



**Government of India
Ministry of Earth Sciences
India Meteorological Department**

**Press Release
Date: 16th September, 2023
Time of Issue: 1330 hours IST**

**Subject: 1) Well Marked Low Pressure Area lies over westcentral Madhya Pradesh & neighbourhood.
2) Exceptionally heavy rainfall recorded over southwest Madhya Pradesh: Bhimpur (Betul) – 45 cm
3) Isolated extremely heavy rainfall very likely over southwest Madhya Pradesh and southeast Rajasthan on 16th & 17th; north Madhya Maharashtra on 16th; Gujarat region during 16th-18th September with exceptionally heavy rainfall (>30 cm) at one or two places over southwest Madhya Pradesh and east Gujarat Region today.**

**Weather observed during past 24 hours ending at 0830 hours IST of today (Annexure I):
For Flash Flood Guidance Map (Annexure III)**

Significant Weather features:

- ❖ Yesterday's Well Marked Low Pressure Area over East Madhya Pradesh & neighbourhood now lies over westcentral Madhya Pradesh & neighbourhood. It is likely to move west-northwestwards across northern parts of Gujarat & adjoining southeast Rajasthan during next 2 days.
- ❖ The Monsoon Trough lies south to its normal position.
- ❖ A cyclonic circulation lies over Punjab in lower tropospheric levels.
- ❖ **A Western Disturbance** as a trough in middle tropospheric westerlies runs roughly along Long. 68°E to the north of Lat. 28°N.

Weather Forecast and Warnings: (Annexure II)

Central & West India: Light/moderate fairly widespread to widespread rainfall/thunderstorm & lightning with **isolated heavy to very heavy rainfall** very likely over West Madhya Pradesh during 16th-18th; North Konkan, North Madhya Maharashtra on 16th & 17th; Marathwada on 16th; Gujarat Region during 16th-19th and Saurashtra & Kutch during 17th-20th September.

- ❖ **Isolated extremely heavy rainfall very likely over southwest Madhya Pradesh and southeast Rajasthan on 16th & 17th; north Madhya Maharashtra on 16th; Gujarat region during 16th-18th September with exceptionally heavy rainfall (>30 cm) at one or two places over southwest Madhya Pradesh and east Gujarat Region today.**
- ❖ **Isolated very heavy rainfall also very likely over Saurashtra & Kutch on 18th & 19th and southwest Rajasthan on 17th September.**

Northwest India: Light/moderate fairly widespread to widespread rainfall/thunderstorm with isolated **heavy falls** very likely over Uttarakhand during 16th-18th September and Himachal Pradesh on 16th September.

East India: Light/moderate fairly widespread to widespread rainfall/thunderstorm & lightning with **isolated heavy rainfall** very likely over Andaman & Nicobar Islands during 16th -18th and Odisha on 19th & 20th September.

South India: Light/moderate fairly widespread to widespread rainfall with isolated **heavy rainfall** very likely over interior Tamil Nadu on 16th & 17th and Coastal & South Interior Karnataka on 16th September.

Northeast India: Light/moderate scattered to fairly widespread rainfall/thunderstorm with isolated **heavy rainfall** activity very likely over Nagaland, Manipur, Mizoram & Tripura during 17th-20th; Assam & Meghalaya during 18th-20th and Arunachal Pradesh on 20th September.

For more details kindly refer:

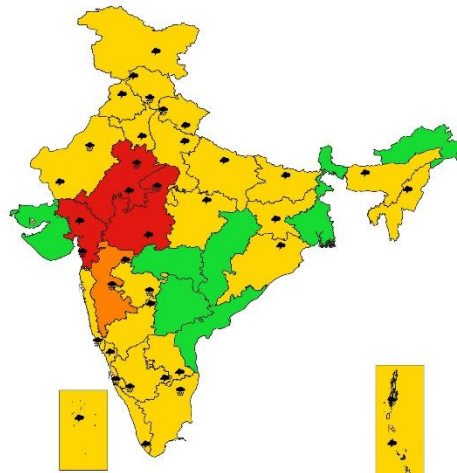
https://mausam.imd.gov.in/responsive/all_india_forecast_bulletin.php

Rainfall observations: (from 0830 hours IST of yesterday to 0830 hours IST of today, the 16th September, 2023):

- **Exceptionally heavy rainfall recorded over southwest Madhya Pradesh: Bhimpur (Betul) – 45 cm**
- **Heavy to very heavy rainfall with extremely heavy falls** at isolated places over West Madhya Pradesh; **Heavy to very heavy rainfall** at isolated places over East Madhya Pradesh, East Rajasthan, Punjab, Himachal Pradesh, Vidarbha, South Interior Karnataka and **heavy rainfall** at isolated places over Uttarakhand, Gujarat Region, Madhya Maharashtra, Coastal Karnataka and Kerala.
- **Significant rainfall recorded (in cm):**
 - ✓ **West Madhya Pradesh:** Bhimpur (dist Betul) 45, Bhainsdehi (dist Betul) 35, Rahatgaon (dist Harda) 29, Sonkatch (dist Dewas) 27, Chicholi (dist Betul) 27, Depalpur (dist Indore) 26, Maheshwar (dist Khargone) 26, Bajna (dist Ratlam) 26, Pachmarhi (dist Narmadapuram) 24, Pithampur (dist Dhar) 24, Nagda (dist Ujjain) 24, Multai (dist Betul) 21, Shahpur (dist Betul) 21, Badnagar (dist Ujjain) 21, New Harsud (dist Khandwa) 21, Khirkiya-arg (dist Harda) 20, Bareli (dist Raisen) 20, Betul (dist Betul) 20, Seoni Malwa (dist Narmadapuram) 19, Kasarwad (dist Khargone) 18, Sanwer (dist Indore) 18, Narmadapuram (dist Narmadapuram) 18, Gautampura (dist Indore) 18, Alot (dist Ratlam) 17, Indore (dist Indore) 17, Hatpiplaya (dist Dewas) 17, Bhikangaon (dist Khargone) 17, Amla (dist Betul) 17, Udainagar (dist Dewas) 17, Harda (dist Harda) 17, Timarni (dist Harda) 16, Hatod (dist Indore) 16, Punasa Dam (dist Khandwa) 16, Barod (dist Agar-malwa) 16, Bagli (dist Dewas) 16, Gogawan (dist Khargone) 16, Mhow (dist Indore) 16, Petlawad (dist Jhabua) 15, Raoti (dist Ratlam) 15, Kannod (dist Dewas) 15, Prabhat Pattan (dist Betul) 15, Barwaha (dist Khargone) 15, Atner (dist Betul) 15, Mahidpur (dist Ujjain) 15, Budhni (dist Sehore) 14, Jharda (dist Ujjain) 14, Dhar-aws (dist Dhar) 14, Shamgarh (dist Mandsaur) 14, Jawar (dist Sehore) 14, Khalwa (dist Khandwa) 13, Khandwa (dist Khandwa) 13, Khargone-aws (dist Khargone) 13, Satwas (dist Dewas) 13, Sanawad (dist Khargone) 13, Rehti (dist Sehore) 13, Badnawar (dist Dhar) 13, Sailana (dist Ratlam) 13, Nasrullahganj (dist Sehore) 12, Godadongri (dist Betul) 12, Ujjain-aws (dist Ujjain) 12, Agar (dist Agar-malwa) 12, Udaipura (dist Raisen) 12, Pipariya (dist Narmadapuram) 12, Khategaon (dist Dewas) 11, Khaknar (dist Burhanpur) 11, Khachrod (dist Ujjain) 11, Dewas-aws (dist Dewas) 10, Pandhana (dist Khandwa) 10, Babai (makhan Nagar) (dist Narmadapuram) 10, Sultanpur (dist Raisen) 10, Sohagpur (dist Narmadapuram) 10, Ichhawar (dist Sehore) 10, Neapanagar (dist Burhanpur) 10, Suvasara (dist Mandsaur) 10, Deori (dist Raisen) 10
 - ✓ **East Madhya Pradesh:** Sausar (dist Chindwara) 20, Chauri (dist Chindwara) 16, Tamia (dist Chindwara) 16, Chand (dist Chindwara) 15, Parasia (dist Chindwara) 15, Umreth (dist Chindwara) 14, Tendukheda (dist Narsinghpur) 14, Junnardeo (dist Chindwara) 13, Mohkheda (dist Chindwara) 10, Amarwara (dist Chindwara) 9, Gadarwara (dist Narsinghpur) 8, Jaisinagar (dist Sagar) 8, Bichhua (dist Chindwara) 7, Kesli (dist Sagar) 7, Katangi (dist Balaghat) 7, Pandhurna (dist Chindwara) 7, Chindwara-aws (dist Chindwara) 7, Seoni (dist Seoni) 7, Kurai (dist Seoni) 7
 - ✓ **Vidarbha:** Chikhaldia (dist Amraoti) 20, Dharni (dist Amraoti) 8, Chandur Bazar (dist Amraoti) 8, Saoner (dist Nagpur) 7,
 - ✓ **East Rajasthan:** Dug (dist Jhalawar) 16, Pirawa (dist Jhalawar) 15, Kesarpura Sr (dist Banswara) 14, Bakani Sr (dist Jhalawar) 13, Danpur (dist Banswara) 11, Pachpahar Sr (dist Jhalawar) 11, Gangdhar Sr (dist Jhalawar) 10, Bhungra Sr (dist Banswara) 8, Khushalgarh (dist Banswara) 7, Ramganjmandi Sr (dist Kota) 7,
 - ✓ **Himachal Pradesh:** Ghamroor (dist Kangra) 13, Dharmsala (dist Kangra) 7, Gohar (dist Mandi) 7,
 - ✓ **Punjab:** Sangrur (dist Sangrur) 12, Bhatinda Iaf (dist Bhatinda) 9, Dhuri (dist Sangrur) 7,
 - ✓ **South Interior Karnataka:** Kottigehara (dist Chikkamagaluru) 13, Bhagamandala (dist Kodagu) 7
 - ✓ **Uttarakhand:** Nainital-9
 - ✓ **Gujarat Region:** Ukai (dist Surat) 8, Sagbara (dist Narmada) 6,
 - ✓ **Coastal Karnataka:** Mangaluru Ap Obsy (dist Dakshina Kannada) 9, Belthangadi (dist Dakshina Kannada) 8, Panambur Obsy (dist Dakshina Kannada) 7
 - ✓ **Madhya Maharashtra:** Yaval (dist Jalgaon) 7, Navapur (dist Nandurbar) 7, Nandurbar (dist Nandurbar) 7,
 - ✓ **Kerala:** Karipur Ap. (dist Malappuram) 7, Mattannur Arg (dist Cannur) 7, Kozhikode (dist Kozhikode) 7,
 - ✓ **Tamil Nadu:** Uthukottai (dist Tiruvallur) 6,

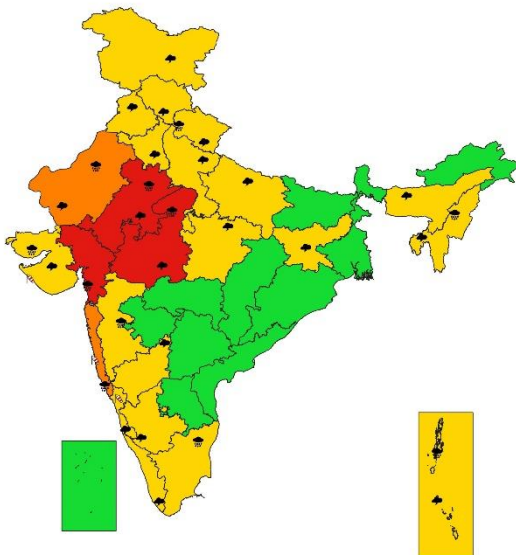
Obsy: Observatory; **AWS:** Automatic Weather Station; **dist:** District; **NH:** National Highway; **KVK:** Krishi Vigyan Kendra; **DVC:** Damodar Valley Corporation

SUBDIVISIONWISE WEATHER WARNING FOR DAY 1
(16-9-2023)



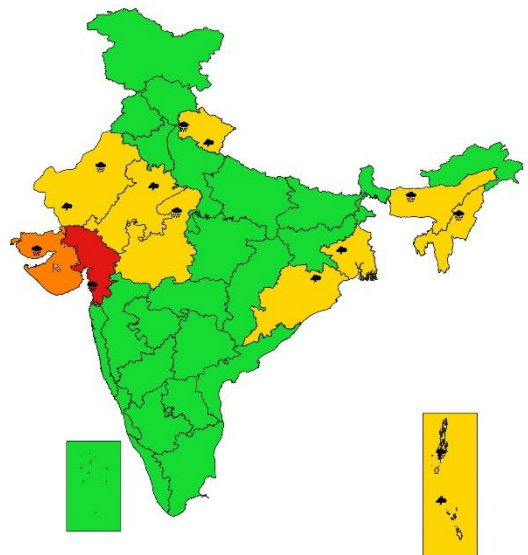
- | | | |
|----------------------------|----------------------|--------------------------|
| Subdivision Warning | Dust Storm | Subdivision color |
| Heavy Rain | Strong Surface Winds | NO WARNING |
| Heavy Snow | Heat Wave | WATCH (BE UPDATED) |
| Thunderstorms & Lightning | Cold wave | ALERT (BE PREPARED) |
| Hailstorm | Fog | WARNING (TAKE ACTION) |

SUBDIVISIONWISE WEATHER WARNING FOR DAY 2
(17-9-2023)

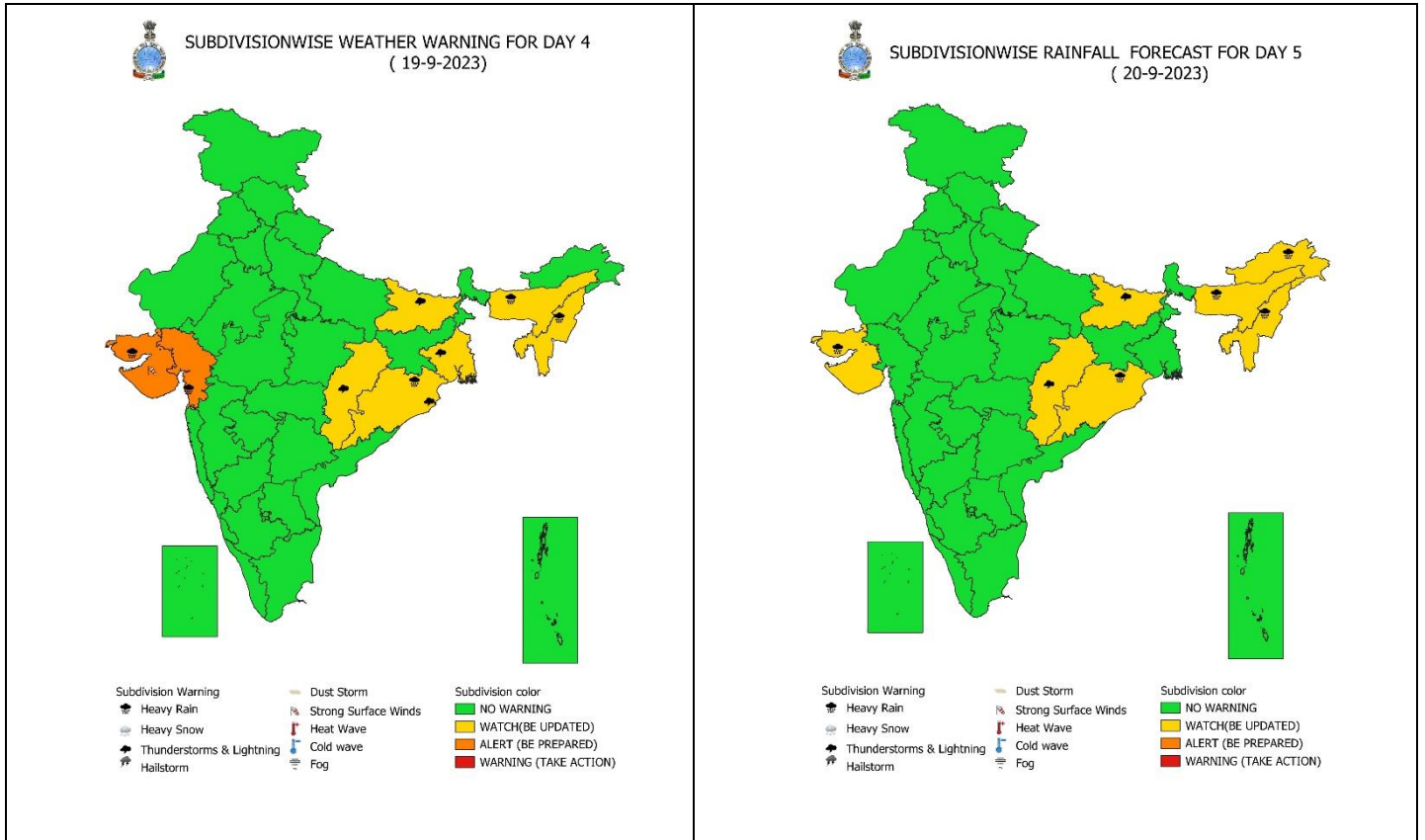


- | | | |
|----------------------------|----------------------|--------------------------|
| Subdivision Warning | Dust Storm | Subdivision color |
| Heavy Rain | Strong Surface Winds | NO WARNING |
| Heavy Snow | Heat Wave | WATCH (BE UPDATED) |
| Thunderstorms & Lightning | Cold wave | ALERT (BE PREPARED) |
| Hailstorm | Fog | WARNING (TAKE ACTION) |

SUBDIVISIONWISE WEATHER WARNING FOR DAY 3
(18-9-2023)



- | | | |
|----------------------------|----------------------|--------------------------|
| Subdivision Warning | Dust Storm | Subdivision color |
| Heavy Rain | Strong Surface Winds | NO WARNING |
| Heavy Snow | Heat Wave | WATCH (BE UPDATED) |
| Thunderstorms & Lightning | Cold wave | ALERT (BE PREPARED) |
| Hailstorm | Fog | WARNING (TAKE ACTION) |



Impact & Action Suggested due to very heavy rainfall/extremely heavy falls over southwest Madhya Pradesh, southeast Rajasthan on 16th & 17th; north Madhya Maharashtra on 16th; Konkan, southwest Rajasthan on 17th; Gujarat region during 16th-19th and Saurashtra & Kutch on 18th & 19th September.

Impact expected:

- Strong wind/hail may damage plantation, horticulture and standing crops.
- Hail may injure people and cattle at open places.
- Partial damage to vulnerable structures due to strong winds.
- Minor damage to kutcha houses/walls and huts.
- Loose objects may fly.

Action suggested:

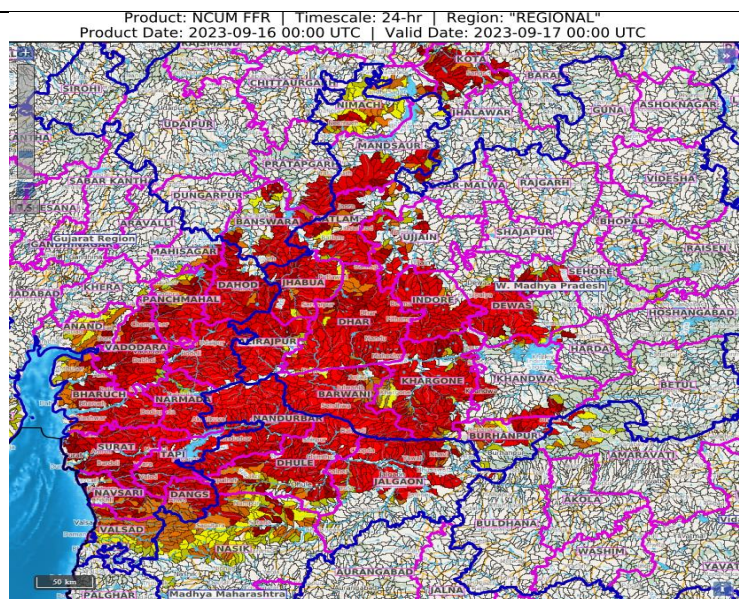
- Stay indoors, close windows & doors and avoid travel if possible.
- Take safe shelters; do not take shelter under trees.
- Do not lie on concrete floors and do not lean against concrete walls.
- Unplug electrical/ electronic appliances.
- Immediately get out of water bodies.
- Keep away from all the objects that conduct electricity.

24 hours Outlook for the Flash Flood Risk (FFR) till 1130 IST of 17-09-2023 :

High flash flood risk likely over few watersheds & neighbourhoods of West Madhya Pradesh Met Sub-divisions during next 24 hours.

Moderate to High flash flood risk likely over few watersheds & neighbourhoods of Southern parts of East Rajasthan, Gujarat Region and adjoining Madhya Maharashtra Met Sub-divisions during next 24 hours.

Surface runoff/ Inundation may occur at some fully saturated soils & low-lying areas over AoC as shown in map due to expected rainfall occurrence in next 24 hours.



Legends:

- ❖ **Heavy Rain:** 64.5 to 115.5 mm; **Very Heavy Rain:** 115.6 to 204.4 mm; **Extremely Heavy Rain:** >204.4mm.
- ❖ **AWS:** Automatic Weather Station
- ❖ **Region wise classification of meteorological Sub-Divisions:**
 - **Northwest India:** Western Himalayan Region (Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh and Uttarakhand); Punjab, Haryana-Chandigarh-Delhi; West Uttar Pradesh, East Uttar Pradesh, West Rajasthan and East Rajasthan.
 - **Central India:** West Madhya Pradesh, East Madhya Pradesh, Vidarbha and Chhattisgarh.
 - **East India:** Bihar, Jharkhand, Sub-Himalaya West Bengal & Sikkim; Gangetic West Bengal, Odisha and Andaman & Nicobar Islands.
 - **Northeast India:** Arunachal Pradesh, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura.
 - **West India:** Gujarat Region, Saurashtra & Kutch, Konkan & Goa, Madhya Maharashtra and Marathwada.
 - **South India:** Coastal Andhra Pradesh & Yanam, Telangana, Rayalaseema, Coastal Karnataka, North Interior Karnataka, South Interior Karnataka, Kerala & Mahe, Tamil Nadu, Puducherry & Karaikal and Lakshadweep.

SPATIAL DISTRIBUTION			
(% of Stations reporting)			
% Stations	Category	% Stations	Category
76-100	Widespread (WS/Most Places)	26-50	Scattered (SCT/ A Few Places)
51-75	Fairly Widespread (FWS/ Many Places)	1-25	Isolated (ISOL)

Subdivision Warning	Dust Storm	Subdivision color
Heavy Rain	Strong Surface Winds	NO WARNING
Heavy Snow	Heat Wave	WATCH(BE UPDATED)
Thunderstorms & Lightning	Cold wave	ALERT (BE PREPARED)
Hailstorm	Fog	WARNING (TAKE ACTION)

Probabilistic Forecast	
Terms	Probability of Occurrence (%)
Unlikely	< 25
Likely	25 - 50
Very Likely	50 - 75
Most Likely	> 75

Flash Flood Risk	
	High Risk (Take Action)
	Moderate Risk (Be Prepared)
	Low Risk (Be Updated)