi, Chitradurga Dharwad, Davangere, Gadag, Gulberga, Hassan, Hubli and Raichur.	Heavy rains	i) 30 Persons died and 9 injured. ii) Some of the live stock washed away.	i) Extensive damage to the crops reported. ii) 60 houses and a bridge collapsed. iii) Many villages inundated.
9.	20-24 Sept.	Bidar and Bijapur	Heavy rains	2 Persons died	i) Catchment area of Bhima river inundated. ii) About 6000 acres of crop area damaged.
10.	8 Oct.	Bagalkote	Heavy rains	3 persons died and 2 others injured.	
*	Whole year			i) 56 human lives lost. ii) 166 cattle lost.	i) 2589 houses damaged. ii) Crops in 0.002 m. ha. affected.
KERALA					
1	13-24 Mar	Alappuzha, Ernakulam, Kannur, Kasaragode, Kollam, Kottayam, Kozhikode, Malappuram, Palakkad , Pathanamthitta, Thiruvananthapuram, Thrissur and Wayanad	Heavy rains	i) 16 persons died and 20 others injured. ii) One cattle perished.	i) Paddy crops in more than 13000 hectares destroyed. ii) About 400 houses damaged.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
2.	8-11 Apr.	Thiruvananthapuram	Heavy rains		i) Many coconut trees uprooted. ii) Few houses collapsed.
3.	23-25 Apr.	Wayanad	Heavy rains		i) About 300 houses collapsed. ii) Extensive damage to agriculture reported.
4.	11-15 Jul.	Thiruvananthapuram	Heavy rains	One person died	
5.	28 -30 Jul.	Alappuzha, Idukki, Kollam, Kottayam, Palakkad, Pathnamthitta Thiruvananthapuram and Wayanad	Heavy rains	One person died and 5 others persons injured.	i) 36 houses damaged and 200 houses partially damaged. ii) Traffic, telephone lines disrupted due to uprooting of trees. iii) Low lying areas inundated.
6.	10-12 Aug.	Palakkad and Wayanad	Heavy rains	2 persons died.	i) Few houses collapsed. ii) Extensive damage to agriculture reported.
7.	31 Aug.	Thiruvananthapuram	Heavy rains	10 persons injured.	i) About 8 houses damaged. ii) Low lying areas flooded. iii) Traffic disrupted.
8.	1-5 Sep.	Malappuram, Pathanamthitta and Thiruvananthapuram	Heavy rains	One person died.	i) Landslide reported. ii) Extensive damage to crops and property reported. iii) Few houses flooded. iv) Traffic disrupted.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
9.	7 & 8 Sep.	Idukki, Kasaragode and Kottayam	Flash flood		i) Extensive damage to agriculture reported. ii) Landslide reported. iii) Many houses collapsed.
10.	19-27 Oct.	Alappuzha, Kottayam, Kozhikode, Malappuram, Palakkad, Thiruvananthapuram, Thrissur and Wayanad	Heavy rains	6 persons died and 16 others injured.	i) Many houses damaged. ii) 18,000 acres of paddy crop flooded.
*	<i>Whole year</i>			i) 72 human lives lost. ii) 8 cattle lost.	i) 0.092 million population affected. ii) 9360 houses damaged. iii) Crops in 0.005 m. ha. affected.
MADHYA PRADESH					
1.	18-20 Jun.	Chhatarpur and Tikamgarh	Flood	i) 3 persons died. ii) About 5000 cattle heads perished.	i) About 1000 houses washed away and many damaged.. ii) 4 highways disrupted.
*	<i>Whole year</i>			i) 16 human lives lost. ii) 1138 cattle lost.	10039 houses damaged.
MAHARASHTRA					
1.	4 Jun.	Pune	Heavy rains		i) 2000 acres of tomato crop damaged. ii) Many trees in fruit garden uprooted.
2.	6 Jun.	Gondia	Heavy rains	One person died.	

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
3.	7-9 Jun.	Mahad, Mumbai, Raigad and Thane	Heavy rains	10 persons including 2 children died and 19 others injured.	i) Landslide reported. ii) Many trees uprooted. iii) Low lying areas flooded. iv) Few houses collapsed.
4.	13 Jun.	Gadchiroli	Heavy rains	4 persons died and 3 others injured.	
5.	1 & 2 Jul.	Mumbai and Thane	Heavy rains	5 persons died including 2 others electrocuted.	i) Low lying houses flooded. ii) Many trees uprooted.
6.	26-31 Jul.	Bhandara, Mumbai, Raigad and Wardha	Flash flood	6 persons died.	i) Landslide reported. ii) Low lying areas inundated. iii) Few houses collapsed. iv) Many trees uprooted.
7.	3 Aug.	Pune	Heavy rains	One person washed away.	
8.	4 - 8 Aug.	Bhandara Chandrapur and Wardha	Flash flood	18 persons died.	About 50 houses fully & 900 houses partially damaged.
9.	9 - 14 Aug.	Kolhapur, Mumbai, Pune, Ratnagiri, Satara and Sindhudurg	Flood (Indrayani, Mula, Panchganga, Pavana)	35 persons died and 35 others injured.	i) Landslide reported. ii) Road / rail traffic and power supply disrupted. iii) About 120 villages marooned. iv) Ratnagiri - Kolhapur highway disrupted. v) 1500 houses damaged. vi) About 900 people evacuated. vii) Extensive damage to grain stock reported.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
10.	29 Aug.	Satara	Heavy rains (Cloud burst)	One person swept away.	Extensive damage to cotton crop reported and soil in agricultural land washed away.
11.	2 Sep.	Osmanabad	Heavy rains	5 persons died due to wall collapse.	
12	12 - 17 Sep.	Beed, Dhule, Latur, Nanded, Nandurbar, Osmanabad, Parbhani and Solapur	Flood (Bhima, Bindusara and Chandrabhaga)	i) 32 persons died and 6 persons injured. ii) 5 persons swept away.	i) About 1000 houses inundated. ii) 80% of kharif crops damaged. iii) Low lying areas flooded.
13	19 Sep.	Nashik	Flood (Godavari)		i) Many villages marooned. ii) Low lying areas flooded.
14	5 Oct.	Nashik	Heavy rains	6 persons died.	
15	19 Nov.	Satara	Heavy rains		Crops of rice and sugarcane damaged.
16	1 Dec.	Pune	Heavy rains		i) Low lying areas flooded. ii) Many trees uprooted.
*	<i>Whole year</i>				<i>0.081 million population affected.</i>
MANIPUR					
1.	7 Sep.	Tamenglong	Heavy rains		i) Land slide reported in NH 53 and 39. ii) Vehicular traffic affected.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
MEGHALAYA					
1.	25 Jul.	Garo Hills	Heavy rains	One person washed away.	i) Landslide reported. ii) Extensive damage to standing crops reported. iii) Damage to bridges and houses reported.
*	<i>Whole year</i>				<i>0.002 million population affected.</i>
ORISSA					
1.	1-9 Jun.	Angul, Balasore, Dhenkanal, Nayagarh, Puri and Sambalpur	Heavy rains	14 persons died.	
2.	16-20 Jun.	Balasore, Bhadrak, Jajpur, Kendrapara and Mayurbhanja	Heavy rains	3 persons died.	Extensive damage to crops reported.
3.	7 Aug.	Cuttack	Heavy rains	2 persons died.	
4.	7 Sep.	Cuttack	Heavy rains	2 persons died.	
5.	15 - 28 Sep.	Angul, Bargarh, Bhadrak, Deogarh, Dhenkanal, Jagatsinghpur, Jharsuguda, Kendrapara, Khurda, Puri, Sambalpur and Sonepur	Flood (Mahanadi and its tributaries)	140 persons died.	i) Extensive damage to crops and houses reported. ii) About 6,000 villages marooned. iii) About 20 lakh people affected. iv) 31 breaches recorded in Mahanadi river system.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
*	Whole year			i) 47 human lives lost. ii) 53 cattle lost.	i) 3.044 million population affected. ii) 45190 houses damaged. iii) Crops in 0.119 m. ha. affected.
PUNJAB					
1.	5 & 6 Apr.	Sangrur	Heavy rains	3 persons died.	
2.	13-16 Jun.	Faridkot, Hoshiarpur, Jalandhar and Patiala	Heavy rains	3 persons died.	i) 1500 acres of land submerged. ii) Old Jalandhar and Patiala city inundated.
3.	21 Jun.	Mansa	Heavy rains		i) Around 1000 acres of land of cotton crops damaged. ii) Many villages inundated.
4.	26 - 29 Jun.	Bhatinda, Fatehagarh Sahib, Jalandhar, Ludhiana and Roop Nagar	Heavy rains	2 persons washed away	i) Standing crops in 250 acres of land damaged. ii) Damage to shops and residential properties reported. iii) A crack of 35-40 feet occurred in Bhakra main line. iv) Most areas of the town inundated. v) Chandigarh – Ambala NH - 22 disrupted.
5.	4 July	Bhatinda	Heavy rains	One girl drowned.	
6.	12 July	Jalandhar	Heavy rains		i) A breach occurred in Darauli canal. ii) Standing crops damaged.
7.	5 Aug.	Hoshiarpur	Heavy rains	One person died.	Low lying areas inundated.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
8.	8 Aug.	Kapurthala	Severe Flood		i) 3500 acres of crops submerged. ii) About a dozen villages affected.
9.	13-18 Aug.	Amritsar, Firozpur, Gurudaspur, Hoshiarpur, Jalandhar, Kapurthala, Mansa, Moga, Patiala and Roop Nagar	Flood (Beas, Ghagar, Sutlej)	26 persons died	i) About 38000 people affected. ii) One Lakh acres of standing crops damaged. iii) 306 villages affected and 1800 houses completely damaged. iv) 2 BSF observational posts submerged.
10.	21 Aug.	Kapurthala	Flash flood	One person swept away.	
11.	24 Aug.	Roop Nagar	Heavy rains	A child died and mother injured.	Landslide reported.
12.	19 - 21 Sept.	Bhatinda, Jalandhar, Hoshiarpur, Ludhiana, Mansa, Patiala and Sangrur	Flash flood	One boy died.	i) Paddy and cotton crops severely affected. ii) Standing crops in thousand acres of land washed away.
*	Whole year			i) 38 human lives lost. ii) 90 cattle lost.	i) 0.195 million population affected. ii) 13161 houses damaged. iii) Crops in 0.207 m.ha. affected.
RAJASTHAN					
1.	3-6 Aug.	Bikaner, Jodhpur and Nagaur	Heavy rains	10 persons died.	i) About 100 houses collapsed. ii) Jaswant Sagar bund breached.
*	Whole year			i) 68 human lives lost. ii) 18 cattle lost.	i) 0.006 million population affected. ii) 3834 houses damaged.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
TAMIL NADU					
1.	13 Mar.	Cuddalore	Heavy rains	100 cattle washed away.	Extensive damage to greengram and blackgram crops reported.
2.	25 May	Coimbatore	Flash flood	13 persons died.	
3.	26-28 Nov.	Ariyalur, Chennai, Cuddalore, Dindigul, Nagapattinam, Sivagangai, Thanjavur, Thiruvarur, Thoothukudi, Tiruchirappalli and Villupuram	Flood	78 persons died.	i) 45,250 acres of paddy crops costing about 4 lakhs submerged. ii) Flooding and electrocution reported.
*	<i>Whole year</i>			i) 27 human lives lost. ii) 28 cattle lost.	30 houses damaged.
UTTAR PRADESH / UTTARANCHAL					
1.	23 May	Kaushambi	Heavy rains	2 persons died due to roof collapse.	
2.	18 Jun.	Mainpuri	Heavy rains	2 persons died due to wall collapse.	
3.	5 & 7 Jul.	Many districts of Uttar Pradesh	Flood	32 persons died.	Torrential rain causes damage to many houses.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
4.	17 Jul.	Champawat	Heavy rains	10 persons died and 12 injured.	Landslide reported.
5.	19 Jul.	Shahajanpur	Heavy rains		i) Damage to 500 houses reported. ii) 500 hectares of cultivated land destroyed.
6.	17 Aug.	Etah, Fatehpur, Farukhabad, Kanpur and Shahjahanpur	Heavy rains	16 persons died.	
7.	20 Aug.	Barabanki, Mirzapur, Sitapur and Varanasi	Heavy rains	17 persons died.	
8.	1 st week of Jun-4 th week of Aug.	Entire Uttar Pradesh	Flood (Gomati)	About 721 persons died and few injured.	i) 15.29 lakh hectare of farmland affected. ii) Lakhs of people in 21 villages affected. iii) Extensive damage to houses reported. iv) About 50 villages inundated. v) The embankment of the river breached at several places.
9.	25 Sep.	Gorakhpur	Flood (Ghagra)		21 villages inundated.
*	Whole year			i) 1056 human lives lost. ii) 3490 cattle lost.	i) 2.576 million population affected. ii) 340761 houses damaged. iii) Crops in 0.422 m.ha. affected.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
WEST BENGAL					
1.	20 & 21 Jun.	Medinipur	Flood	25 persons died.	Extensive damage to crops reported. About 22 lakhs people affected.
2.	31 Aug.	Coochbehar and South 24 Paraganas	Heavy rains	One person died.	
*	<i>Whole year</i>			<i>69 human lives lost.</i>	<i>i) 0.008 million population affected. ii) 653 houses damaged.</i>
UNION TERRITORY					
CHANDIGARH					
1.	29 Jun.	Chandigarh	Heavy rains	One boy drowned.	i) Electric supply and road traffic disrupted. ii) Section 29 damaged.
2.	5 Aug.	Chandigarh	Heavy rains		i) Many trees uprooted. ii) Many houses flooded.
3.	11 Aug.	Chandigarh	Heavy rains	One person drowned.	Basement of district court flooded.
4.	5 Sep.	Chandigarh	Heavy rains	2 persons injured.	i) Many trees uprooted. ii) Traffic and power supply disrupted. iii) Many areas flooded.

S. N.	Date/Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
GOA, DIU & DAMAN					
1.	8 Jun.	Panjim	Heavy rains	5 persons died and 6 injured.	
*	<i>Whole year</i>			<i>i) 10 human lives lost. ii) 2 cattle lost.</i>	<i>216 houses damaged.</i>

* Input from Central Water Commission (CWC)

S. N.	Date/Period	Area affected	Intensity	Casualties	Extent of damage
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TABLE – XII : CYCLONIC STORM

During 2008, one very severe cyclonic storm 'NARGIS' and three cyclonic storms were formed over the Bay of Bengal. The Arabian sea was devoid of any cyclonic storm.

BAY CYCLONE

1.	25-27 Oct	<p>Formation Near Lat. 16.5°N/Long. 86.5°E at 0300 UTC of 25th.</p> <p>Landfall Crossed Bangladesh coast between 2200-2300 UTC of 26th Oct. near Long. 89.5°E.(about 50 km. west of Khepupara).</p> <p>Dissipation Over Meghalaya on 27th at 0900 UTC .</p>	Cyclonic Storm (RASHMI)	<ul style="list-style-type: none"> i) 5 persons died in Meghalaya. ii) 8 persons died in Arunachal Pradesh. 	<ul style="list-style-type: none"> i) The road and other communication links were disrupted over Tawang and Bomdila of West Arunachal Pradesh. ii) Several road bridges broken. iii) A few no. of dwelling houses destroyed.
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S. N.	Date/Period	Area affected	Intensity	Casualties	Extent of damage
2.	13-16 Nov.	<p><u>Formation</u> Lat. 11.5°N/Long. 85.5°E at 1200 UTC of 13th.</p> <p><u>Landfall</u> Crossed south Andhra Pradesh coast close to north of Kavali between 2200-2300 UTC.</p> <p><u>Dissipation</u> Over Rayalaseema and neighbourhood on 16th at 0900 UTC.</p>	Cyclonic Storm (KHAI MUK)	<p>i) One person died in Guntur district.</p> <p>ii) Livestock perished- Krishna district : 26 Guntur : 2</p>	<p>i) Krishna District: Population affected: 4112 Crop affected: 29287 hectares Irrigation loss : 11.70lakhs No. of houses damaged : 12 Fisheries loss: 21.77 lakhs</p> <p>ii) Guntur District: No. of houses damaged : 6</p> <p>iii) Prakasam District : Crop affected: 50.80 hectares Fishries loss: 140.30 lakhs</p> <p>iv) Visakhapatnam District: Fishries loss: Rs. 7,41,000/-</p> <p>v) East Godavari District: Agriculture loss: Rs. 625 lakhs Houses damaged: 297 Fishries loss: 1.20 lakhs</p> <p>vi) Nellore District: No. of persons affected: 7509 No. of villages affected: 104 Fishries loss: 1143.10 lakhs</p>

S. N.	Date/Period	Area affected	Intensity	Casualties	Extent of damage
3.	25-27 Nov.	<p><u>Formation</u> Lat. 8.5°N/Long. 81.0°E at 0900 UTC on 25th Nov.</p> <p><u>Landfall</u> Crossed Tamilnadu coast to north of Karaikal near Lat 11.3°N and Long. 79.8°E between 0000-0100 UTC.</p> <p><u>Dissipation</u> Over North Interior Tamil Nadu and adjoining areas of South Interior Karnataka and Rayalaseema on 28th at 0000 UTC.</p>	Cyclonic Storm (NISHA)	100 persons died in Tamil Nadu.	<p>i) 8 lakhs of paddy in Nagapattinam, Thanjavur and Tiruvarur and 55,250 hectares of paddy in Cuddalore district were submerged.</p> <p>ii) Disruption in road traffic due to the uprooted trees and electric poles.</p>