



INDIA METEOROLOGICAL DEPARTMENT

DISASTROUS WEATHER EVENTS 2016



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PUNE - 411005

Cover Photo: 'Mahad bridge collapse' incidence, August 2, 2016. The illfated British-era Bridge on the Mumbai-Goa Highway in Raigad district of Maharashtra collapsed due to swelling of river Savitri after incessant rains since past 72 hours. (<http://www.thehindu.com>)



भारत सरकार
GOVERNMENT OF INDIA
भारत मौसम विज्ञान विभाग
INDIA METEOROLOGICAL DEPARTMENT

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OFFICE OF THE HEAD, CLIMATE RESEARCH & SERVICES
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विपदाकारी मौसम घटनाएँ - 2016

2016 की सबसे चित्तग्राही विपदाकारी मौसम घटनाएँ इस प्रकार थे :

- देश के पूर्वोत्तर, मध्य एवं प्रायद्वीपीय भागों में उष्ण लहर की स्थितियाँ प्रबल रहीं, जिसके कारण 500 से अधिक लोगों की मृत्यु हुई, जिनमें से 324 तेलंगाना से थी ।
- 2016 की ग्रीष्म मॉनसून के दौरान बाढ़ तथा भारी वर्षा के कारण अधिक संख्या में पशुधन हानि एवं कृषि तथा निजी / सार्वजनिक सम्पत्तियों के अत्यधिक क्षति होने के अलावा 645 लोगों की मृत्यु हुई ।
- चक्रवाती तूफान (रोआनु) बंगाल की खाड़ी (बीओबी) में अक्षांश 11.0⁰ उ. / देशान्तर 81.0⁰ पू. के पास 0300 यू.टी.सी को 17-22 मई के दौरान विकसित हुआ । मई को बांग्लादेश के दक्षिणपूर्व तट को अक्षांश 22.6⁰ उ. और देशांतर 91.6⁰ पू. के करीब चित्तगॉंग (बांग्लादेश) के उत्तर की ओर लगभग 1000 यू.टी.सी को तट को पार किया । 22 मई की सुबह म्यानमार में और नागालैंड और मणिपुर के आसपास कमजोर हो गया । त्रिपुरा में एक व्यक्ति की मृत्यु हो गई ।
- अति प्रचण्ड चक्रवाती तूफान (वरदा) बंगाल की खाड़ी (बीओबी) में अक्षांश 8.5⁰ उ. / देशान्तर 91.0⁰ पू. के पास 0900 यू.टी.सी को 6-13 दिसम्बर के दौरान विकसित हुआ । 12 दिसम्बर को उत्तर तमिल नाडु तट को चेन्नई के करीब 0930 और 1130 यू.टी.सी के बीच अति प्रचण्ड चक्रवाती तूफान के रूप में तट को पार किया और उत्तर तमिल नाडु के करीब अक्षांश 13.0⁰ उ. और देशान्तर 79.9⁰ पू. पर केंद्रित रहा और 13 दिसम्बर 0300 यू.टी.सी. को उत्तर तमिल नाडु और निकटवर्ती दक्षिणी आंतरिक कर्नाटक पर कमजोर हो गया । तमिल नाडु में 33 व्यक्तियों की मृत्यु हो गई ।

इन प्राकृतिक आपदाओं का सारांश प्रेस तथा भारत मौसम विज्ञान विभाग के विविध विवरणों की सूचनाओं पर और मीडिया रिपोर्ट पर आधारित हैं । प्रतिकूल मौसम स्थितियों से प्रभावित क्षेत्रों को ऋतुवार चार मानचित्रों में दर्शाया गया है ।

DISASTROUS WEATHER EVENTS OF 2016

The most striking disastrous weather events of 2016 were the following:

- Heat wave conditions prevailed over Northeastern, Central and Peninsular parts of the country and claimed human lives over 500 out of which 324 lives claimed from Telangana.
- During summer monsoon of 2016, floods and heavy rains claimed about 645 human lives apart from loss of large number of livestock and extensive damage to agriculture and public/private property.
- A Cyclonic Storm (ROANU) formed over the Bay of Bengal near Lat. 11.0⁰N/ Long. 81.0⁰E at 0300 UTC during 17-22 May, crossed the southeast coast of Bangladesh near Lat. 22.6⁰N and Long. 91.6⁰E around 1000 UTC of 21st May close to the north of Chittagong (Bangladesh) and dissipated over Myanmar and adjoining Nagaland & Manipur on 22nd May morning. It took a toll of one person in Tripura.
- A Very Severe Cyclonic Storm (VARDHA) formed over the Bay of Bengal near Lat. 8.5⁰N/ Long. 91.0⁰E at 0900 UTC during 6 -13 December, crossed north Tamil Nadu coast close to Chennai between 0930 & 1130 UTC of 12th December as a Severe Cyclonic Storm & lay centered over north Tamil Nadu near Lat. 13.0⁰N and Long. 79.9⁰E and dissipated over north interior Tamil Nadu and adjoining south interior Karnataka on 13th December at 0300 UTC. It took a toll of 33 persons in Tamil Nadu.

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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सारिणी - I : हिमपात 2016

निकष

हल्की : 10.4 सेमी. या कम 24 घंटेमें ।

मध्यम : 10.5 से 64.4 सेमी. 24 घंटेमें ।

भारी : 64.5 से 115.5 सेमी. 24 घंटेमें ।

बहुत भारी : 115.6 से 195.5 सेमी. 24 घंटेमें ।

अत्यंत भारी : 195.6 सेमी. या अधिक 24 घंटेमें ।

TABLE - I : SNOWFALL 2016

CRITERIA

Light : 10.4 cm or less in 24 hrs.

Moderate : 10.5 to 64.4 cm in 24 hrs.

Heavy : 64.5 to 115.5 cm in 24 hrs.

Very Heavy : 115.6 to 195.5 cm in 24 hrs.

Extremely Heavy : 195.6 cm or more in 24 hrs.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
1	3 Jan.	Leh (Jammu & Kashmir)	Heavy	4 soldiers died due to snow avalanche at the Southern Glacier in Ladakh.	
2	30 Jan.	Kupwara (Jammu & Kashmir)	Heavy moderate	One person died & 2 others injured due to snow avalanche.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
3	3 Feb.	Leh (Jammu & Kashmir)	Heavy	10 soldiers died due to snow avalanche in Siachen area of Ladakh region.	
4	18 Feb.	Pulwama (Jammu & Kashmir)	Heavy	2 persons died due to snow avalanche in Narastan village of Tral.	
5	19 Mar.	Kargil (Jammu & Kashir)	Heavy	One Army soldier died due to snow avalanche in Kargil sector of Ladakh.	
6	25 Mar.	Leh (Jammu & Kashmir)	Heavy	2 soldiers died due to snow avalanche in Turtuk sector of Ladakh	
7	27 Mar.	Kupwara (Jammu & Kashmir)	Heavy	2 persons died due to snow avalanche in Tangdar sector of Kupwara.	

सारिणी - II : शीत लहर 2016

निकष

(A) जब, वास्तविक न्यूनतम तापमान 10°C या कम मैदानों के लिए और 0°C या कम पहाड़ी क्षेत्रों के लिए है ।

शीत लहर : ऋण विचलन सामान्य से 4.5°C से 6.4°C तक ।

तिव्र शीत लहर : ऋण विचलन सामान्य से 6.4°C से अधिक ।

(B) तटीय स्टेशन के लिए शीत लहर

जब, न्यूनतम तापमान 15°C या कम ।

शीत लहर : न्यूनतम विचलन तापमान -4.5°C या कम ।

(C) वास्तविक न्यूनतम तापमान पर आधारित (केवल मैदानों के लिए)

शीत लहर : जब न्यूनतम तापमान 4°C से कम या बराबर है ।

तिव्र शीत लहर : जब न्यूनतम तापमान 2°C से कम या बराबर है ।

'शीत लहर' घोषित करने के लिए कम से कम लगातार दो दिनों के लिए एक मौसम-उपखंड के कम से कम दो स्टेशनों में उपर्युक्त मानदंड यदि पूरा हो, तो दूसरे दिन इसे घोषित किया जाएगा।

TABLE - II : COLD WAVE 2016

CRITERIA

(A) When; Actual minimum temperature is 10°C or less for plains & 0°C or less for Hilly regions.

Cold wave : Negative departure from normal is 4.5°C to 6.4°C .

Severe cold wave : Negative departure from normal is more than 6.4°C .

(B) Cold Wave for coastal station

When; Minimum temperature 15°C or less.

Cold wave : Minimum temperature departure is -4.5°C or less.

(C) Based on Actual Minimum Temperature (For plain stations only)

Cold Wave : When minimum temperature is less or equal to 4°C .

Severe Cold Wave : When minimum temperature is less or equal to 2°C .

For declaring 'Cold Wave', the above criteria should be met at least in two stations, in a met. subdivision, for atleast two consecutive days and it will be declared on the second day.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
1	22 Jan.	New Delhi	Severe (A)	7 persons died.	
2	24 Jan.	Satna (Madhya Pradesh)	Severe (A)	One person died.	
		Chatra (Jharkhand)	Severe (B)	4 persons died.	
		Bilaspur (Chhattisgarh)	Severe (B)	One person died.	
3	25 Jan.	Mahoba (Uttar Pradesh)	Severe (A)	2 persons died.	
		Puruliya (West Bengal)	Severe (A)	4 persons died.	
4	11 & 12 Dec.	Begusari, Jhanabad, Muzaffapur, Nawada, Rohtas, Patna, Samistipur, Vaishali (Bihar)	Severe (Both A & B as appropriate)	16 persons died.	
5	9 to 12 Dec.	Deoria, Gorakhpur, Unnao (Uttar Pradesh)	Severe (Both A & B as appropriate)	7 persons died.	

सारिणी - III : उष्ण लहर 2016

निकष

(A) जब, अधिकतम तापमान कम से कम 40°C या अधिक मैदानों के लिए और 30°C या अधिक पहाड़ी स्टेशन के लिए ।

उष्ण लहर : सामान्य से विचलन 4.5°C से 6.4°C ।

तिव्र उष्ण लहर : सामान्य से विचलन 6.4°C से अधिक ।

(B) तटीय स्टेशन के लिए गर्मी की लहर

जब, वास्तविक अधिकतम तापमान 37°C या अधिक है ।

उष्ण लहर : सामान्य से अधिकतम तापमान विचलन 4.5°C या अधिक ।

(C) वास्तविक अधिकतम तापमान पर आधारित

उष्ण लहर : जब वास्तविक अधिकतम तापमान 45°C या अधिक ।

तिव्र उष्ण लहर : जब वास्तविक अधिकतम तापमान 47°C या अधिक ।

‘गर्मी की लहर’ घोषित करने के लिए कम से कम लगातार दो दिनों के लिए एक मौसम-उपखंड के कम से कम दो स्टेशनों में उपर्युक्त मानदंड यदि पूरा हो, तो दूसरे दिन इसे घोषित किया जाएगा।

TABLE - III : HEAT WAVE 2016

CRITERIA

(A) When; Maximum temperature is at least 40°C or more for plains & at least 30°C or more for Hilly station.

Heat wave : Departure from normal is 4.5°C to 6.4°C.

Severe heat wave : Departure from normal is greater than 6.4°C.

(B) Heat Wave for coastal station

When; Actual maximum temperature is 37°C or more.

Heat wave : Maximum temperature departure from normal is 4.5°C or more.

(C) Based on Actual Maximum Temperature

Heat wave : When Actual maximum temperature is greater than or equal to 45°C.

Severe heat wave : When Actual maximum temperature is greater than or equal to 47°C.

For declaring ‘Heat Wave’, the above criteria should be met *at least in two stations, in a met. subdivision, for atleast two consecutive days and it will be declared on the second day.*

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
1.	1 Mar. to 31 May	Adilabad	Severe (Both A & B as appropriate)	38	
		Karimnagar		29	
		Khammam		42	
		Mahaboobnagar		44	
		Medak		33	
		Nalgonda		91	
		Nizamabad		12	
		Ranga Reddy		20	
		Warangal		15	
		* Total		324	

*** As per data received from Disaster Management, Govt. of Telangana.**

2	5 Mar.	Palakkad (Kerala)	Severe (A)	One person died & 3 others injured in Alathur.
3	13 Mar.	Nanded (Maharashtra)	Severe (A)	One person died.
4	1 to 6 Apr.	Anantapur, Chittoor, Krishna, Kurnool, Prakasam, Srikakulam, Vizianagaram, West Godavari, YSR Cuddapah (Andhra Pradesh)	Severe (Both A & B as appropriate)	Total 45 persons died. Anantapur - 4, Chittoor - 3, Krishna - 2, Kurnool - 3, Prakasam - 11, Srikakulam - 2, Vizianagaram - 3, West Godavari - 1, YSR Cuddapah - 16
5	9 Apr.	Purulia (West Bengal)	Severe (B)	One person died.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
6	11 Apr.	Bankura, Bardhaman, South 24-Parganas (West Bengal)	Severe (B)	Total 4 persons died. Bankura - 1, Bardhaman - 2, South 24 - Parganas – 1	
7	5, 6, 10, 12, 13, 15, 19, 22, 23, 24, 27, 29 Apr.	Angul, Balasore, Dhenkanal, Jajpur, Keonjhar, Sambalpur (Odisha)	Severe (Both A & B as appropriate)	Total 13 persons died. Angul - 5, Balasore – 2, Dhenkanal - 2, Jajpur – 2, Keonjhar - 1, Sambalpur – 1	
8	13 Apr.	Hingoli, Nanded (Maharashtra)	Severe (B)	5 persons died.	
		Bardhaman (West Bengal)	Severe (B)	One person died.	
9	14 Apr.	Bardhaman, West Midnapur (West Bengal)	Severe (B)	Total 2 persons died, one in each district.	
10	19 & 20 Apr.	Alappuzha, Ernakulam, Kottayam, Palakkad, Pathanamthitta, Thrissur (Kerala)	Severe(A)	4 persons died & 9 other suffered burns. 2 cows perished.	
11	20 Apr.	Bilaspur (Chhattisgarh)	Severe(A)	One person died.	
		Parts of Maharashtra	Severe (Both A & B as appropriate)	3 persons died.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
12	21 & 22 Apr.	Ernakulam, Kasaragod, Kottayam, Malappuram, Palakkad, Pathanamthitta, Thrissur (Kerala)	Severe(A)	3 persons died & 9 other suffered burns. 4 cows perished.	
13	22 Apr.	Raipur (Chhattisgarh)	Severe(A)	One person died.	
14	25 Apr.	Bankura (West Bengal)	Severe (B)	2 persons died.	
15	26 Apr.	Tirunelveli (Tamil Nadu)	Severe(B)	3 persons died.	
		Bellary, Gulbarga (Karnataka)	Severe (B)	Total 3 persons died. Bellary - 2, Gulbarga - 1	
		Kottayam, Kollam, Thrissur (Kerala)	Severe(A)	Total 4 persons died. Kollam - 1, Kottayam - 2, Thrissur - 1	1038 hectares of agriculture crops worth rupees 16 crores damaged.
		Bankura (West Bengal)	Severe (B)	One person died.	
16	27 Apr.	Ernakulam, Pathanamthitta, Thiruvanthapuram (Kerala)	Severe (A)	5 persons suffered burns & 2 animals perished.	
		Salem (Tamil Nadu)	Severe(B)	One person died.	
		Puducherry	Severe(A)	One person died.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
		Bagalkot, Bijapur (Karnataka)	Severe (B)	2 persons died one in each Dist.	
17	28 Apr.	Entire Kerala state	Severe(A)	i) 2 persons died from Kannur & Kottayam Dist. ii) 16 persons suffered burns from different districts.	i) Standing crops viz. Banana, Papper & vegetables around 134.84 hectares of land whitened due to prolonged dry spell. ii) Total loss worth 35 crores reported. Rs.2.83 crore from Papper cultivation farmers, while Rs. 2.13 crore on 38 hectares of land from 404 Banana cultivation farmers. Damage to more than 97000 Banana plants reported.
18	29 Apr.	Kannur, Kollam, Kottayam (Kerala)	Severe(A)	Total 4 persons died. Kannur - 1, Kollam - 1, Kottayam - 2	
19	30 Apr.	Kottayam (Kerala)	Severe(A)	2 persons died.	
20	1 May	Kozhikode (Kerala)	Severe(A)	2 persons died.	
		Kurnool, Ongole (Andhra Pradesh)	Severe (Both A & B as appropriate)	4 persons died. Kurnool - 3, Ongole - 1	
21	1,2,5,6, 10,13,23 May	Angul, Balasore, Bolangir, Jajpur (Odisha)	Severe (Both A & B as appropriate)	Total 7 persons died. Angul -1, Balasore – 3, Bolangir - 2, Jajpur – 1.	
22	2 May	Parts of Gujrat	Severe (Both A & B as appropriate)	4 persons died.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
23	3 May	Palakkad (Kerala)	Severe (A)	One person died.	
24	5 May	Akola (Maharashtra)	Severe (B)	2 persons died in Danapur village of Telhara taluka.	
25	11 May	Bhandara, Chandrapur, Nagpur, Wardha (Maharashtra)	Severe (B)	15 persons died.	
		Dhamtari (Chhattisgarh)	Severe(A)	One person died.	
26	17 May	Mahasamund (Chhattisgarh)	Severe(A)	One person died.	
27	19 to 25 May	Parts of Gujrat	Severe (Both A & B as appropriate)	30 persons died.	
28	20 May	Burhanpur (Madhya Pradesh)	Severe (B)	One person died.	
		Gariaband (Chhattisgarh)	Severe(A)	One person died.	
29	21 May	Bhopal (Madhya Pradesh)	Severe (B)	2 persons died.	

सारिणी - IV : अंधड़ (स्कॉल) 2016

हवा की गति में कम से कम 29 किलोमीटर (16 KTS) प्रति घंटे से
40 किलोमीटर (22 KTS) प्रति घंटे या अधिक और अचानक वृद्धि
और कम से कम एक मिनट के लिए स्थायी

निकष

मध्यम : सतह हवा की गति (gusts में) 80 किलोमीटर प्रति घंटे तक।

तीव्र : सतह हवा की गति (gusts में) > 80 किलोमीटर प्रति घंटे।

TABLE - IV : SQUALL 2016

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.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
1	6 Apr.	Rajnandgaon (Chhattisgarh)	Severe	One persons died.	Damage to ropeway trail reported.
2	24 Apr.	Tinsukia (Assam)	Severe	2 persons died.	i) Extensive damage to huge amount of standing crops reported. ii) Damage to several houses reported. iii) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
3	2 May	Gomati, South Tripura (Tripura)	Severe	9 persons injured.	i) Damage to huge amount of Rubber plantations reported. ii) Extensive damage to household property reported. iii) Some trees/electric poles uprooted disrupting power supply, road traffic.
4	6 May	Bijapur, Kanker (Chhattisgarh)	Severe	One person died in Kanker Dist. as a tree fell on him.	i) Damage to 33 KV line reported. ii) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply for at least 20 hrs.
5	11 May	Sonitpur (Assam)	Severe	One person died & other injured.	i) Extensive damage to huge amount of standing crops reported. ii) Some trees/electric poles uprooted disrupting power supply, road traffic.
6	14 May	North Tripura	Severe	2 persons severely injured.	i) Damage to oil tanker reported. ii) Some trees uprooted.
7	16 May	Nagaon (Assam)	Severe	One person died.	Damage to standing crops reported.
8	21 May	Baloda Bazar (Chhattisgarh)	Severe	One person died & 3 others injured.	i) House collapsed. ii) Damage to about 100 electric poles reported.
9	30 May	Korba (Chhattisgarh)	Severe	One person died & other injured.	i) Some trees uprooted. ii) Damage to vehicles reported.
10	31 May	Jorhat (Assam)	Severe	2 persons injured.	i) Damage to huge amount of standing crops reported. ii) Some trees/electric poles uprooted disrupting power supply, road traffic.

सारिणी - V : झंझा 2016

निकष

तीव्र : हवा की गति ≥ 75 किलोमीटर प्रति घंटे

TABLE - V : GALE 2016

CRITERIA

Strong : Wind speed ≥ 75 kmph

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
1	18 Feb.	Thrissur (Kerala)	Strong	One person died & 6 others injured as a huge tree fell over them in Guruvayoor.	In Guruvayoor 4 cars damaged as a huge tree uprooted & fell over.
2	28 Mar.	Kollam (Kerala)	Strong		i) Damage to agricultural crops worth lakhs rupees reported. ii) Damage to 4 houses completely & several houses partially reported.
3	7 Apr.	Wayanad (Kerala)	Strong		i) Complete damage to one house reported. ii) Several trees uprooted & fell over electric cable lines causing disruption in power supply & traffic.
4	23 Apr.	Thoothukkudi (Tamil Nadu)	Strong		Damage to 1000 Banana plantations reported.
5	11 May	Patna (Bihar)	Strong		i) 215 families rendered homeless. ii) Roofs of many Katcha houses blown away. iii)

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
6	13 May	Kupwara (Jammu & Kashmir)	Strong	-	Damage to the school building & building of Sub-District Hospital reported.
7	29 May	Kupwara (Jammu & Kashmir)	Strong		i) Damage to many houses reported. ii) Several trees uprooted.
8	13 Jun.	Bilaspur, Hamirpur, Mandi (Himachal Pradesh)	Strong		i) Roof of school building blown away. ii) Damage to school bus reported as tree fell.
9	15 Jun.	Baramulla, Kupwara (Jammu & Kashmir)	Strong	2 persons died & 2 others injured.	i) Damage to many houses reported. ii) Several trees uprooted.
10	19 Jun.	Theni (Tamil Nadu)	Strong		Damage to 20 acres of Banana plantations in Podi in Theni Dist. reported.
		Thiruvananthapuram (Kerala)	Strong		i) Damage to 2 houses reported. ii) Damage to 2 cars & 2 bikes reported. iii) Several trees uprooted.
11	30 Jun.	Pulwama (Jammu & Kashmir)	Strong		i) Damage to fruits & other crops reported. ii) Damage to 90 houses reported.
12	1 Jul.	Thiruvananthapuram (Kerala)	Strong		Roof of a school building damaged as a huge coconut tree uprooted & fell over it.
13	2 Jul.	Udupi (Karnataka)	Strong		i) Damage to more than 40 houses reported. ii) 250 trees and 100 electricity poles uprooted causing disruption in power supply & vehicular traffic.

सारिणी - VI : आंधी 2016

TABLE - VI : DUST STORM 2016

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
1	7 May	Burdhawan (West Bengal)		One person died.	Damage to crops reported.
2	13 May	Murshidabad (West Bengal)		2 persons died.	i) Damage to crops reported. ii) Damage to mud houses reported.
3	23 May	Hardoi, Kanpur, Meerut, Sambhal, Unnao (Uttar Pradesh)		5 persons died.	i) Heavy damage to mango crops reported. ii) Damage to infrastructure reported. iii) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply.
4	30 May	Howarh (West Bengal)			i) Damage to crops reported. ii) Damage to houses reported.
5	17 Jun.	Baran, Ganganagar, Jaipur (Rajasthan)		3 persons died & 3 others injured.	

सारिणी - VII : मेघ विद्युत 2016

TABLE - VII : LIGHTNING 2016

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
1	1 Mar.	Parts of Maharashtra		6 persons died & 2 others injured.	
2	2 Mar.	Beed, Pune (Maharashtra)		2 persons died & 2 other injured.	
3	5 Mar.	Bhilwara (Rajasthan)		One person died.	
4	6 Mar.	Bhilwara, Jhalawar (Rajasthan)		Total 2 persons died one from each district.	
		Allahabad, Auraiya, Banda, Budaun, Bulandshahr, Chitrakoot, Etah, Fatehpur, Farrukhabad , Hamirpur, Hardoi, Jaunpur, Kannauj, Kaushambi, Mahoba, Pratapgarh, Unnao, (Uttar Pradesh)		7 persons died.	
5	7 Mar.	Chhattarpur, Jabalpur, Satna, Shahdol, Tikamgarh (Madhya Pradesh)		10 persons died.	
6	9 Mar.	Parts of Rajasthan		5 persons died & 3 others injured.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
7	11 Mar.	Samba (Jammu & Kashmir)		One soldier died & 2 others injured.	
8	12 Mar.	Chhattarpur , Damoh, Jhabua, Rajgarh, Sagar Shajapur Tikamgarh, (Madhya Pradesh)		11 persons died.	
9	13 Mar.	Khandwa (Madhya Pradesh)		2 persons died & 2 others injured.	
10	14 Mar.	Dindori (Madhya Pradesh)		One person died & 2 others injured.	
11	17 Mar	Dharpuri (Tami Nadu)		2 persons died	
12	26 Mar.	Nashik (Maharashtra)		2 persons died. 6 cattle heads perished.	
13	27 Mar.	Parts of Uttar Pradesh		3 persons died.	
14	3 Apr.	Gulbarga (Karnataka)		One person died.	
15	5 Apr.	Shivamogga (Karnataka)		2 persons died & 5 other injured.	
16	17 Apr.	Kurnool (Andhra Pradesh)		One person died.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
17	1, 6, 18, 22, 26, 28, 29, 30 Apr.	Angul, Balasore, Bolangir, Bargarh, Bhadrak, Deogarh, Dhenkanal, Gangam, Gajpatri, Jajpur, Kalahandi, Khurda, Koraput, Mayurbhanj, Nabarangpur, Nupada, Puri, Rayagada, Sambalpur (Odisha)		Total 49 persons died. Angul - 1, Balasore - 2, Bolangir - 3, Bargarh - 2, Bhadrak - 1, Deogarh - 1, Dhenkanal - 1, Gangam - 6, Gajpatri - 3, Jajpur - 1, Kalahandi - 4, Khurda - 2, Koraput - 3, Mayurbhanj - 8, Nabarangpur - 2, Nupada - 1, Puri - 2, Rayagada - 5, Sambalpur - 1.	
18	9 Apr.	Thiruvananthapuram (Kerala)		One person died.	
19	21, 22, 23, 24, 25, 27, 28, 29, 30, 31 May	Balasore, Bargarh, Cuttack, Dhenkanal, Kandhamal, Keonjhar, Koraput, Mayurbhanj, Nupada, Sundargarh (Odisha)		Total 18 persons died. Balasore - 2, Bargarh - 3, Cuttack - 1, Dhenkanal - 2, Kandhamal - 1, Keonjhar - 4, Koraput - 1, Mayurbhanj - 2, Nupada - 1, Sundargarh - 1 (Odisha)	
20	2 May	Gomati, South Tripura (Tripura)		One person died.	
		Anantpur (Andhra Pradesh)		2 persons died.	
21	3 May	Parts of Telangana		2 persons died & 4 others injured. 3 cattleheads perished.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
22	3 May	Chitradurga, Shivamoga (Karnataka)		2 persons died & other injured.	
23	4 May	Nagpur (Maharashtra) Amethi, Bahraich, Balrampur, Gonda (Uttar Pradesh)		2 persons died. 3 persons died.	
24	5 May	Rajgarh, Shajapur (Madhya Pradesh)		6 persons died.	
25	10 May	Jaipur, Kota (Rajasthan)		2 persons died & other injured. 19 goats perished.	
		Rajgarh (Madhya Pradesh)		One person died.	
		Mandi (Himachal Pradesh)		20 goats perished.	
26	12 May	Bhojpur, Katihar, Kishanganj, Nalanda, Supaul (Bihar)		14 persons died.	
27	13 May	Khowal, West Tripura (Tripura)		One person died & other injured.	
		Malda (West Bengal)		7 persons died & 12 others injured.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
28	16 May	Ariyalur (Tamil Nadu)		One person died.	
29	18 May	Khowal, West Tripura (Tripura)		2 persons died & 6 others injured.	
30	26 May	Chhattarpur, Kanti, Rewa (Madhya Pradesh)		5 persons died.	
31	1 Jun.	Bhadrak, Bhubaneshwar, Ganjam, Kendrapara, Khurda, Mayurbhanj (Odisha)		Total 18 persons died & 19 others injured. Bhadrak - 2, Bhubaneshwar - 4, Ganjam - 5, Kendrapara - 4, Khurda - 1, Mayurbhanj – 2.	
		Pune (Maharashtra)		2 persons died.	
		Tumakur (Karnataka)		3 persons died & 3 others injured.	
32	1 st week of Jun.	Parts of Maharashtra		6 persons died & 50 others injured.	
33	6 Jun.	Dehradun (Uttarkhand)		One person died & 20 others injured.	
		Kollam (Kerala)		One person died.	
		Faizabad, Gonda, Jaunpur, Raebareli (Uttar Pradesh)		8 persons died.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
34	7 Jun.	Fatehpur, Jhansi, Kanpur, Unnao (Uttar Pradesh)		17 persons died.	
35	8 Jun.	Ambedkar Nagar, Azamgarh, Bahraich, Faizabad, Ghazipur, Gonda, Jaunpur, (Uttar Pradesh)		12 persons died.	
		East Singhbhum (Jharkhand)		3 persons died in Jamshedpur city.	
		Visakhapatnam (Andhra Pradesh)		2 persons died & 2 others injured.	
36	17 Jun.	Bhopal (Madhya Pradesh)		One person died.	
37	18 Jun.	Jhalawar (Rajasthan)		One person died & one cow perished.	
		Neemuch, Panna (Madhya Pradesh)		Total 3 persons died. 2 persons died & 2 others injured in Neemuch Dist. while one person died in Panna Dist.	
		Khammam (Telangana)		2 persons died.	
38	19 Jun.	Raebareli (Uttar Pradesh)		2 persons died.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
39	20 Jun.	Bhind, Bhopal, Gwalior, Guna, Harda, Jhabua, Raisen, Rajgarh, Shivpuri, Tikamgarh, Ujjain (Madhya Pradesh)		16 persons died & 2 others injured.	
		Agra, Ambedkar Nagar, Auraiya, Basti, Etah, Firozabad, Jhansi, Lalitpur, Mainpuri, Mathura, (Uttar Pradesh)		37 persons died.	
40	21 Jun.	Ballia, Ghazipur, Jaunpur, Lucknow (Uttar Pradesh)		34 persons died.	
		Aurangabad, Bhagalpur, Bhojpur, Buxar, Kaimur, Katihar, Madhepura, Munger, Nalanda, Patna, Purnia, Rohtas, Saharsa, Samastipur, Saran, West Champanan (Bihar)		Total 46 persons died. Aurangabad – 4; Bhagalpur – 2; Bhojpur – 2; Buxar – 3; Kaimur – 3; Katihar – 3; Madhepura – 1; Munger – 2; Nalanda – 4; Patna – 4; Purnia – 4; Rohtas – 5; Saharsa – 3; Samastipur – 2; Saran – 3; West Champanan – 1	
41	22 Jun.	Chatra, Garhwa, Palamau (Jharkhand)		Total 10 persons died & 4 others injured. Chatra – 4 died & 4 injured, Garhwa - 5, Palamau – 1	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
42	23 Jun.	Khammam (Telangana)		One person died.	
43	27 Jun.	Bundi, Jhalawar (Rajasthan)		Total 2 persons died, one person from each district.	
44	28 Jun.	Pratapgarh (Rajasthan)		4 persons died.	
45	29 Jun.	Alirajpur, Dhar (Madhya Pradesh)		2 persons died.	
46	1, 4, 14, 15, 18, 20, 21, 22, 23, 24, 28, 29, 30, 31 Jul.	Angul, Balasore, Bargarh, Bhadrak, Cuttack, Deogarh, Dhenkanal, Gangam, Jajpur, Jharsuguda, Kendrapada, Keonjhar, Khurda, Malkangiri, Mayurbhanj, Nayagarh, Nabarangpur, Puri, Sambalpur, Sundergarh (Odisha)		Total 78 persons died. Angul - 1, Balasore - 9, Bargarh - 1, Bhadrak - 9, Cuttack - 5, Deogarh - 1, Dhenkanal - 7, Gangam - 5, Jajpur - 5, Jharsuguda - 2, Kendrapada - 2, Keonjhar - 7, Khurda - 6, Malkangiri - 1, Mayurbhanj - 8, Nayagarh - 2, Nabarangpur - 2, Puri - 1, Sambalpur - 2, Sundergarh - 2	
47	1 Jul.	Surajpur (Chhattisgarh)		4 persons died from Dalabakra, Kamalapur & Kusmusi villages.	
48	28 Jul.	Baran (Rajasthan)		One person died.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
49	1, 2, 4, 9, 11, 14, 15, 16, 17, 23, 24, 25, 26, 30, 31 Aug.	Balasore, Bargarh, Bhadrak, Bolangir, Cuttack, Deogarh, Dhenkanal, Gangam, Jagatsinghpur, Jajpur, Kendrapada, Keonjhargarh, Khurda, Nayagarh, Nabarangpur, Naupada, Sundergarh (Odisha)		Total 40 persons died. Balasore - 8, Bargarh - 3, Bhadrak - 4, Bolangir - 1, Cuttack - 3, Deogarh - 2, Dhenkanal - 1, Gangam - 2, Jagatsinghpur - 4, Jajpur - 1, Kendrapada - 1, Keonjhargarh - 1, Khurda - 2, Nayagarh - 2, Nabarangpur - 1, Naupada - 2, Sundergarh - 2	
50	26 Aug.	Malda (Madhya Pradesh)		4 persons died & 20 others injured.	
51	1, 2, 7, 9, 10, 11, 12, 13, 15, 17, 18, 21, 23, 24, 28, 29, 30 Sep.	Puducherry Angul, Bargarh, Bolangir, Gangam, Gajpatri, Jharsuguda, Kalahandi, Kendrapara, Keonjhar, Khorda, Mayurbhanj, Nayagarh, Nabarangpur, Subrnapur, Sundargarh (Odisha)		One person died in Vaithikuppam. Total 32 persons died. Angul - 4, Bargarh - 5, Bolangir - 2, Gangam - 2, Gajpatri - 1, Jharsuguda - 1, Kalahandi - 2, Kendrapara - 1, Keonjhar - 4, Khorda - 2, Mayurbhanj - 1, Nayagarh - 1, Nabarangpur - 1, Subrnapur - 1, Sundargarh - 4.	
52	1 Sep.	New Delhi		5 persons died.	
53	13 Sep.	Jangir-Champa, Raipur (Chhattisgarh)		2 persons died in Raipur Dist. & 8 others injured in Jangir-Champa	
54	14 Sep.	Bhandara, Yavatmal (Maharashtra)		2 persons died & 2 others injured.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
55	17 Sep.	Betul, Chhindwara, Rewa, Satna, Sehore, Narsinghpur (Madhya Pradesh)		16 persons died.	
56	18 Sep.	Ashoknagar, Ratlam, Sehore, Shajapur (Madhya Pradesh)		6 persons died.	
57	20 Sep.	Nagpur (Maharashtra)		One person died.	
58	21 Sep.	Vidisha (Madhya Pradesh)		2 persons died.	
59	22 Sep.	Parts of Vidarbha [Akola , Amravati , Buldana , Bhandara , Chandrapur , Gadchiroli , Gondia , Nagpur , Yavatmal , Washim , Wardha] (Mharashtra)		2 persons died & 2 others injured.	
60	25 Sep.	Parts of Vidarbha [Akola , Amravati , Buldana , Bhandara , Chandrapur , Gadchiroli , Gondia , Nagpur , Yavatmal , Washim , Wardha] (Mharashtra)		2 persons died.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
61	29 Sep.	Vellore (Tamil Nadu)		One person died.	
62	1 Oct.	Baran, Bhilwara, Jhalawar, Udaipur (Rajasthan)		11 persons including 9 women died.	
		Ashoknagar, Guna, Rajgarh, Ujjain (Madhya Pradesh)		16 persons died.	
63	1, 4, 5, 6, 9, 10 Oct.	Angul, Cuttack, Khordha, Ganjam, Mayurbhanj, Puri (Odisha)		9 persons died.	
64	2 Oct.	Rajsamand, Udaipur (Rajasthan)		2 children died & 2 persons injured.	
		Jalana, Nanded (Maharashtra)		4 persons died.	
65	3 Oct.	Rajsamand, Udaipur (Rajasthan)		2 children died & 14 persons injured.	
66	4 Oct.	Bhilwara, Kota, Pali, Rajsamand, Tonk (Rajasthan)		Total 8 persons died & 6 others injured in Kota.	
67	7 Oct.	Sukma (Chhattisgarh)		3 persons died.	

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
68	20 Oct.	Tuticorin (Tamil Nadu)		One person died & 2 others injured.	
69	26 Oct.	Tirunelveli (Tamil Nadu)		One person died.	
70	14 Nov.	Dakshina Kannada (Karnataka)		One person died.	
71	15 Nov.	Belgaum (Karnataka)		One person died.	

सारिणी - VIII : गर्ज के साथ तूफान (थंडरस्टॉर्म) 2016

TABLE - VIII : THUNDERSTORM 2016

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
1	27 Feb.	Jaspur (Chattisgarh)		One person died.	i) Damage to more than 100 houses reported. ii) Daily life disrupted.
2	14 Mar.	Bhojpur, Buxar, Purnia (Bihar)		2 persons died & 3 children injured in Arah city of Bhojpur dist.	Extensive damage to Rabi crops reported.
		Giridh (Jharkhand)		One person died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
3	19 Mar.	North 24-Parganas (West Bengal)		2 persons died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
4	22 Mar	Dibrugarh, Sivsagar (Assam)			i) Extensive damage to standing crops reported. ii) Extensive damage to hundreds of villages reported. iii) Damage to several houses reported. iv) Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
5	28 Mar.	Barpeta,Chirang, Darrang, Goalpara, Kokrajhar (Assam)		6 persons died & 3 others injured.	<ul style="list-style-type: none"> i) Extensive damage to standing crops reported. ii) Damage to houses reported. iii) A number of trees/electric poles uprooted disrupting power supply, road traffic and telecommunication services.
6	30 Mar.	Barpeta, Nalbari (Assam)			<ul style="list-style-type: none"> i) Damage to standing crops reported. ii) Extensive damaged to least 20 villages reported. iii) Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
		Murshidabad (West Bengal)		3 persons died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
7	31 Mar.	Barpeta, Kamrup (Assam)		One person died in Bako revenue circle of Kamrup Dist.	<ul style="list-style-type: none"> i) Damage to huge amount of standing crops reported. ii) At least 50 villages of Bajali revenue circle of Barpeta Dist. damaged. iii) Damage to houses reported. iv) Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
		Mahbubnagar, Nalgonda, Warangal (Telangana)		5 persons died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
		East Godavari, Kurnool (Andhra Pradesh)		2 persons died.	Damage to Paddy & Banana crops reported.
8	1 Apr.	South Kamrup (Assam)		One person died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
9	5 Apr.	Marigaon (Assam)		One person died.	i) Extensive damage to standing crops reported. ii) Damage to number of houses reported. iii) A number of trees/electric poles uprooted disrupting power supply, road traffic and telecommunication services.
10	6 Apr.	Karimnagar (Telangana)		2 persons died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
11	11 Apr.	Kamrup, Marigaon, Nalbari (Assam)			i) Damage to huge amount of standing crops reported. ii) Extensive damage to at least 20 villages reported. iii) Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
12	17 Apr.	Hyderabad, Mahbubnagar, Medak, Rangareddy (Telangana)		4 persons died.	i) Damage to vehicles reported. ii) Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.

<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
	Aizwal (Mizoram)			<ul style="list-style-type: none"> i) Damage to at least 350 houses reported. ii) Most of the power transmission lines damaged with at least ten electric polls uprooted, leaving the town completely powerless at Mamit.
13	27 Apr.	Karimnagar, Medak, Rangareddy (Telangana)	6 persons died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
14	28 Apr.	Darrang, Golaghat, Goalpara, Jorhat, Kamrup, Nalbari, Nagaon, Sivsagar, Tinsukia (Assam)	7 persons died.	<ul style="list-style-type: none"> i) Extensive damage to standing crops reported. ii) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply.
15	2 May	Golghat, Jorhat, North Lakhimpur (Assam)	3 persons injured & 4 livestock perished.	<ul style="list-style-type: none"> i) Damage to huge amount of standing crops reported. ii) Extensive damage to more than 100 villages reported. iii) Damage to several houses reported.
		5 districts of Nagaland	2 persons injured.	Damage to more than 1000 houses reported.
16	4 May	Ujjain (Madhya Pradesh)	7 persons died & 100 persons injured.	<ul style="list-style-type: none"> i) Damage to 150 pandals reported. ii) Many people affected at Kumbh mela site.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
		Baksa, Kamrup (Assam)		One person died & several others injured.	i) Damage to huge amount of standing crops reported. ii) Damage to few houses reported. iii) Some trees/electric poles uprooted disrupting power supply, road traffic.
17	6 May	Barpeta, Baksa, Goalpara, Jorhat (Assam)		2 persons died in Baska district & several others injured.	i) Damage to huge amount of standing crops reported. ii) Extensive damage more than 100 villages reported. iii) Damage to several houses reported. iv) Some trees/electric poles uprooted disrupting power supply, road traffic.
		West Midnapur (West Bengal)		One person died & 4 others injured.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
18	7 May	Ranchi (Jharkhand)		One person died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
19	9 May	Hazaribag (Jharkhand)		One person died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
20	11 to 13 May	Bokaro, Giridh, Hazaribagh, Khunti, Ranchi (Jharkhand)		One person died, 5 others injured & 10 cattle heads perished.	i) Asbestos roofs of houses blown away. ii) Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
21	13 May	Malda, Nadia, North Dinajpur (West Bengal)		Total 7 persons died. Malda - 5 died & 3 others injured. Nadia – 1, North Dinajpur - 1	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
22	16 May	East Singhbhum, Giridh, Khunti, Lohardaga, West Singhbhum (Jharkhand)		2 persons died.	i) Asbestos roofs of houses blown away. ii) Many trees, electric/telephone poles uprooted causing disruption in communication and power supply.
23	17 to 19 May	Latehar, Lohardga, Ranchi (Jharkhand)		10 persons died & other injured.	i) Asbestos roofs of houses blown away. ii) Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
24	21 May	Raigarh (Chhattisgarh)		2 persons died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
25	21 to 23 May	Bokaro, Gumla, Hazaribagh, Ranchi, West Singhbhum (Jharkhand)		10 persons died & 3 others injured.	i) Asbestos roofs of houses blown away. ii) Many trees, electric/telephone poles uprooted causing disruption in communication and power supply.
26	27 May	Ranchi (Jharkhand)		One person died & 2 cattle heads perished.	i) Asbestos roofs of houses blown away.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
					ii) Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
27	29 May	Amethi, Azamgarh, Budaun, Bahraich , Ballia, Barabanki, Bareilly, Farrukhabad, Fatehpur, Mau, Raebareli (Uttar Pradesh)		15 persons died.	i) Crops & Mango trees severely damaged. ii) Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
28	30 May	Ranchi (Jharkhand)		2 persons died & 2 cattle heads perished.	i) Asbestos roofs of houses blown away. ii) Many trees, electric/telephone poles uprooted causing disruption in communication and power supply.
29	8 Jun.	Nagpur (Maharashtra)			i) Roofs of houses blown away. ii) Power supply disrupted since transformer caught fire.
30	9 Jun.	Shimla (Himachal Pradesh)		2 persons died.	Several trees/electric poles uprooted disrupting road traffic/telecommunication services.
		Agra, Amethi, Faizabad, Gonda, Lucknow, Raebareli, Shravasti, Unnao, Varanasi (Uttar Pradesh)		11 persons died & 5 others injured.	Damage to Paddy crops, Mango, Maize, Arhar crops reported.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
31	10 Jun.	Marigaon, Sonitpur (Assam)		i) Total 3 persons died & 10 others injured. ii) 1 person died & 3 others injured in Marigaon Dist. while 2 persons died & 7 others injured while playing football in Sonitpur Dist.	
32	12 Jun.	Muzzafarpur, Patna, Siwan (Bihar)		8 persons died.	Rail traffic disrupted.
33	17 Jun.	Vizianagaram (Andhra Pradesh)		2 persons died.	
34	2 Jul.	Jaspur (Chhattisgarh)		2 persons died & many animals perished.	
		Garhwa, Ranchi (Jharkhand)		One person died, 8 others injured & one livestock perished.	Several trees, electric / telephone poles uprooted causing disruption in communication and power supply.
35	15 Jul.	Bokaro, Gumla, Hazaribagh (Jharkhand)		4 persons died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
36	20 Jul.	Pakur, Sahibganj (Jharkhand)		4 persons died & 3 others injured.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
37	22 Jul.	Bakora (Jharkhand)		2 persons died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
38	29 Jul.	Hazaribagh, Palamu, Ranchi (Jharkhand)		3 persons died & 7 others injured.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
39	30 Jul.	East Singhbhum (Jharkhand)		One person died & other injured in Baharagora town in East Singhbhum district.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
40	2 Aug.	Khunti, Ranchi (Jharkhand)		2 persons died. 2 cattle heads perished.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
41	5 Aug.	Ranchi (Jharkhand)		One person died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
42	6 Aug.	Marigaon, Nalbari (Assam)		2 persons died and 2 others injured.	
43	10 Aug.	East Singhbhum, Garhwa, Jamatra, Palamu, West Singhbhum (Jharkhand)		12 persons died & 3 others injured.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
44	26 Aug.	Barpeta, Goalpara, Kamrup, Kokrajhar, Nalbari (Assam)		5 persons died & several others injured.	
45	29 Aug.	Godda (Jharkhand)		2 persons died.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
46	30 Aug.	Morigaon (Assam)		4 persons died & 4 others injured.	
		Ranchi (Jharkhand)		One person died & 7 others injured in Bero town of Ranchi Dist.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
47	31 Aug.	Kanker (Chhattisgarh)		2 persons died.	
48	1 & 2 Sep.	Khunti, Ranchi (Jharkhand)		3 persons died & 3 others injured.	Many trees, electric/telephone poles uprooted causing disruption in communication and power supply.
49	8 Sep.	Ranchi (Jharkhand)		2 persons died & 5 others injured.	
50	18 Sep.	Garhwa, Giridh, Gumla, Hazaribagh, Latehar, Palamue, Ranchi (Jharkhand)		18 persons died, other injured & 2 cattle heads perished.	Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
51	20 Sep.	Ranchi (Jharkhand)		4 persons died & 2 cattle heads perished.	Many trees, electric/telephone poles uprooted causing disruption in communication and power supply.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
52	2 Oct.	Khunti (Jharkhand)		One person died.	
53	4 to 7 Oct.	Garhwa, Giridh, Khunti, Ramgarh, Ranchi (Jharkhand)		4 persons died & 14 others injured.	i) Damage to many houses reported. ii) Many trees, electric/telephone poles uprooted causing disruption in communication and power supply.
54	28 Dec.	Karbi Anglong (Assam)		3 persons injured. Several animals perished.	Damage to many houses reported.

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

सारिणी - IX : ओलावृष्टि 2016

निकष

हलका : विरल, आमतौर पर छोटे आकार और अक्सर बारिश के साथ संमिश्र ।

मध्यम : पर्याप्त प्रचुर मात्रा में जमीन सफेद करने के लिए।

भारी : बड़े पत्थरों के कम से कम एक अनुपात भी शामिल है।

TABLE – IX : HAILSTORM 2016

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.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
1	26 Feb.	Adilabad (Telangana)	Moderate	One person died.	Damage to 1000 acres of Redgram crops reported.
2	27 Feb.	Kawardha (Chhattigarh)	Moderate		i) Damage to few houses reported. ii) Disturbance in daily life reported.
3	28 Feb.	Madhya Maharashtra, Marathwada, Vidarbha (Maharashtra)	Moderate		Damage to crops which reached the harvesting stage reported.
4	5 & 6 Mar.	Baran, Bhilwara, Bikaner, Bundi, Churu, Jhalwar, Jhunjhunu,	Moderate		Damage to 15 -30 % Wheat, Musterd, Gram, Cumin, Isabgul, Corinder crops reported.

<i>S.N.</i>	<i>Date / Period</i>	<i>Area affected</i>	<i>Intensity</i>	<i>Casualties</i>	<i>Extent of damage</i>
		Jodhpur, Kota, Nagaur, Sikar (Rajasthan)			
5	7 Mar.	Bhind, Datia , Gwalior, Morena (Madhya Pradesh)	Moderate		Damage to 50% crops reported.
6	12 Mar.	Bilaspur, Hamirpur, Kullu, Mandi, Shimla, Sirmaur, Solan, Una (Himachal Pradesh)	Heavy		i) Damage to Wheat, Almond crops reported. ii) National High way remained closed. iii) Several trees, electric/telephone poles uprooted causing disruption in communication and power supply.
		Hanumangarh (Rajasthan)	Moderate		Damage to 50-80% crops reported.
7	14 Mar.	Chhindwada, Rewa, Shivpuri, Tikamgarh, (Madhya Pradesh)	Heavy	One person died & hundreds of birds perished.	i) Extensive damage Wheat, Gram, Mustard & vegetable crops reported. ii) Several trees uprooted.
		Parts of Uttar Pradesh	Heavy	10 persons died.	Damage to Mango, Wheat, Gram, Potato crops reported.
8	16 Mar.	New Delhi	Moderate		Damage to tones of grains at the New Narela Grain Market in the Capital New Delhi reported.
9	18 Apr.	Zunheboto (Nagaland)	Heavy		i) Damage to several plantation reported. ii) Damage to 370 houses reported.

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
10	22 Apr.	Pulwama (Jammu & Kashmir)	Heavy		iii) Extensive damage to Apple, Almond, Cherry, Peach Orchads reported.
11	4 May	Parts of Bihar	Heavy	10 persons died.	
12	11 to 14 May	Baramulla, Budgam, Kulgam, Kupwara (Jammu & Kashmir)	Moderate		Extensive damage to Apple, Almond & vegetable crops reported.
13	16, 21, 25 May	Balasore, Cuttack, Jagatsingpur, Koraput, Sambalpur (Odisha)		Total 6 persons died. Balasore - 1, Cuttack - 1, Jagatsingpur- 2, Koraput-1, Sambalpur – 1	
14	20 May	Hamirpur, Shimla (Himachal Pradesh)	Heavy		i) Extensive damage crops & fruits reported. ii) Damage to roof of School reported. iii) Damage to more than 12 vehicles reported. iv) Solan-Shimla National Highway remained closed.

सारिणी X - बाढ़ और भारी बारिश 2016

TABLE XI - FLOODS AND HEAVY RAINS 2016

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
STATES					
ANDHRA PRADESH					
1	14 Jul.	East Godavari	Heavy rains		i) Coconut Grooves, Banana plantations & Paddy fields submerged in 10 mandals of Konaseema & 6 mandals of Amalapuram. ii) People from 25 major villages affected.
2	15 & 16 Sep.	Visakhapatnam	Flash flood	3 persons washed away.	
3	1 to 30 Sep.	Guntur, Kurnool, Visakhapatnam, Vizianagaram	Heavy rains & floods	Total 20 persons died & 429 others injured. 39,562 birds perished. Guntur - 7, Kurnool -2, Visakhapatnam - 9, Vizianagaram – 2.	i) Damage to 49,035 hectares of crops reported. ii) Damage to 16807 houses, 17 school buildings & 48 Panchayat Raj buildings reported. iii) Damage to 46 boats reported. iv) Damage to roads reported. v) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply.
	<i>CWC DATA (*whole year)</i>	<i>Area affected 0.003 m.ha</i>		i) <i>03 human lives lost.</i> ii) <i>04 cattle lost.</i>	i) <i>0.386 million population affected.</i> ii) <i>Crops in 0.003 m. ha. damaged.</i>

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
ARUNACHAL PRADESH					
1	22 Apr.	Tawang	Heavy rains (Massive landslide)	17 persons died due to massive landslide.	Damage to several dwelling houses reported.
2	24 to 27 Apr.	Chanlang	Heavy rains		80 families rendered homeless.
3	1 Jul.	West Kameng	Massive landslide	10 persons died & 5 others injured.	Damage to 4 houses completely & 9 buildings partially reported.
4	5 Aug.	Tawang	Heavy rains (Landslide)	3 persons died.	8 houses collapsed.
5	11 & 12 Sep.	Upper Subansiri	Heavy rains & Flood in Sigin river.		i) Damage to huge quantity of standing crops reported. ii) The entire town Daporijo inundated. iii) Commodity of Daporijo market damaged.
	<i>CWC DATA (*whole year)</i>			<i>i) 42 human lives lost. ii) 15671 cattle lost.</i>	<i>354 houses damaged.</i>
ASSAM					
1	21 Apr.	Jorhat	Flood (Janji river)		i) Extensive damage to huge amount of standing crops reported. ii) At least 15 villages inundated.
2	24 to 27 Apr.	Cachar, Charaideo, Dhubri, Dibrugarh,	Flood (Brahmaputra	8 persons died.	i) About 86,905 people of 7 districts affected. ii) Damage to cropland of area 5009 hectares reported.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
		Jorhat, Lakhimpur, Sivsagar	and tributaries)		
3	17 May	Halkandi, Karimganj	Landslide	Total 11 persons died. 5 persons died, 4 injured in Halkandi district & 6 persons died in Karimganj district.	Landslide reported.
4	18 May	Nagaon	Flood (Kapili river)		i) Huge cropland submerged. ii) More than 20 villages inundated.
5	19 to 25 Jun.	Baska, Barpeta, Dhemaji, Lakhimpur, Sonitpur	Flood (Brahmaputra and tributaries)		i) About 26,111 population of 68 villages affected. ii) Damage to cropland of area 3598.86 hectares reported.
6	3 to 7 Jul.	Barpeta, Golaghat, Jorhat, Kamrup (M), Lakhimpur, Marigaon, Nagaon, Sonitpur	Flood (Brahmaputra and tributaries)	2 persons died & 6 others injured due to landslide in Kamrup (M) Dist. on 7 th Jul.	i) About 1,52,977 population of 294 villages in 8 districts affected. ii) Crop land of area 26.86 hectares affected.
7	7 Jul	Guwahati	Heavy rain	2 youths died & 2 others injured due to wall collapse at 11 th Mile area at Jorabat near Guwahati.	Vehicular traffic badly affected due to water logging.
8	13 to 18 Jul.	Golaghat, Jorhat, Lakhimpur, Marigaon, Sonitpur	Flood (Brahmaputra and tributaries)	2 persons died & 2 others injured.	i) 1,87,738 population of 310 villages affected. ii) Crop land of area 16,240.47 hectares & 815 bighas affected. iii)
9	14 Jul.	Kamrup (M)	Landslide	2 persons died.	

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
10	21 to 31 Jul.	Barpeta, Bongaigaon, Chirang, Darrang, Dhemaji, Dhubri, Dibrugarh, Golaghat, Goalpara, Jorhat, Kamrup, Karbi Anglong, Kokrajhar, Lakhimpur, Marigaon, Nagaon, Nalbari, Sivsagar, Sonitpur, Tinsukia	Flood (Brahmaputra and tributaries)	22 persons died.	i) 18,99,470 population of 3374 villages affected. ii) Crop land of area 2,13,251.52 hectares affected.
11	1 to 5 Aug.	Barpeta, Bongaigaon, Chirang, Darrang, Dhemaji, Dhubri, Dibrugarh, Golaghat, Goalpara, Jorhat, Kabri Analong, Kamrup (M), Kokrajhar, Lakhimpur, Marigaon, Nagaon, Nalbari, Sivsagar, Sonitpur, South Kamrup, Tinsukia	Flood (Brahmaputra and tributaries)	3 persons died. 8 rhinos & 221 hog deer perished in Kaziranga National Park in the district Golaghat, Nagaon.	i) Cropland of area 1,00,651.71 hectares affected. ii) 11,00,618 population from 1659 villages of 21 districts affected.
12	13 Aug.	Guwahati	Heavy rains (Landslide)	2 persons died.	
13	1 to 7 Sep.	Dhemaji, Lakhimpur and Udalguri	Flood (Brahmaputra and tributaries)		i) Cropland of area 1,382.53 hectares affected. ii) 24,540 population from 32 villages affected.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
14	13 to 16 Sep.	Cachar and Dhemaji	Flood (Brahmaputra and tributaries	Several persons injured.	i) Cropland of area 1,804.36 hectares affected. ii) 950 population from 71 villages of 2 districts affected.
	<i>CWC DATA (*whole year)</i>			<i>36 human lives lost.</i>	
BIHAR					
1	18 May	Araria, Bhagalpur, Katihar, Kishanganj, Lakhisarai, Madhepura, Madhubani, Munger, Purnea, Supaul, Saharsa	Heavy Rain	12 persons died & several other injured.	i) Damage to standing crops reported. ii) Damage to several thatched houses reported. iii) Several trees/electric poles uprooted.
2	25 to 27 Jul.	Araria, Bhagalpur, Darbhanga, Katihar, Kishanganj, Madhepura, Purnea, Supaul	Heavy Rain	17 persons died.	i) Damage to crops reported. ii) 17.25 lakh population of 1448 villages affected.
3	12 Aug.	Gaya, Patna	Heavy Rain & floods in Punpun & Falgu river.	One child & 12 cattle heads washed away in falgu river of Gaya Dist.	Damage to the bridge on the river Punpun near Siswa Chawak, Patna reported.
4	17 to 21 Aug.	Patna, Saran, Vaishali	Floods in Ganga & tributaries	Total 9 persons died. Patna - 1, Saran - 7, Vaishali – 1	i) 600 acres of Paddy crops submerged. ii) Several trees/electric poles uprooted.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
5	23 to 25 Aug.	Parts of Bihar	Heavy Rain & flood	14 persons died & 8 others missing.	i) Damage to Paddy crops reported. ii) Boat capsized. iii) Damage to diversion near NH-110 & road connection between Jahanabad & Arwal roads reported.
6	28 Aug.	Bhagalpur	Heavy Rain		Damage to railway track in Bhagalpur Dist. reported due to which rail traffic disrupted for at least 9 hours.
7	30 Aug.	Patna	Heavy Rain & floods	One girl child washed away in Patna Dist.	Water logging in many areas.
8	1 & 2 Sep.	Begusari, Bhojpur, Samastipur, Khagaria, Vaishali	Floods in Ganga & tributaries	Total 11 persons died. Begusari - 2, Bhojpur - 1, Samastipur - 2, Khagaria - 1, Vaishali - 5. Also 61 animals perished.	i) 37.70 lakh people affected in different parts of the state. ii) 2029 villages inundated.
9	3 Sep.	Begusarai, Lakhisarai, Patna, Samastipur, Saran	Heavy rain	Total 19 persons died. Begusarai - 1, Lakhisarai - 1, Patna - 10, Samastipur - 1, Saran - 6.	41.90 lakh people affected in different parts of the state.
	<i>CWC DATA (*whole year)</i>	<i>Area affected 0.410 m.ha</i>		<i>i) 254 human lives lost. ii) 246 cattle lost.</i>	<i>i) 8.823 million population affected. ii) Crops in 0.410 m. ha. damaged. iii) 16717 houses damaged.</i>

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
CHHATTISGARH					
1	2 & 3 Jun.	Bastar	Heavy rains	2 women injured in Jamawada village in Jagdalpur tehsil.	Pandal of Kisan Mela collapsed in Jagdalpur tehsil.
2	12 & 13 Jun.	Raipur	Heavy rains	2 persons injured.	i) Damage to houses reported. ii) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply.
3	2 Aug.	Kanker, Rajnandgaon	Heavy rains & Flood in Sheonath river	One person died & 5 others injured in Kanker Dist.	4 van with goods washed away in Rajnandgaon Dist.
4	19 Aug.	Surguja	Heavy rains	5 persons died & 2 others injured. 13 goats perished.	Damage to vehicles reported..
5	26 to 31 Aug.	Mahasamund, Raipur	Heavy rains	Total 6 persons died. Mahasamund - 5, Raipur – 111 persons injured in Mahasamund Dist.	
6	11 to 13 Sep.	Jagdalpur, Jangir-Champa, Narayanpur, Rajnandgaon	Heavy Rains	4 persons died & 6 others injured.	
GUJARAT					
1	1 st Jun to 28 th Sep.	Ahmedabad, Amreli, Bharuch, Bhavnagar, Batod, Chhota Udaiur,	Heavy rains & floods	Total 81 persons died. Ahmedabad – 3, Amreli – 2, Bharuch – 1, Bhavnagar – 1,	i) 12,121 population affected. ii) 3 houses fully & 125 houses partially damaged.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
		Devbhoomi Dwarka, Dohad, Gandhinagar,		Batod-1, Chhota Udaiur – 5, Devbhoomi Dwarka – 2, Dohad	
		Gir Somanath, Jamnagar, Junagadh, Kutch, Mehsana, Morbi, Navsari, Panchmahal, Patan, Rajkot, Sabarkantha, Sundarnagar, Tapi, The Dangs, Vadodara, Valsad		– 3, Gandhinagar – 2, Gir Somanath – 2, Jamnagar – 2, Junagadh – 6, Kutch – 1, Mehsana – 1, Morbi – 2, Navsari – 3, Panchmahal – 10, Patan – 2, Rajkot – 6, Sabarkantha – 2, Sundarnagar – 1, Tapi – 1, The Dangs – 10, Vadodara – 1, Valsad – 11. While 4 persons injured & 220 animals perished.	
	<i>CWC DATA (*whole year)</i>			<i>i) 99 human lives lost. ii) 322 cattle lost.</i>	<i>128 houses damaged.</i>
HIMACHAL PRADESH					
1	10 May	Shimla	Cloud Burst	5 persons died & 3 others injured.	i) Damage to crops reported. ii) Damage to cow-shed reported. iii) Electricity, water & Telephone services disrupted. iv) Scorpio car washed away.
2	15 & 16 Jun.	Kullu, Mandi, Solan	Heavy rains	2 animals perished.	i) Damage to crops reported. ii) Complete damage to gate of a school & 2 cow-sheds reported. iii) National Highway remained closed.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
3	3 & 4 Jul.	Chamba, Kangra, Shimla	Heavy rains		i) Damage to 6 houses & 2 bridges reported. ii) Roads blocked.
4	10 to 17 Jul.	Chamba, Kinnaur	Cloud Burst		i) Apple, Deodar trees uprooted causing loss of lakhs of rupees. ii) Electricity generation in BASPA hydropower project in Kinnaur Dist. stopped. iii) Damage to many houses & small bridges reported. iv) National Highways remained closed.
5	23 to 31 Jul.	Hamirpur, Kullu, Shimla, Sirmaur, Solan	Heavy rains & landslide	2 persons died due to landslide in Sirmaur Dist.	i) Damage to crops reported. ii) Damage to many houses, Hotels reported. iii) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply.
6	1 & 2 Aug.	Chamba, Hamirpur, Kangra, Kullu, Mandi, Shimla Sirmaur, Una	Heavy rains	One child died in Una Dist.	i) Extensive damage to crops reported. ii) Damage to shops, houses & buildings reported. iii) Damage to bridges reported. iv) Damage to railway track reported.
7	5 to 7 Aug.	Bilaspur, Chamba, Hamirpur, Kangra, Kullu, Mandi, Shimla, Solan, Una	Heavy rains & Landslide	i) One woman died & other injured due to landslide in Chamba Dist. on 7 th August. ii) 11 buffaloes perished in Kangra Dist.	i) Extensive damage to the crops reported. ii) Damage to cow-shed, houses reported. iii) Damage to bridges reported. iv) Damage to roads & railway track reported.
8	10 to 12 Aug.	Bilaspur, Chamba, Hamirpur, Kangra, Kinnaur, Kullu, Mandi,	Heavy rains	One person died & other injured due to wall collapse in Shimla Dist.	i) Partial damage to houses, cow-sheds reported. ii) Several trees uprooted & fell on vehicles causing damage.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
9	17 & 18 Aug.	Shimla, Sirmaur, Solan, Una Shimla	Heavy rains	2 persons died & 5 others injured as wall collapsed.	iii) Vehicular traffic disrupted due to damage of roads.
10	25 & 26 Aug.	Bilaspur, Chamba, Hamirpur, Kangra, Kullu, Mandi, Shimla, Sirmaur, Solan, Una JAMMU & KASHMIR	Heavy rains & cloud burst in Shimla.	5 persons died & other missing due to cloud burst in Shimla Dist.	The three floor building collapsed. i) Damage to many apple orchards reported. ii) Several trees uprooted causing loss of lakhs of rupees.
1	12 May	Ramban	Heavy rain	3 children washed away in Batote town.	Damage to several houses reported.
2	7 Jun.	Anantnag, Bandipora	Heavy Rains	2 persons died, one in each Dist.	i) Extensive damage to fruits & vegetables reported. ii) Damage to many houses & government buildings reported.
3	27 Jul.	Jammu, Rajouri	Flash Flood	Total 3 persons died. 2 girls washed away in Janipur area of Jammu Dist. & one woman died due to wall collapsed in Rajouri Dist.	Damage to the public & private property reported.
4	5 Aug.	Kathua, Reasi	Heavy rains & Landslide	Total 5 persons died. 4 persons including 3 pilgrims of Mata Vaisho Devi died & 9 others injured due to landslide in Reasi Dist. While one engineer washed away in Kathua Dist.	

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
5	6 & 7 Aug.	Doda, Kathua, Pulwama	Heavy rains & Cloudburst	2 persons died & 7 others injured in different incidents.	Damage to several houses reported.
6	24 Aug.	Jammu, Reasi	Flash Flood in Tawi river & Landslide	Total 3 persons died. 2 persons washed away in Tawi river in Jammu Dist. One CRPF man died in Reasi Dist.	
JHARKHAND					
1	3 to 5 Jul.	Chatra, Garhwa, Hazaribagh, Ramgarh, Ranchi (Jharkhand)	Heavy rains	2 persons died.	i) Damage to 1008 Katcha houses reported. ii) Damage to some small bridges reported. iii) Vehicles washed away.
2	3 Aug.	Ramgarh	Heavy rains	One person died, 11 others injured & 2 cattle heads perished.	
3	12 Aug.	East Singhbhum	Heavy rains	4 persons died in Jameshedpur.	Damage to 3 bridges reported.
4	16 to 18 Aug.	Chatra, Garhwa, Hazaribagh, Khunti, Ranchi	Heavy rains	9 persons died & other injured.	i) Damage to 4 bridges & 8 katcha houses reported. ii) 100 trees uprooted.
5	22 & 23 Aug.	Garhwa, Hazaribagh, Khunti, Ranchi	Heavy rains	One cattle heads perished.	i) Damage to 2 bridges reported. ii) Damage to many katcha houses reported.
6	9 to 12 Sep.	Chatra, Hazaribagh, Khunti, Ranchi	Heavy rains	One person died, 7 others injured & 4 cattle heads perished.	i) Damage to standing crops reported. ii) Damage to 10 mud houses reported.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
7	9 Oct.	Chatra, Hazaribag	Heavy rains	One person died & 4 cattle heads perished.	One bridge washed away.
KARNATAKA					
1	20 Jun.	Raichur	Heavy rains	One girl died.	
2	22 Jun.	Dakshina Kannada, Udupi	Heavy rains	2 persons died.	
3	27 Jun.	Dakshina Kannada	Heavy rains	One man died.	
4	3-6 Jul.	Dakshina Kannada, Uttara Kannada	Heavy rains	A cow perished.	i) Damage to many houses reported. ii) Several trees uprooted.
5	11 to 12 Jul.	Belgaum, Chikkamagalur, Kodagu, Uttar Kanada	Heavy rains	One person died in Chikkamagalur Dist. & 4 persons injured in Kodagu Dist.	i) Damage of about 90 houses fully & 200 houses partially reported. ii) Several trees/electric poles uprooted causing vehicular traffic & power supply disruption.
6	15 Jul.	Bagalkot	Heavy rains		i) 2 villages named Muttur & Kanankanvadi in Jamakhandi taluk submerged as water was released following heavy rains in Maharashtra & Belgaum Dist. ii) Vegetables grown on hundreds of acers completely washed away. iii) Quarry cement factory flooded.
7	22 Jul.	Gulbarga, Uttar Kanada	Heavy rains	One person drowned in Mullamari river Iragapali village, Chincholi taluk in Gulbarga Dist. 6 livestock perished.	i) Damage to standing crops reported. ii) Damage to 20 irrigation pumps set reported. iii) Partial damage to 279 houses reported.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
8	29 Jul.	Banglore	Heavy rains		iv) Damage to Govt. School building reported as a huge tree fell. i) About 3000 houses affected. ii) Damage to few cars & two-wheelers reported.
9	31 Jul.	Gulbarga	Heavy rains		i) Hundreds acres of crops washed away. ii) Damage to historic Hazrat Safdar Darga reported.
10	5 to 9 Aug.	Bagalkot, Belgaum, Raichur, Yadgir	Heavy rains & Floods in Krishna river	One boatman washed away in Raichur Dist.	i) Extensive damage to standing crops of Toor, Cotton reported. ii) Several villages on Krishna river bank inundated. iii) Bridges inundated in Belgaum & Raichur Dist.
11	18 Aug.	Hassan	Heavy rains		Agricultural crops worth lakhs of rupees destroyed.
12	15 & 16 Sep.	Bidar, Gulbarga, Raichur	Heavy rains	2 persons died.	i) Damage to 500 acres of crops reported. ii) Human life disrupted. iii) Partial damage to more than 29 houses reported.
13	22 to 26 Sep.	Bidar, Belgaum, Gadag, Gulbarga	Heavy rains	One boy drowned in Bidar Dist.	i) Damage to 84,991 hectares standing crops reported. ii) Damage to as many as 2900 houses reported.
14	13 & 14 Dec.	Hassan , Kodagu, Mysore	Heavy rains		Coffee & Paddy harvest affected badly.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
KERALA					
1	14 Apr.	Kannur	Heavy rains	2 persons died as compound wall collapsed on them.	Partial damage to one house reported.
2	31 May	Kozhikode	Heavy rains	One person died due to wall collapsed.	12 feet high compound wall collapsed.
3	7 to 9 Jun.	Idukki, Kottayam, Thiruvananthapuram, Wayanad	Heavy rains, flood & Landslides	One person died & other injured in Idukki Dist. due to landslide on 7 th June. One person injured in Sreekaryam in Thiruvananthapuram Dist. One person died as a huge rock fell over him in Wayanad Dist, on 8 th June.	Idukki : Complete damage to a house reported. Kottayam : i) One Anganvadi building collapsed in Thazhangadi. ii) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply. Thiruvananthapuram : i) Damage to vegetable crops reported as fields submerged. ii) 3 wells caved in. iii) Damage to more than 25 houses including house-hold appliances, Taluka office, dispensary, shop & a compound wall of a school reported. iv) More than 11 KV line broke & functioning of 4 transformers disrupted. v) In Kazhakootam, nearby houses inundated as Tettayar river flooded. Wayanad : A house completely damaged as a huge rock fell from 50 feet.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
5	16 to 19 Jun.	Alappuzha, Ernakulam, Idukki, Kollam, Kottayam, Malappuram, Thrissur, Thiruvananthapuram, Wayanad	Heavy Rain	Several students injured in Kuttanam in Alappuza Dist.	<p>Alappuzha :</p> <ul style="list-style-type: none"> i) 33 houses completely, 38 partially & one Anganwadi damaged. ii) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply. <p>Ernakulam, Idukki, Kollam, Kottayam, Malappuram, Thrissur:</p> <p>Damage to total 175 houses reported.</p> <p>Ernakulam - 28 completely ; Idukki - 7 completely & 69 partially; Kollam - 11 completely ; Kottayam - 55 completely ; Malappuram - 1 completely ; Thrissur - 4 completely damaged.</p> <p>Thiruvananthapuram :</p> <ul style="list-style-type: none"> i) Damage to 1.53 hectares of vegetable crops, 1.25 lakh banana crops reported. ii) More than 35 houses completely & more than 430 houses partially damaged. iii) Loss of worth Rs.10.1 crores damage reported. iv) Damage to 1.53 hectares of vegetable crops, 1.25 lakh banana crops reported.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
					<ul style="list-style-type: none"> v) Crores worth damage reported by KSEB as more than 2000 electric poles, one transformer 11 KV line, 50 electric cable lines damaged. vi) 30 families shifted to relief camps from Pallichal area. vii) Damage to 122 mts. Long Akashwani tower reported. viii) Damage to an Auto-rikshaw reported. viii) Several trees uprooted causing disruption in vehicular traffic. <p>Wayanad :</p> <ul style="list-style-type: none"> i) 4 houses partially damaged. ii) Several trees uprooted causing disruption in vehicular traffic.
6	26 to 29 Jun.	Kasragod, Malappuram, Wayanad	Heavy Rain		<ul style="list-style-type: none"> i) 20 hectares of agriculture land belonging to 157 farmers damaged causing loss of worth crores. Paddy, Ginger, Banana Damage to crops reported. ii) 52 families from different areas shifted to relief camps. iii) 4 wells caved in. iv) Full damage to 2 houses & partial damage to 106 houses reported. Also damage to 3 rooms of Higher Secondary School building reported. v) Low lying areas inundated. vi) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
7	2 Jul.	Wanayad	Heavy Rain		<ul style="list-style-type: none"> i) Damage to 69 hectares agriculture crops reported due to which 444 farmers affected. ii) 22 houses fully & 65 partially damaged. iii) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply.
8	10 to 15 Jul.	Idukki, Kasaragod, Wanayad	Heavy Rain	One person died in Kasaragod Dist. & other injured in Idukki Dist.	<ul style="list-style-type: none"> i) 4 houses, shop & five storied building under construction by the wayside of Kozikode-Mysore NH_212 collapsed. ii) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply.
9	18 Sep.	Kozhikode	Landslide	6 students died.	
	<i>CWC DATA (*whole year)</i>	<i>Area affected 0.002 m.ha.</i>		<ul style="list-style-type: none"> i) 66 human lives lost. ii) 56 cattle lost. 	<ul style="list-style-type: none"> i) <i>0.006 million population affected.</i> ii) <i>Crops in 0.002 m.ha damaged .</i> iii) <i>5809 houses damaged.</i>
MADHYA PRADESH					
1	30 Jun.	Bhopal	Floods & Heavy rains	One person drown.	
2	6 Jul.	Rewa, Sehore	Floods & Heavy rains	Total 6 persons died. Rewa – 5, Sehore - 1	
3	7 Jul.	Bhind, Panna, Rewa	Flood in Tamas river	3 persons died.	<ul style="list-style-type: none"> i) Damage to 2 dams reported. ii) More than 50 villages in Tyonthar and Sirmaur blocks of Rewa Dist. cut off from the other parts of the state due to rising water in the river.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
					iii) One motor boat washed away.
4	8 to 10 Jul.	Bhopal, Damoh, Malda, Morena, Seoni	Floods & Heavy rains	11 persons died.	The excessive rains have affected at least 3 lakh 46 thousand people.
5	2 Aug.	Vidisha	Heavy rains	4 persons died.	
6	19 & 20 Aug.	Raisen, Rewa, Sagar, Satna, Vidisha	Floods & Heavy rains	23 persons died.	i) More than one lakh people affected. ii) Damage to many houses, Cow-sheds reported. iii) Bridge washed away.
	<i>CWC DATA (*whole year)</i>	<i>Area affected 1.304 m. ha.</i>		<i>i) 327 human lives lost. ii) 2623 cattle lost.</i>	<i>i) 1.560 million population affected. ii) 168267 houses damaged. iii) Crops in 1.304 m. ha. damaged.</i>
MAHARASHTRA					
1	21 May	Bhandara, Gadchiroli, Gondia	Heavy rains	i) 2 persons died & one girl injured due to wall collapsed in Gondia Dist. ii) 100 hens perished.	i) Damage to 568 houses reported. ii) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply.
2	6 Jun.	Parts of Maharashtra	Heavy rains	2 persons died.	
3	20 Jun.	Mumbai	Heavy rains	One person died.	22 trees uprooted causing disruption in vehicular traffic.
4	25 Jun.	Mumbai	Heavy rains	2 persons died.	
5	1 to 3 Jul.	Ahmednagar, Dhule, Jalgaon, Mumbai,	Heavy rains	11 persons died.	

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
		Nandurbar, Nashik, Pune			
6	8 to 10 Jul.	Chandrapur, Gadchiroli, Nandurbar	Heavy rains & Flood in Narmada, Tapi Wainganga river	Total 9 persons died. 6 persons died in Chandrapur Dist. due to flood in Wainganga river. While 3 persons died & 2 others missing in Pachorabari village of Nandurbar Dist. 50 livestock perished.	i) Damage to 200 houses reported. ii) Damage to railway track reported.
7	11 to 12 Jul.	Kolhapur & Konkan region	Heavy Rains	One person died in Konkan region.	i) 31 roads including 22 main roads and 9 highways are completely under water in Kolhapur Dist. ii) Around 80 villages lost contact from rest of the state in Konkan region.
8	12 Jul.	Akola, Amravati, Chandrapur, Gadchiroli Yavotmal, Washim	Heavy Rains	2 persons died.	More than 100 villages marooned.
9	28 Jul.	Akola, Amravati	Heavy Rains	2 persons died.	Damage to many houses reported.
10	30 & 31 Jul.	Mumbai	Heavy Rains	One person died as tree fell on him & 4 others injured.	i) Damage to Ground-plus-three structure building & security cabin reported. ii) A car & an auto-rickshaw damaged as tree fell on it.
11	1 Aug.	Thane	Heavy Rains	9 persons died & 10 others injured.	i) Dilapidated building collapsed. ii) Water logging in low lying areas reported.
12	2 Aug.	Nashik	Flood in Godavari	5 persons drowned.	

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
13	3 Aug.	Raigad	Flood in Savitri River	27 persons drowned & 14 others missing.	2 MSRTC (Maharashtra State Road transport Corporation) buses & several other vehicles washed away as a bridge on the Savitri River collapsed near Mahad in Raigad district of Maharashtra on Mumbai - Goa highway on 2nd August at late night.
14	24 to 26 Sep.	Parts of Maharashtra	Heavy rain & Flash Flood	2 persons died.	
15	2 to 4 Oct.	Beed, Latur, Osmanabad, Nanded in Marathwada region.	Heavy rain & Flash Flood	5 persons drown & 36 animals perished.	About 50% of the Kharif crops viz. Soya bean, Cotton, tur and Jowar were damaged. Soya bean, which is one of the major crops of Marathwada, suffered a damage of about Rs.2500 crores over an area of about 15 lakh hectares.
	<i>CWC DATA (*whole year)</i>	<i>Area affected 0.015 m.ha.</i>		<i>i) 145 human lives lost. ii) 1036 cattle lost.</i>	<i>i) 0.077 million population affected. ii) 8164 houses damaged. iii) Crops in 0.015 m.ha damaged.</i>
MIZORAM					
1	23 May	Aizwal	Landslide	3 persons died & one other injured.	Airport approach road National Highway -54 remained closed.
2	18 Sep.	Aizwal	Landslip	5 persons died.	Roads blocked. Traffic & power supply disrupted.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
ODISHA					
1	3 to 8 Aug.	Koraput, Sambalpur	Heavy rains	2 persons died, one in each dist	
	<i>CWC DATA (*whole year)</i>	<i>Area affected 0.009 m.ha</i>		<i>3 human lives lost.</i>	<i>i) 0.015 million population affected. ii) 09 houses damaged.</i>
RAJASTHAN					
1	11 Jul.	Baran	Heavy rains	2 persons drowned.	10 villages from Alwar district & 36 villages from Baran districts cut off from nearby areas.
2	15 Jul.	Jaipur	Heavy rains	One child drowned.	
3	28 Jul.	Ganganagar	Heavy rains	One person drowned.	
4	9 to 13 Aug.	Barmer, Jodhpur, Kota	Heavy rains	14 persons drowned. Barmer - 6, Jodhpur - 7, Kota – 1.	
5	16 to 20 Aug.	Baran, Jhalawar, Pali	Heavy rains	Total 11 persons died in different incidents. Baran - 6, Jhalawar - 4, Pali – 1	House collapsed in Baran Dist.
6	22 to 30 Aug.	Sawai Madhopur, Sirohi, Udaipur	Heavy rains	6 persons swept away.	A car & a loaded tempo swept away.
	<i>CWC DATA (*whole year)</i>	<i>Area affected 0.884 m.ha.</i>		<i>i) 129 human lives lost ii) 635 cattle lost.</i>	<i>i) 4.381 million population affected. ii) 14494 houses damaged. iii) Crops in 0.796 m.ha. damaged.</i>

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
TAMIL NADU					
1	11 to 13 Jun.	Kanyakumari	Flood (Kuzhithurai and Sitraru rivers)	3 persons died.	Kulasekaram and Tiruvattar towns were inundated.
2	26 Jul.	Krishnagiri	Heavy Rains	2 persons died in Hosur municipal corporation in Krishnagiri Dist.	
TELANGANA					
1	2 Mar.	Karimnagar, Khammam, Nizamabad, Warangal	Heavy rains		Damage to 2585 hectares of Maize crops, 254 hectares of Banana crops & 350 Hectares of Chilli crops reported.
2	31 Aug.	Hyderabad	Heavy rains	7 persons died due to wall collapse.	i) Innundation of low lying areas. ii) Damage to thousands of cars reported. iii) Water logging in most parts of city causing traffic disruption.
3	1 to 30 Sep.	Hyderabad, Kamareddy, Karimnagar, Mahbubnagar, Medak, Medchal, Nalgonda, Nizamabad, Sangareddy, Vikarabad, Warrangal, Yadadri	Heavy rains & floods	Total 49 persons died & 9 others injured. 6733 animals perished. Hyderabad - 1, Kamareddy- 4, Karimnagar - 6, Mahbubnagar - 2, Medak - 4, Medchal - 6, Nalgonda - 2, Nizamabad - 3, Sangareddy- 16, Vikarabad - 3, Warrangal - 1, Yadadri -1.	i) Damage to 2.60 lakh hectares of crops reported. ii) Damage to 37991 houses reported. iii) Damage to 644 boats & 1493 nets reported. iv) Damage to roads reported. v) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply.

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
TRIPURA					
1	18 May	North Tripura	Heavy rains		i) About 50,000 peoples affected & shifted to relief camps. ii) The entire city Dharamnagar flooded. iii) All Offices, Schools, collages remained closed. iv) Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply.
	<i>CWC DATA (*whole year)</i>	<i>Area affected 0.037 m.ha.</i>		<i>03 human lives lost.</i>	<i>i) 0.091 population affected. ii) 455 houses damaged. iii) Crops in 0.019 m. ha. damaged.</i>
UTTAR PRADESH					
1	12 Mar.	Meerut	Heavy Rains	5 persons died due to wall collapse.	Extensive damage to building reported.
2	1-3 Jul.	Parts of U.P.	Heavy Rains	26 persons died.	Damage to Mango, Maize crops reported.
3	18 Jul.	Parts of West U.P.	Heavy Rains	10 persons died.	Damage to Mango, Maize crops reported.
4	30 Jul.	Parts of East U.P.	Heavy Rains	3 persons died.	Damage to Mango, Maize crops reported.
5	16 Aug.	Parts of East U.P.	Heavy Rains	8 persons died.	Damage to crops reported.
	<i>CWC DATA (*whole year)</i>	<i>Area affected 0.569 m.ha.</i>		<i>i) 74 human lives lost. ii) 293 cattle lost.</i>	<i>i) 2.032 million population affected. ii) 35525 houses damaged. iii) Crops in 0.277 m.ha. damaged.</i>

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
UTTARAKHAND					
1	8 May	Chamoli	Landslide		i) Damage to more than 10 houses reported. ii) Damage to more than half dozen vehicles reported.
2	22 May	Dehradun	Landslide	10 labourers died & 5 other injured.	
3	28 May	Tehri and Uttarkashi	Cloud Burst	5 persons died.	
4	3 Jul.	Chamoli, Pithoragarh	Cloud Burst	20 persons died & 12 others missing.	i) 150 families affected. ii) 4 houses fully & 12 houses partially damaged.
5	16 & 17 Jul.	Dehradun, Nainital, Pauri, Tehri, Uttarkashi	Heavy rains & Landslides	15 persons died.	i) Rishikesh-Badrinath national highway and the Rishikesh - Kedarnath National Highway between Sonprayag and Gaurikund, remained cut off. ii) Damage to several bridges across the state reported.
6	21 to 23 Jul.	Dehradun	Landslide	11 persons died.	
	<i>CWC DATA (*whole year)</i>	<i>Area affected 0.010 m.ha.</i>		<i>i) 114 human lives lost. ii) 823 cattle lost.</i>	<i>i) 3324 houses damaged. ii) Crops in 0.010 m.ha. damaged.</i>

S.N.	Date / Period	Area affected	Intensity [River(s)]	Casualties	Extent of damage
WEST BENGAL					
1	20 Jul.	Darjeeling	Heavy rains & Landslides	3 persons died due to landslide.	
2	24 to 25 Jul.	Alipurduar, Cooch Behar, Darjeeling, Jalpaiguri	Flood	4 persons died.	58000 people affected.
3	17 Aug.	Kolkata	Heavy rains	3 persons died and 15 others injured.	Several trees/electric poles uprooted causing disruption in vehicular traffic & power supply.
4	23 to 29 Aug.	Hooghly, Howrah	Heavy rains & Flood in Mahananda river	5 persons died & one person drowned in Mahananda river of Malda Dist.	i) Extensive damage to the crops reported. ii) 5,550 families in 45 villages affected

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

सारिणी - XII : चक्रवाती तूफान 2016

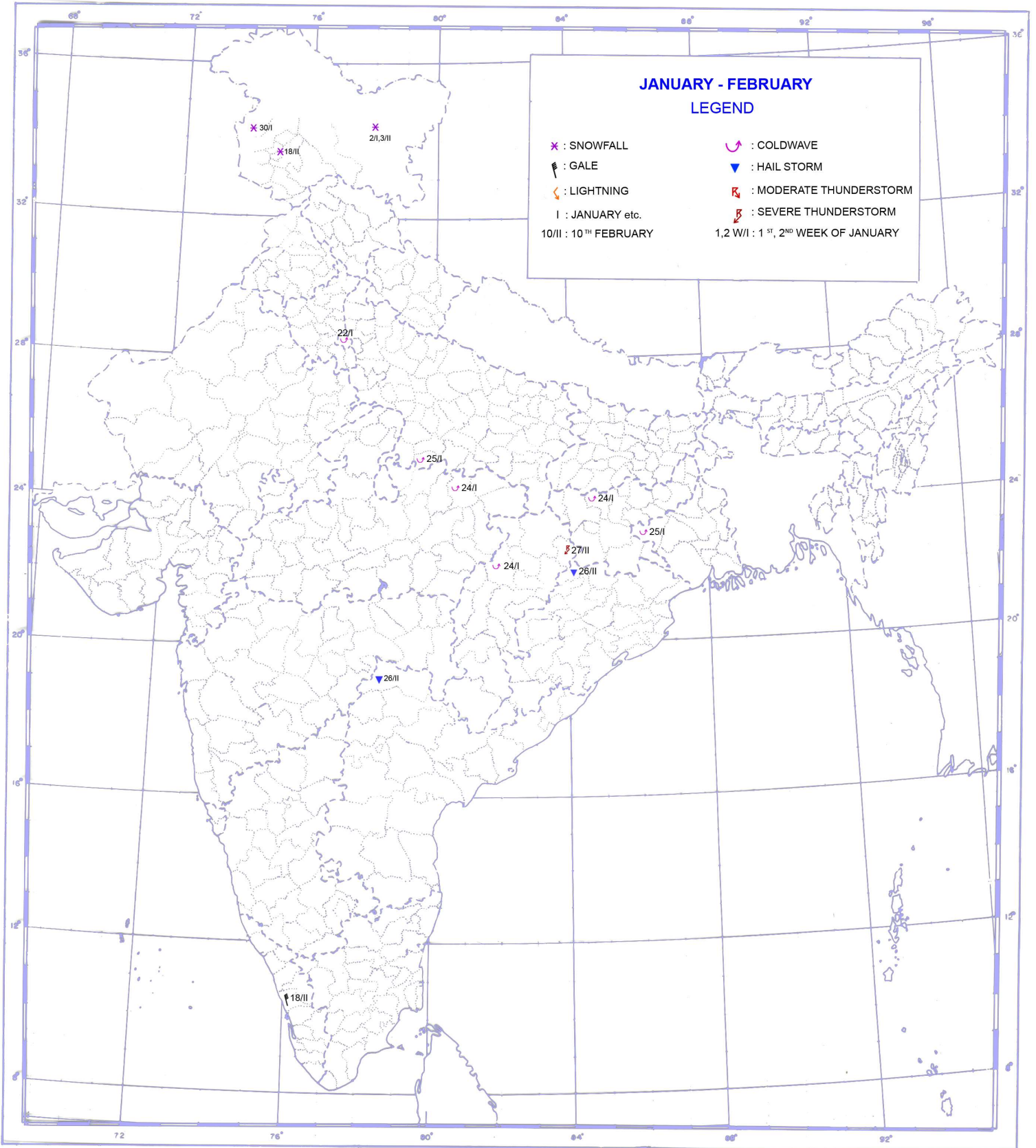
TABLE - XII : CYCLONIC STORM 2016

During 2016, one Very Severe Cyclonic Storm (VARDAH) and 3 Cyclonic Storms (ROANU, KYANT and NADA) were formed over the Bay of Bengal. The Arabian Sea was devoid of any cyclonic storm. Out of these ROANU and VARADH caused some damage, details of the same are out lined below :-

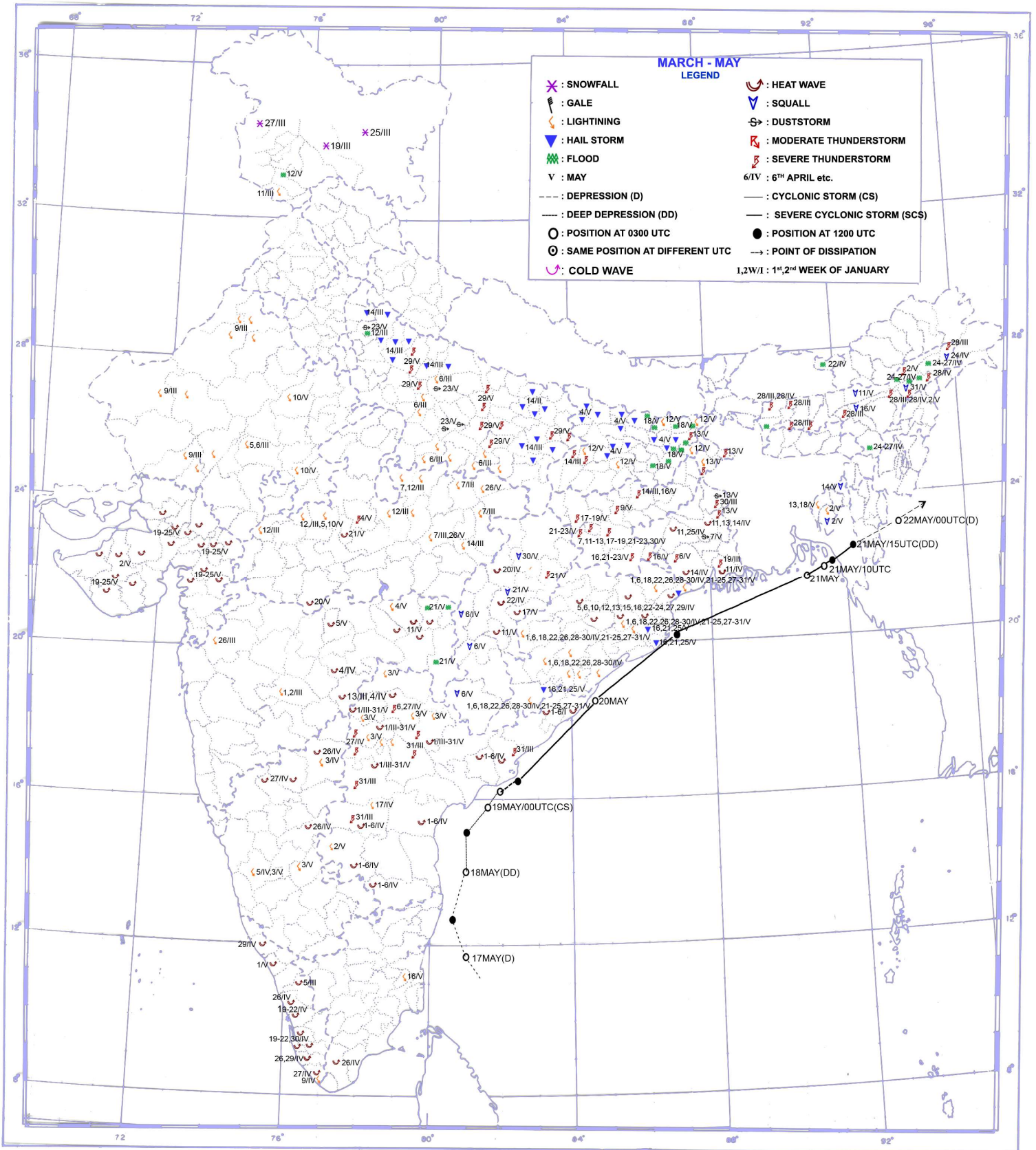
S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
<u>BAY CYCLONE</u>					
1.	17 May – 22 May	<p><u>Formation</u></p> <p>Near Lat. 11.0°N / Long. 81.0°E, about 240 kms. south-southeast of Chennai at 0300 UTC of 17th May .</p> <p><u>Landfall</u></p> <p>It crossed southeast coast of Bangladesh near lat. 22.6°N and 91.6°E around 1000 UTC of 21st, close to and to the north of Chittagong (Bangladesh)</p> <p><u>Dissipation</u></p> <p>Weakened into a well marked low pressure area over Myanmar and adjoining Nagaland and Manipur on 22nd morning.</p>	Cyclonic Storm (ROANU)	One person died and 4 others injured.	<p><u>Tripura :</u></p> <p>i) Damage to crops and vegetables reported.</p> <p>ii) Gomati, Sipahijala, South Tripura, West Tripura districts severely affected.</p> <p>iii) Electricity and telecommunication services severely affected.</p> <p>iv) Many trees uprooted causing disruption in road communications.</p>

S.N.	Date / Period	Area affected	Intensity	Casualties	Extent of damage
2	6 Dec. – 13 Dec.	<p><u>Formation</u></p> <p>Near Lat. 8.5°N / Long.91.0°E, about 210 kms west-southwest of Car Nicobar & about 1320 kms south-southeast of Vishakhapatnam at 0900 UTC of 6th Dec.</p> <p><u>Landfall</u></p> <p>It crossed north Tamil Nadu coast close to Chennai between 0930 and 1130 UTC of 12th Dec. as a Severe Cyclonic Storm and lay centred over north Tamil Nadu near lat. 13.0°N and 79.9°E.</p> <p><u>Dissipation</u></p> <p>Weakened into a well marked low pressure area over north interior Tamil Nadu and adjoining south interior Karnataka at 0300 UTC on 13th Dec.</p>	Very Severe Cyclonic Storm (VARDAH)	33 persons died. 10,100 cattle heads perished.	<p><u>Tamil Nadu :</u></p> <p>i) Estimated total loss is some core & 11 lakhs worth.</p> <p>ii) Damage to 89,500 acres of Paddy fields, 12,510 acres of Sugarcane, 5000 acres of Karcavina trees, 3000 acres of Mango trees, 2000 acres of groundnut field, 1010 acres of Banana plants, 1000 acres of vegetable plants, 1000 acres of Eucalyptus trees reported.</p> <p>iii) 45 villages marooned in Thiruvallur district.</p> <p>iv) Damage to more than 1000 boats reported.</p> <p>v) Damage to large number of thatched houses reported.</p> <p>vi) More than 1000 trees & electric poles uprooted causing disruption in power supply & mobile services.</p> <p><u>Andaman & Nicobar :</u></p> <p>Nearly 2400 tourists strained due to heavy rainfall.</p>

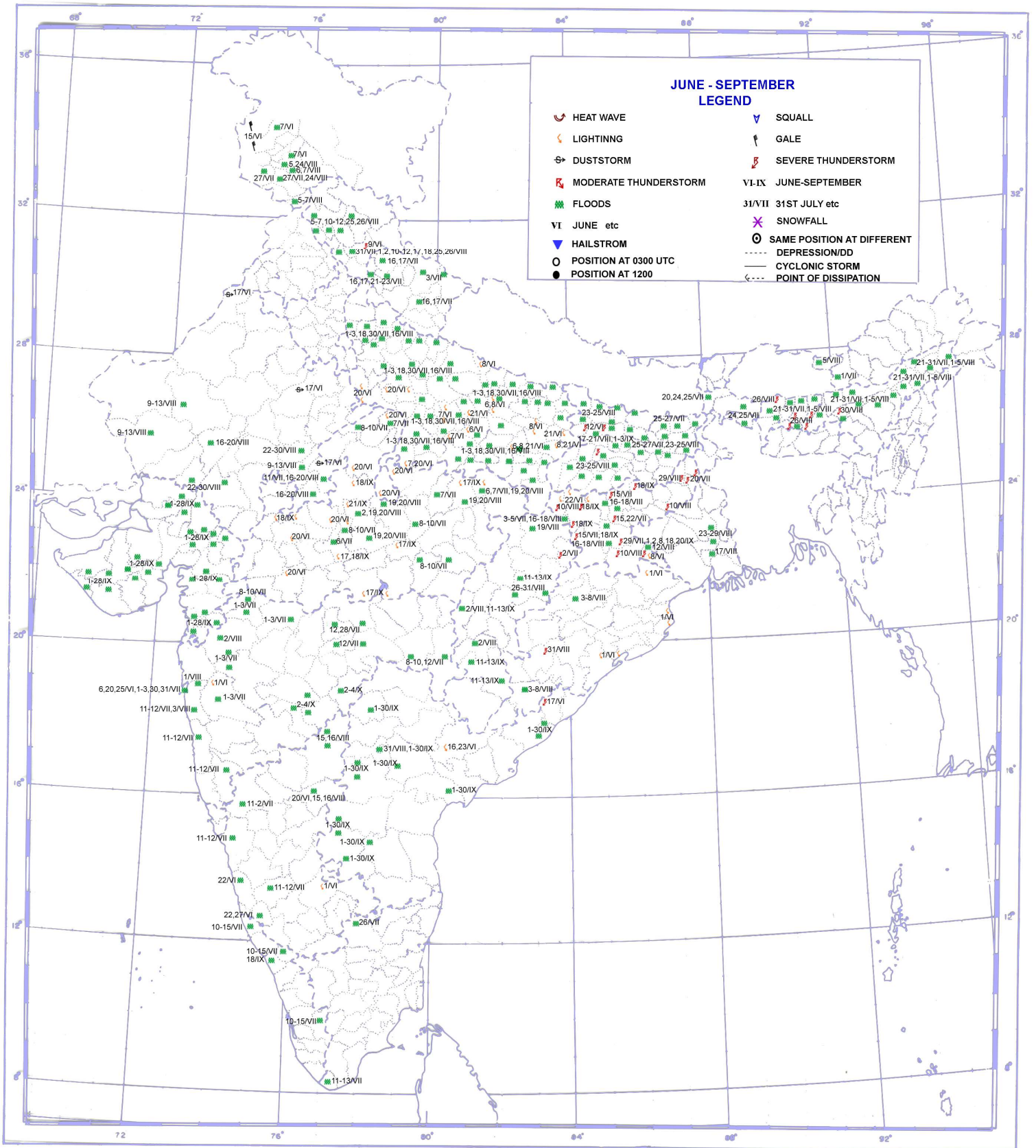
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