

Cold Day and Dense Fog Conditions over North India during winter 2023-24

Maximum temperatures are running below normal by 5-8°C over plains of North India since 29th December with a brief respite during 7th-8th January. These temperatures went into normal range for a brief period after 8th January due to influence of a Western Disturbance.

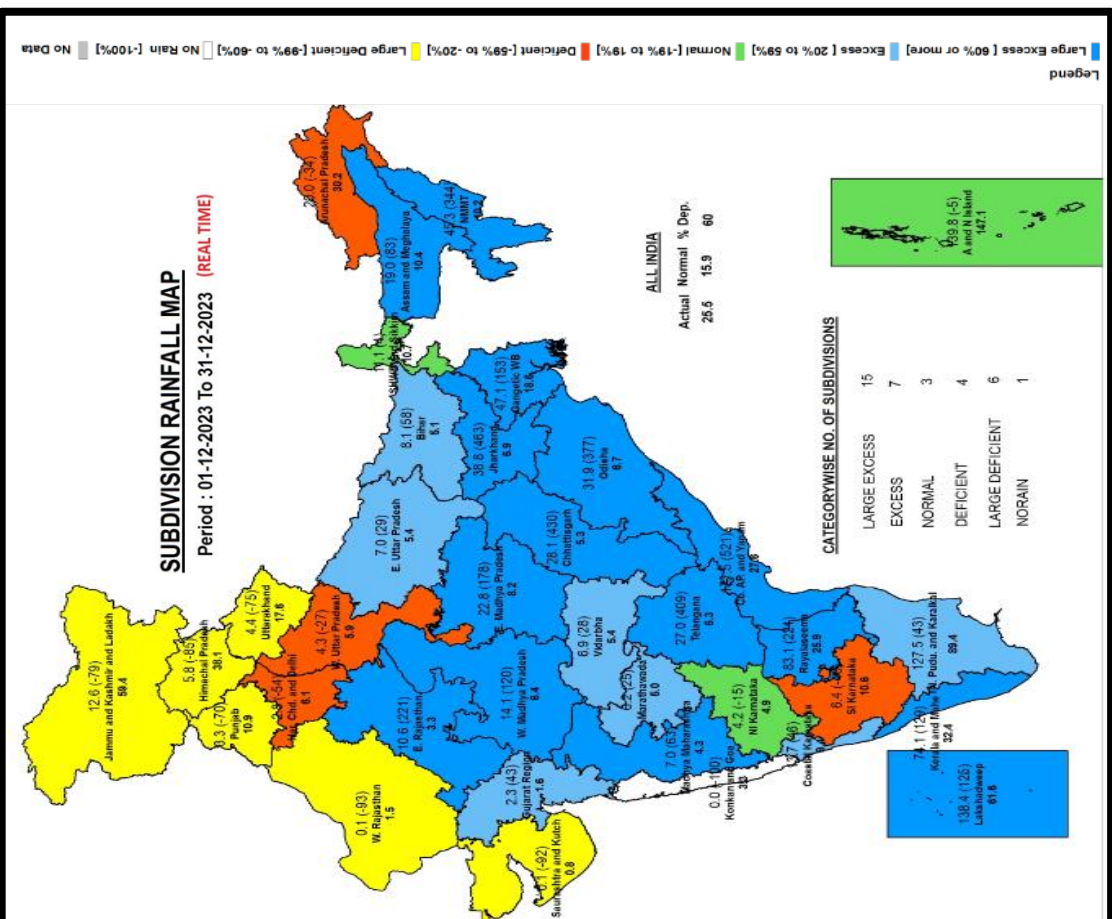
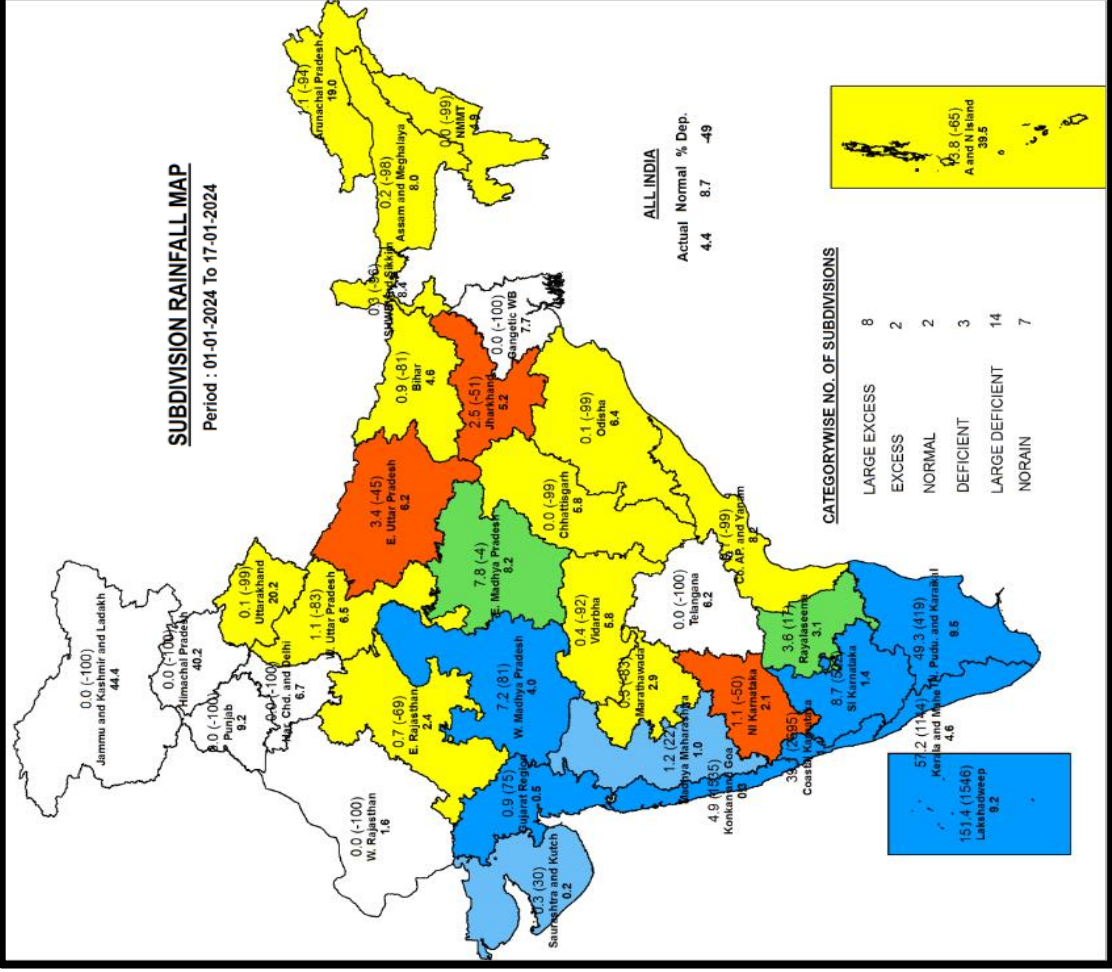
Also, the minimum temperatures have been running below 4°C at many stations of Northwest India 12th-17th January.

Very dense fog conditions have also been persisting over the plains of Northwest India since 25th December which was maximum in intensity & duration on 14th when zero visibility was observed over entire north Indian plains from Amritsar to Dibrugarh across Haryana, Delhi, UP and Bihar. This severe weather owes mainly to 3 reasons: 1) Lack of any Active Western Disturbance (WD) over Northwest India 2) Prevailing El-Nino conditions 3) Strong Jet Stream

- 1) Lack of any Active Western Disturbance (WD) over Northwest India: This severe weather over north India does primarily owe to lack of any active WD over Northwest India during the months of December and January. Generally, 5-7 WDs impact Northwest India during December to January. But this winter no such WD has been received. 2 WDs affected the country, one in December and another in January but their impact was mainly confined to Gujarat, north Maharashtra, East Rajasthan and Madhya Pradesh. As a result, Western Himalayan Region has received very less precipitation (rain/snow) during the month of December which is roughly about -80% departure from normal over the region (attached figure). Similarly, in the month of January till 17th January there is almost no precipitation over the region.
- 2) Lack of the active WDs can also be attributed to El-Nino conditions over the Equatorial Pacific Ocean. During El-Nino (La-Nino) years the Cold Wave days over North India happen to be less than normal which is visible in terms of lesser number of Cold Wave Days during December and January.
- 3) Strong Jet stream winds of the order 250-320 kmph at about 12 km above mean sea level have been prevailing over North India since last 5 days. It is leading to subsidence of cold air and enhancing cold wave/cold day conditions over North India. Similar intensity of Jet Stream is likely to continue during next 5 days which will result into persistence of Cold Conditions over North India during next 5 days.

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Legend

- Large Excess [60% or more]
- Excess [20% to 59%]
- Normal [-19% to 19%]
- Deficient [-59% to -20%]
- Large Deficient [-99% to -60%]
- No Rain [-100%]
- No Data