



**India Meteorological Department**

**(Ministry of Earth Sciences)**

**NATIONAL BULLETIN NO.: 21 (BOB/04/2024)**

**TIME OF ISSUE: 1450 HOURS IST**

**DATED: 12.09.2024**

**FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)**

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**Sub: Depression over Southwest Uttar Pradesh and neighbourhood**

The depression over Southwest Uttar Pradesh and neighbourhood moved north-northeastwards with a speed of 13 kmph during past 6 hours and lay centred at 1130 hours IST of today, the 12<sup>th</sup> September over the same region near latitude 27.3°N and longitude 78.7°E, about 70 km east-northeast of Agra (Uttar Pradesh), 90 km southeast of Aligarh (Uttar Pradesh), 130 km north-northeast of Gwalior (Madhya Pradesh), and 140 km south-southwest of Bareilly (Uttar Pradesh).

It is likely to move north-northeastwards and maintain its intensity today, the 12<sup>th</sup> September and weaken gradually thereafter from tomorrow, the 13<sup>th</sup> September.

The system is under continuous surveillance of Doppler Weather Radars at Delhi and Lucknow.

**Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%**

**Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.**

## Warnings:

### (i) Rainfall warning

**Uttarakhand:** Light to moderate rainfall at most places is very likely with **heavy to very heavy rainfall** at a few places and **extremely heavy rainfall** at isolated places on 12<sup>th</sup> & 13<sup>th</sup>; **heavy rainfall** at isolated places on 14<sup>th</sup> September.

**West Uttar Pradesh:** Light to moderate rainfall at most places is very likely with **heavy to very heavy rainfall** at a few places and **extremely heavy rainfall** at isolated places on 12<sup>th</sup> **heavy to very heavy rainfall** at isolated places on 13<sup>th</sup> and **heavy rainfall** at a few places on 14<sup>th</sup> September.

**East Uttar Pradesh:** Light to moderate rainfall at many places is very likely with **heavy rainfall** at a few places on 12<sup>th</sup> and at isolated places on 13<sup>th</sup> & 14<sup>th</sup> September.

**West Madhya Pradesh:** Light to moderate rainfall at many places is very likely with **heavy to very heavy rainfall** at a few places over northwest Madhya Pradesh on 12<sup>th</sup>; **heavy rainfall** at isolated places on 13<sup>th</sup> & 14<sup>th</sup> September.

**East Madhya Pradesh:** Light to moderate rainfall at most places is very likely with **heavy rainfall** at a few places over northeast Madhya Pradesh on 12<sup>th</sup> and **heavy rainfall** at isolated places on 13<sup>th</sup> and 14<sup>th</sup> September.

**East Rajasthan:** Light to moderate rainfall at many places is very likely with **heavy to very heavy rainfall** at a few places over northeast Rajasthan on 12<sup>th</sup> and **heavy rainfall** at isolated places on 14<sup>th</sup> September.

**Haryana:** Light to moderate rainfall at most places is very likely with **heavy to very heavy rainfall** at a few places over south Haryana on 12<sup>th</sup> and **heavy rainfall** at isolated places on 13<sup>th</sup> & 14<sup>th</sup> September.

### (ii) Flash Flood Guidance: (Graphics Attached)

#### 24 hours Outlook for the Flash Flood Risk (FFR) till 0530 IST of 13-09-2024 :

**Moderate to High flash flood risk** likely over few watersheds & neighbourhoods of **West**

**Uttarakhand** – Pauri Garwal, Tehri Garwal, Dehradun, Uttarkashi, Rudrapur, Bageshwar, Almora, Nainital, Champawat, Chamoli and Pithoragarh districts

**Himachal Pradesh** – Simla, Sirmour, Kullu and Kinnaur districts

**Uttar Pradesh** – Moradabad, Rampur, Bareilly, Philipnagar, Jyotibagh, Sambhal, Badaun, Bulandshahr, Aligarh, Kanpur, Mahamayanagar, Etah, Auraiya, Etah, Shahjahanpur, Firozabad, Mainpuri, Etawah, Auraiya, Hamirpur, Jalaun, Jhansi, Kannauj, Kanpur Dehat, Hardoi, Keerli, Sitapur, Lucknow, Unnao, Raibareilly, and Barabanki districts.

**East Madhya Pradesh** - Chhatarpur, Damoh and Sagar districts.

**West Madhya Pradesh** – Agardha, Ashoknagar, Bhind, Bhopal, Datia, Guna, Morena, Rajgarh, Sheopur, Shivpuri, Raisen, and Videsha districts.

**East Rajasthan** – Kota, Baran, Jhalawar, Pratapgarh, Alwar, Dausa, Bundi, Karauli and Bharatpur districts.

### (iii) Wind warning:

Strong wind speed reaching 35-45 kmph gusting to 55 kmph is likely to prevail over southwest Uttar Pradesh adjoining areas of Northwest Madhya Pradesh, northeast Rajasthan and south Haryana during next 24 hours.

**Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%**

**Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.**

**(iv) Impact Expected (Uttarakhand, Uttar Pradesh, North Madhya Pradesh, Haryana, and Northeast Rajasthan due to heavy rainfall)**

- ✓ Localized Flooding of roads, water logging in low lying areas and closure of underpasses mainly in urban areas of the above region.
- ✓ Occasional reduction in visibility due to heavy rainfall.
- ✓ Disruption of traffic in major cities and roadways due to water logging in roads leading to increased travel time.
- ✓ Minor damage to kutcha roads.
- ✓ Possibilities of damage to vulnerable structure.
- ✓ Localized Landslides/Mudslides/landslips/mud slips/land sinks/mud sinks.
- ✓ Damage to horticulture and standing crops in some areas due to inundation and wind.
- ✓ It may lead to riverine flooding in some river catchments (for riverine flooding please visit Web page of CWC)

**(v) Action Suggested (Uttarakhand, Uttar Pradesh, North Madhya Pradesh, Haryana, and Northeast Rajasthan)**

- ✓ Judicious regulation of surface transports including railways and roadways.
- ✓ Check for traffic congestion on your route before leaving for your destination.
- ✓ Follow any traffic advisories that are issued in this regard.
- ✓ Avoid going to areas that face the water logging problems often.
- ✓ Avoid staying in vulnerable structure.

**(vi) Agromet advisories for Heavy Rainfall likely over various parts of the country**

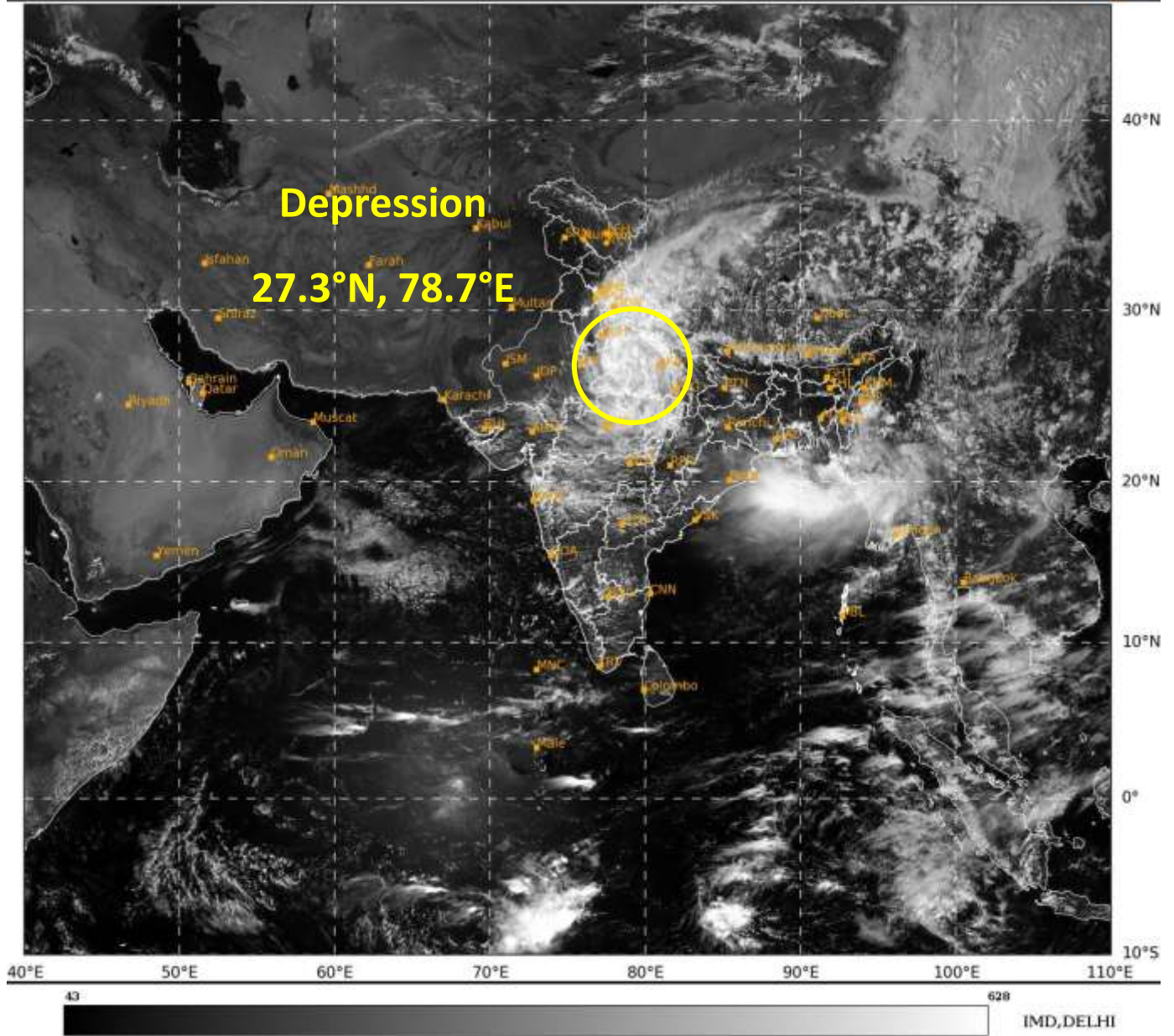
- ✓ Provide mechanical support to horticultural crops & staking to vegetables.
- ✓ Keep the harvested produce at safer place.

***Significant amount of rainfall recorded from 0830 hrs IST of 11.09.2024 to 0830 hrs IST of 12.09.2024 (cm) is given in Annexure –I.***

***The next bulletin will be issued at 2030 hrs IST of today, the 12<sup>th</sup> September, 2024.***

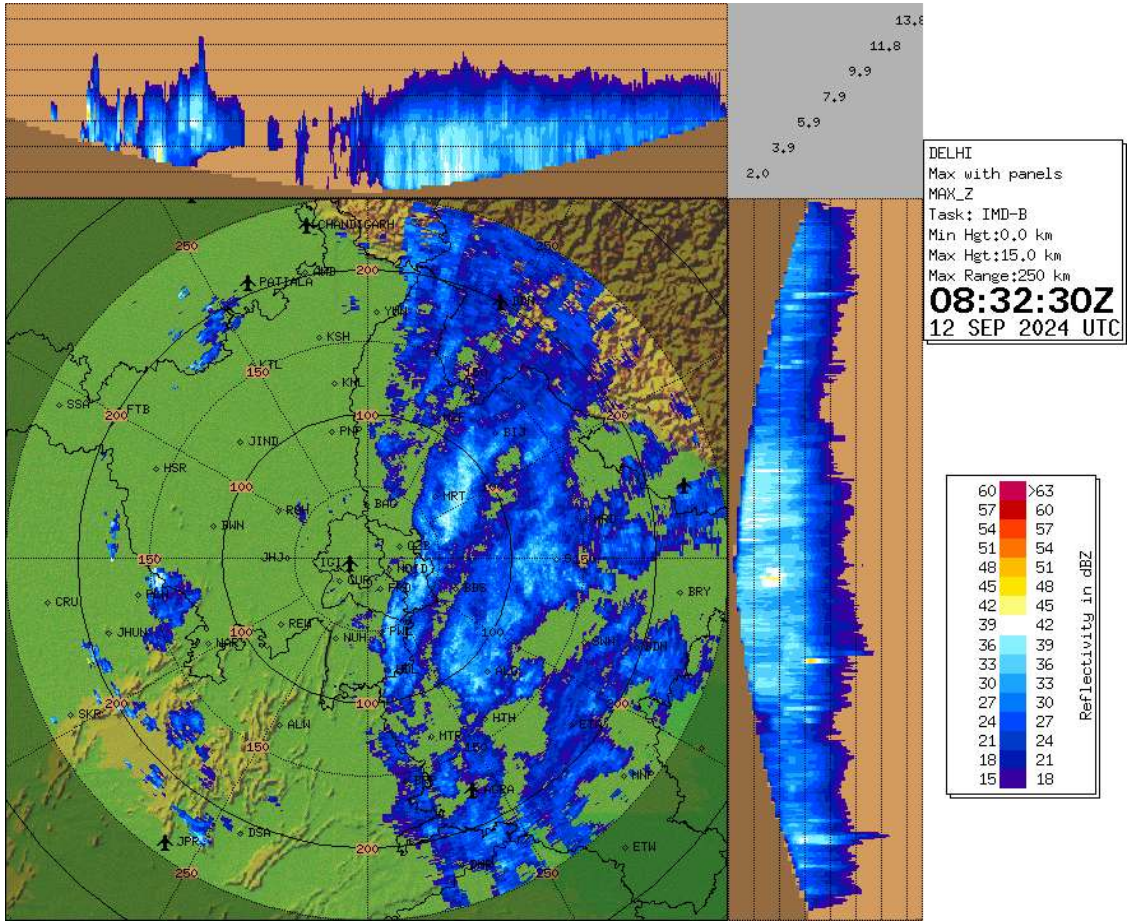
**(Dr. Ananda Kumar Das)  
Scientist- E, RSMC, New Delhi**

*Copy to: CRS, Pune/RMC Delhi /RMC Nagpur/MC Lucknow/MC Bhopal/MC Chandigarh/MC Dehradun/ MC Jaipur/MC Shimla*

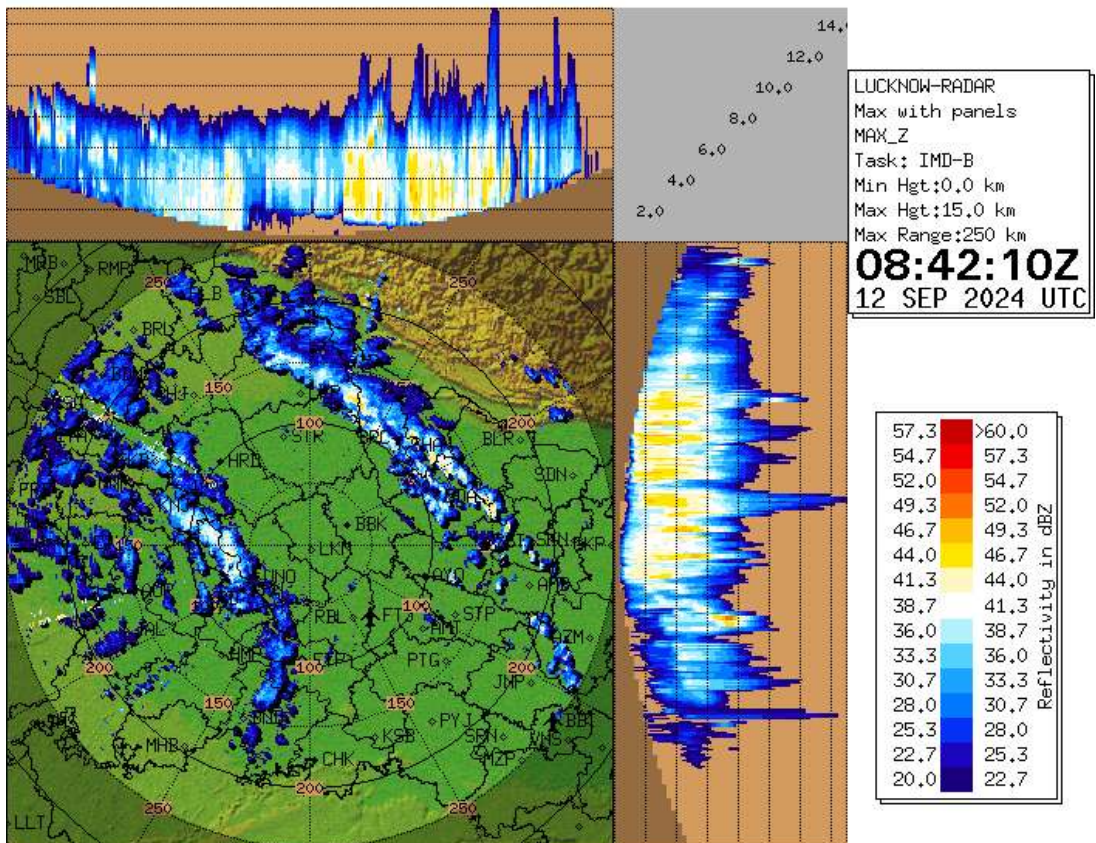


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### Doppler Weather Radar at Delhi (Max\_Z)



### Doppler Weather Radar at Lucknow (Max\_Z)



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**OBSERVED AND FORECAST TRACK OF DEPRESSION OVER SOUTHWEST UTTAR PRADESH AND NEIGHBOURHOOD BASED ON 0600 UTC (1130 IST) OF 12<sup>TH</sup> SEPTEMBER, 2024.**



**DATE/TIME IN UTC**

**IST=UTC + 0530**

**L: LOW PRESSURE AREA**

**WML: WELL MARKED LOW PRESSURE AREA**

**D: DEPRESSION (17-27 KT)**

**DD: DEEP DEPRESSION (28-33 KT)**

**CS: CYCLONIC STORM (34-47 KT)**

**SCS: SEVERE CYCLONIC STORM (48-63KT)**

**VSCS: VERY SEVERE CYCLONIC STORM (64-89 KT)**

**ESCS: EXTREMELY SEVERE CYCLONIC STORM (90-119 KT)**

**SuCS: SUPER CYCLONIC STORM  $\geq$  120 KT)**

LESS THAN 34 KT

34-47 KT

$\geq$  48 KT

OBSERVED TRACK

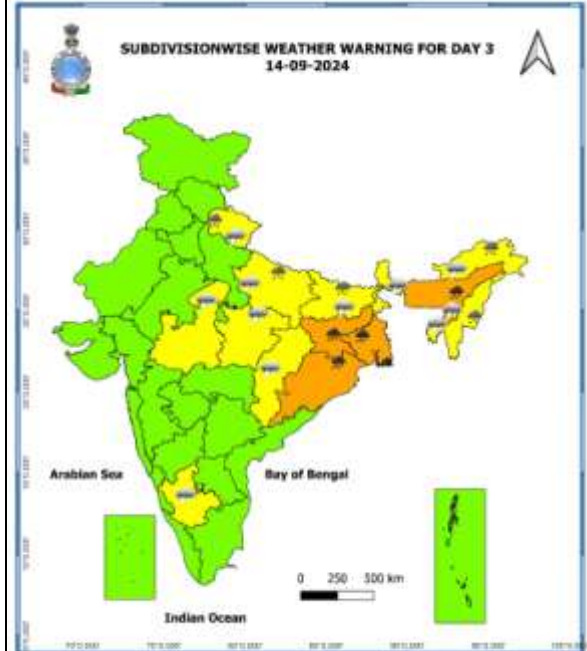
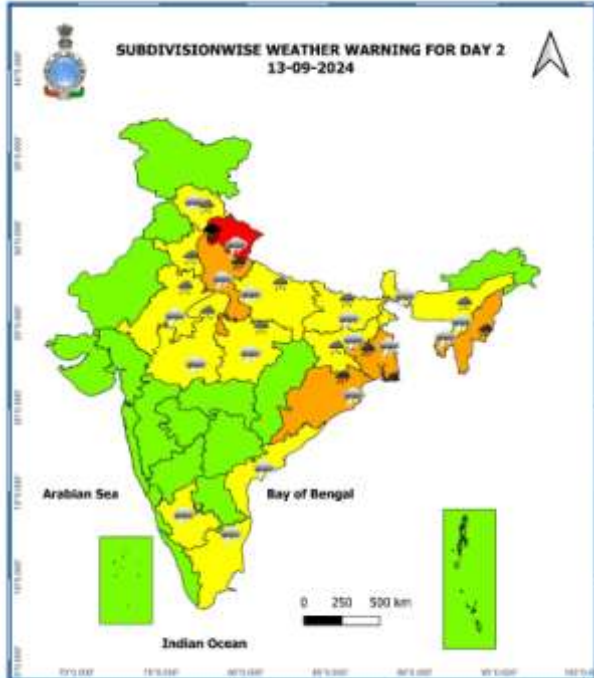
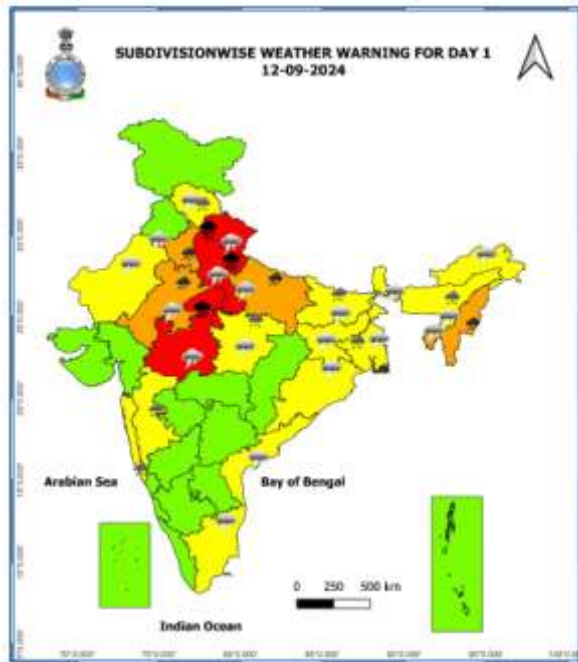
FORECAST TRACK

CONE OF UNCERTAINTY

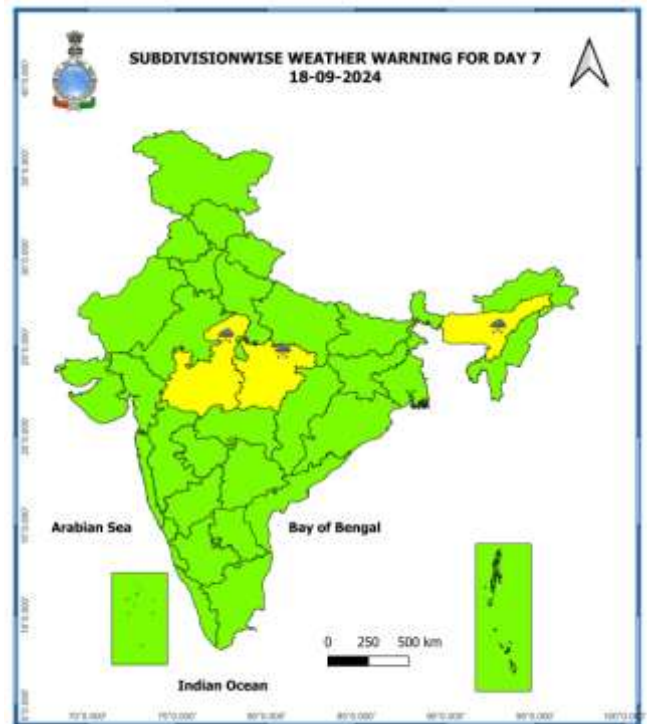
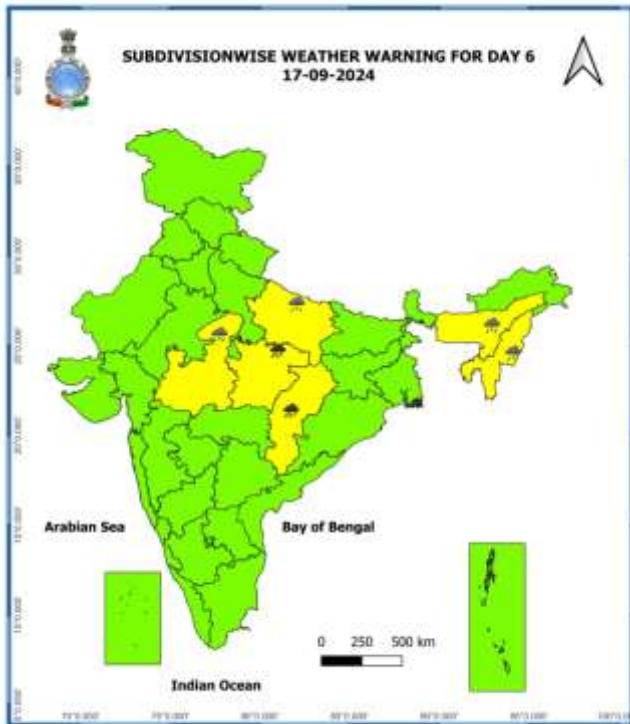
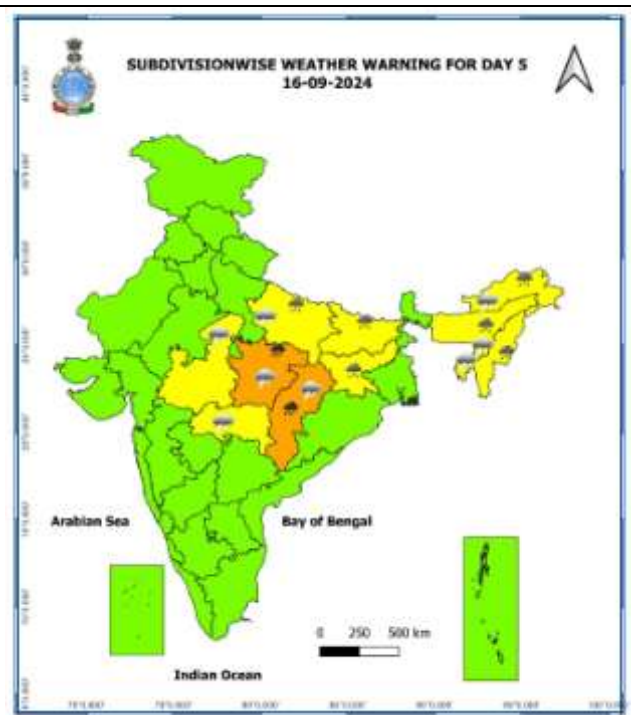
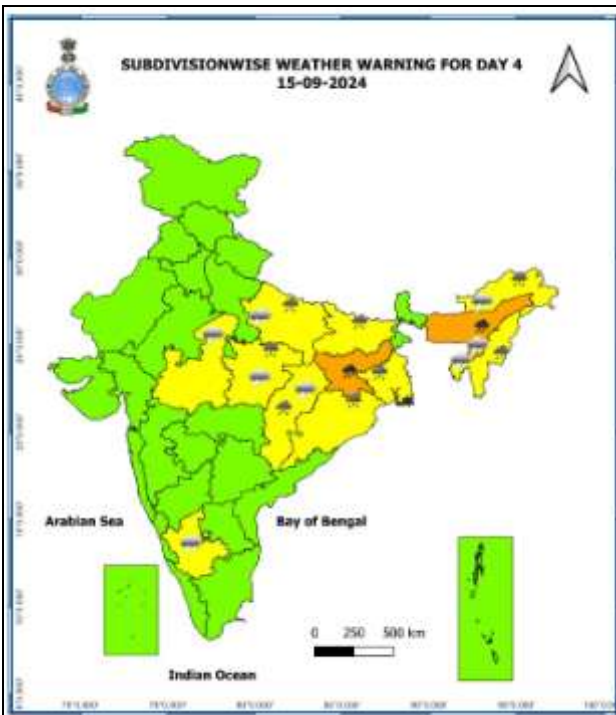
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## Warning Graphics



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- Action may be taken based on **ORANGE AND RED** COLOUR warnings.
- Vulnerable regions likely urban and hilly areas action may be initiated for heavy rainfall warning.
- As the lead period increases forecast accuracy decreases

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## Flash Flood Guidance

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**Uttarakhand** – Pauri Garwal, Tehri Garwal, Dehradun, Uttarkashi, Rudraprayag, Bageshwar, Almora, Nainital, Champawat, Chamoli and Pithoragarh districts

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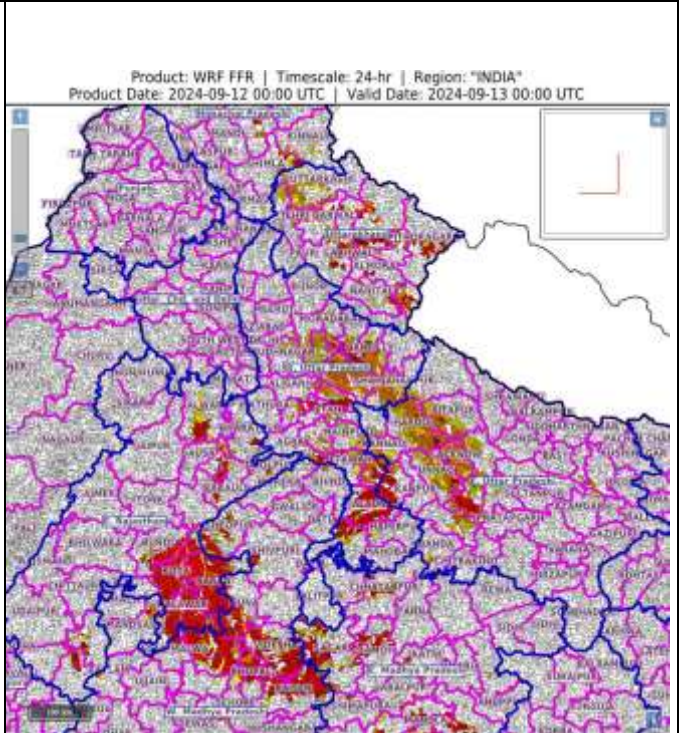
**Uttar Pradesh** – Moradabad, Rampur, Bareilly, Philiphit, Jyotibaphule Nagar, Sambhal, Badaun, Bulandsahar, Aligarh, Kanshiram Nagar, Mahamayanagar, Etah, Auraiya, Etah, Shahjahanpur, Firozabad, Mainpuri, Etawah, Auraiya, Hamirpur, Jalaun, Jhansi, Kannauj, Kanpur Dehat, Hardoi, Keeri, Sitapur, Lacknow, Unnao, Raibareli, and Barabanki districts.

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**East Rajasthan** – Kota, Baraj, Jhalawar, Pratapgarh, Alwar, Dausa, Bundi, Karauli and Bharatpur districts.

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.



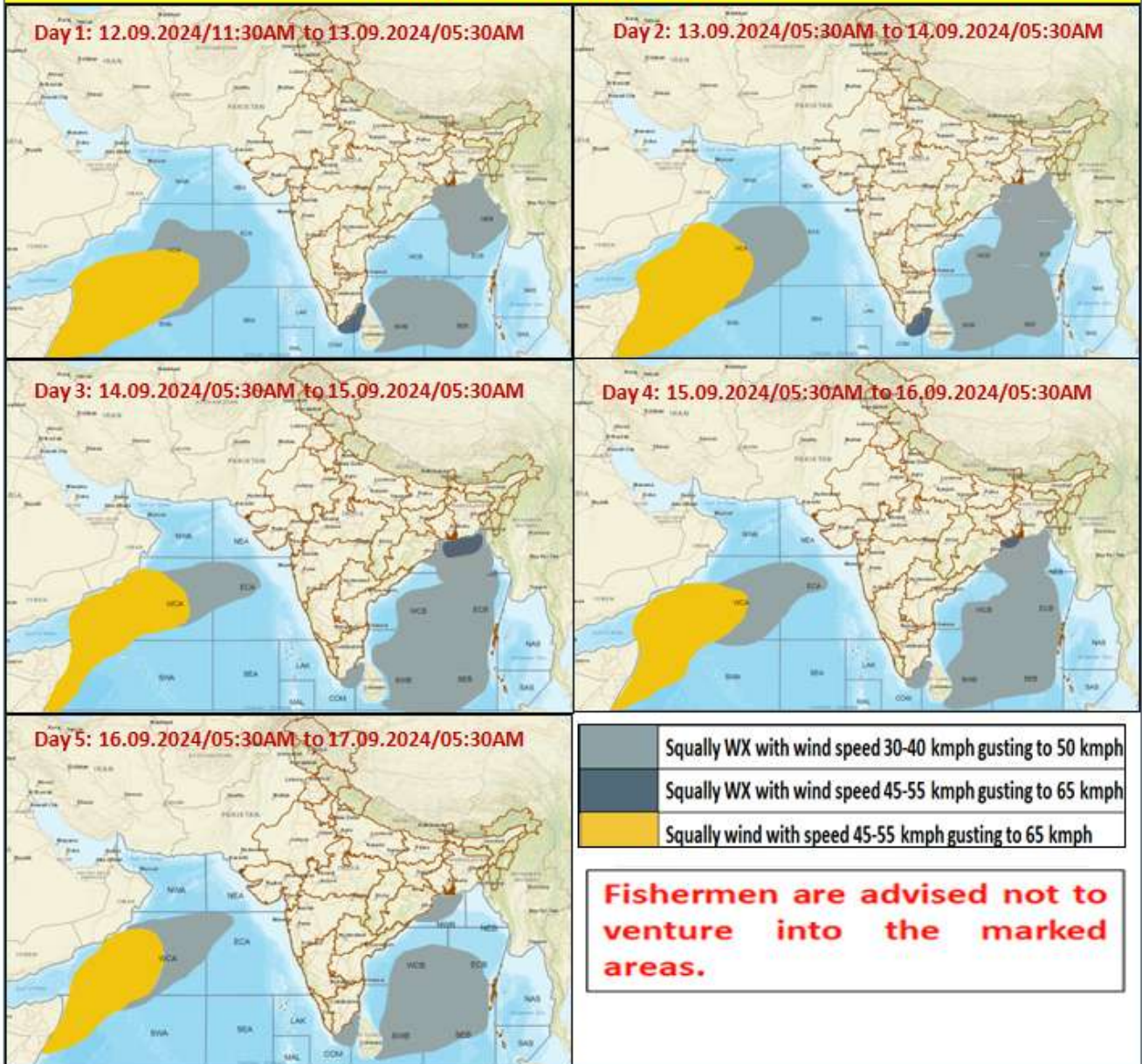
#### Flash Flood Risk

**High Risk (Take Action)**

**Moderate Risk (Be Prepared)**

**Low Risk (Be Updated)**

### Fishermen Warning Graphics



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**Significant rainfall recorded from 0830 hrs IST of yesterday, the 11<sup>th</sup> September to 0830 hrs IST of today, the 12<sup>th</sup> September, 2024 (cm):**

- ❖ **West Madhya Pradesh:** Biaora (Rajgarh) 36, Gohad (Bhind) 22, Karera (Shivpuri) 22, Narwar (Shivpuri) 21, Rajgarh (Rajgarh) 21, Gwalior (Gwalior) 20, Mau (Bhind) 20, Bhandar (Datia) 19, Sabalgarh (Morena) 19, Datia-aws (Datia) 19, Dabra (Gwalior) 18, Ater (Bhind) 17, Ambah (Morena) 17, Porsa (Morena) 17, Ghatigaon (Gwalior) 17, Bhitwarwar (Gwalior) 17, Mihona (Bhind) 16, Mehgaon (Bhind) 16, Lahar (Bhind) 16, Chinor (Gwalior) 15, Gormi (Bhind) 15, Bhind-aws (Bhind) 15, Badoda (Sheopur) 15, Alipur(jaura) (Morena) 14, Morena-aws (Morena) 12, Narsingarh (Rajgarh) 12, Pachmarhi (Narmadapuram) 12, Roan (Bhind) 12, Badarwas (Shivpuri) 11, Shivpuri (Shivpuri) 11, Vijaypur (adp) (Sheopur) 10, Pichhore (Shivpuri) 10, Seodha(seondha) (Datia) 9, Shamshabad (Vidisha) 9, Khaniyadana (Shivpuri) 9, Indergarh (Datia) 9, Bamori (Guna) 9, Kailaras (Morena) 9, Navibagh Aet (Bhopal) 8, Kolaras (Shivpuri) 8, Ashoknagar-aws (Ashoknagar) 8, Bairad (Shivpuri) 7, Sheopur-aws (Sheopur) 7,
- ❖ **West Uttar Pradesh:** Agra (cwc) (Agra) 29, Jalesar (Etah) 23, Sadabad (Hathras) 23, Sikandra Rao (Hathras) 20, Hathras (Hathras) 19, Tundla (Firozabad) 17, Khairagarh (Agra) 17, Kasganj (Kasganj) 17, Sahawar (Kasganj) 17, Tahrauli (Jhansi) 15, Jhansi (Jhansi) 14, Fatehabad (Agra) 13, Etawah (cwc) (Etawah) 12, Sasani (Hathras) 12, Sahaswan (Badaun) 12, Vrindavan (Mathura) 12, Talbehat (Lalitpur) 11, Moth (Jhansi) 11, Narora (Bulandshahar) 11, Etah (Etah) 11, Jasrana (Firozabad) 11, Aligarh (Aligarh) 11, Karhal (Mainpuri) 10, Etmadpur (Agra) 10, Bah (Agra) 9, Auraiya (cwc) (Auraiya) 9, Gunnaur (Sambhal) 9, Madawara (Lalitpur) 9, Mainpuri (Mainpuri) 9, Shikohabad (Firozabad) 8, Kurawali (Mainpuri) 8, Mauranipur (Jhansi) 8, Kalpi Tehsil (Jalaun) 8, Kalpi Cwc (Jalaun) 8, Moradabad Cwc (Moradabad) 8, Moradabad Obsy (Moradabad) 8, Bareilly Pbo (Bareilly) 8, Pali (Lalitpur) 7, Moradabad (Moradabad) 7, Kasba Tanda (Rampur) 7, Aliganj (Etah) 7, Etawah Obsy (Etawah) 7, Ghiror (Mainpuri) 7,
- ❖ **East Rajasthan:** Rajakhera (Dholpur) 24, Dholpur Tehsil Sr (Dholpur) 19, Sawaimadhupur Tesil Sr (Sawai Madhopur) 16, Aklera (Jhalawar) 13, Sapau Sr (Dholpur) 11, Bari (Dholpur) 11, Shahabad (Baran) 11, Manohar Thana (Jhalawar) 10, Baseri Sr (Dholpur) 10, Bharatpur Tehsil Sr (Bharatpur) 10, Rupbas (Bharatpur) 9, Pipalda Sr (Kota) 9, Kathumer (Alwar) 8, Sarmathura Sr (Dholpur) 8, Kumher Sr (Bharatpur) 8, Khandar Sr (Sawai Madhopur) 8, Beir Sr (Bharatpur) 8, Deeg Sr (Bharatpur) 8, Lalsot (Dausa) 7, Nagar Sr (Bharatpur) 7, Nadbai (Bharatpur) 7, Bayana (Bharatpur) 7, Karauli (Karauli) 7, Baran (Baran) 7, Atru Sr (Baran) 7, Dhariabad (Pratapgarh) 7,
- ❖ **East Madhya Pradesh:** Prithvipur (Niwari) 23, Orchha (Niwari) 15, Niwari (distNiwari) 12, Chahtarpur-aws (Chhatarpur) 12, Nowgong (Chhatarpur) 11, Mohangarh (Tikamgarh) 10, Lidhora (Tikamgarh) 9, Rajnagar (Chhatarpur) 8, Patera (Damoh) 7, Banda (Sagar) 7, Lavkushnagar (Chhatarpur) 7,
- ❖ **Uttarakhand:** Banbasa (CHAMPAWAT): 12, Champawat (CHAMPAWAT):9, Pantnagar (UDHAMSINGH NAGAR): 8, Lohaghat (CHAMPAWAT) : 8, Haldwani (NAINITAL) : 7,
- ❖ **East Uttar Pradesh:** Itwa (Siddharth Nagar) 11, Bhanpur (Basti) 7,

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