



PRESS RELEASE
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भारत सरकार
Government of India
पृथ्वीविज्ञानमंत्रालय (एम. ओ. ई. एस.)
Ministry of Earth Sciences (MoES)
भारत मौसम विज्ञानविभाग
INDIA METEOROLOGICAL DEPARTMENT

**Seasonal Outlook for the Temperatures during
March to May 2018**

Highlights

- During the 2018 Pre-monsoon Season (March to May), warmer than normal temperatures are likely in all meteorological sub-divisions of the country. Seasonal (March- May) average temperatures over many of the subdivisions from northwest and neighbouring central India are likely to be above normal by more than 1.0°C.
- Normal to above normal heat wave (HW) conditions are likely over core heat wave zone of the country.

1. Background

Since 2016, India Meteorological Department (IMD), Ministry of Earth Sciences (MoES) has been issuing seasonal forecast outlooks for subdivision scale temperatures over the country for both hot and cold weather seasons based on predictions from an ocean-atmosphere coupled climate model. Country experiences hot weather and heat wave conditions (days with abnormally warmer temperatures) during March to July period with many adverse impacts on the human health, water resources and power generation and outage. Studies also indicate increasing trends in the frequency and duration of heat waves over the country, which can be attributed to increasing trends in the greenhouse gases and the warming of the sea surface temperatures over the equatorial Indian and Pacific oceans.

IMD has now prepared Seasonal forecast outlook for the 2018 pre-monsoon season (March-May) temperatures over the country.

2. Forecast for the 2018 Pre-monsoon Season (March to May) Temperatures

Fig.1, Fig.2 & Fig.3 show the forecast for the subdivision averaged maximum, minimum and mean temperature anomalies {departures from the long term (1981-2010) normal} respectively over India for March to May, 2018. The forecast indicates above normal maximum, minimum and mean temperatures in all the subdivisions. Overall, the temperature anomaly patterns show increase in the magnitudes of the anomalies from southeastern parts to the northwestern parts of the country.

The seasonal average maximum temperature (**Fig.1**) is likely to be warmer than normal by ≥ 1 °C over Jammu & Kashmir, Punjab, HCD (Haryana, Chandigarh & Delhi), Himachal Pradesh, west and east Rajasthan, Uttarakhand, west and east Uttar Pradesh, west and east Madhya Pradesh, Bihar, Jharkhand, Chhattisgarh,

Vidarbha, Gujarat and Arunachal Pradesh. It is likely to be $<0.5^{\circ}\text{C}$ over Kerala, Tamil Nadu, south interior Karnataka and Rayalaseema. Remaining subdivisions are likely to experience maximum temperature anomalies between 0.5°C & 1°C .

The seasonal average minimum temperature (**Fig. 2**) is likely to be warmer than normal by $\geq 1^{\circ}\text{C}$ over Jammu & Kashmir, Punjab, HCD, Himachal Pradesh, west and east Rajasthan, Uttarakhand, west and east Uttar Pradesh, west Madhya Pradesh and Arunachal Pradesh. It is likely to be $<0.5^{\circ}\text{C}$ in Tamil Nadu, north and south interior Karnataka, Rayalaseema, coastal Andhra Pradesh, Orissa and NMMT (Nagaland, Manipur, Mizoram and Tripura). Remaining subdivisions are likely to experience minimum temperature anomalies between 0.5°C & 1°C .

The seasonal average mean temperature (**Fig.3**) is likely to be warmer than normal by $\geq 1^{\circ}\text{C}$ over Jammu & Kashmir, Punjab, HCD, Himachal Pradesh, west and east Rajasthan, Uttarakhand, west and east Uttar Pradesh, west and east Madhya Pradesh, Vidarbha, Gujarat and Arunachal Pradesh. It is likely to be $<0.5^{\circ}\text{C}$ in Tamilnadu, south interior Karnataka, Rayalaseema and NMMT. Remaining subdivisions are likely to experience mean temperature anomalies between 0.5°C & 1°C .

There is about 52% probability of grid point maximum temperatures in the core heat wave zone during March to May 2018 to be above normal (**Fig.4**). Core Heat Wave zone covers states of Punjab, Himachal Pradesh, Uttarakhand, Delhi, Haryana, Rajasthan, Uttar Pradesh, Gujarat, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, West Bengal, Orissa and Telangana and meteorological subdivisions of Marathwada, Vidarbha, Madhya Maharashtra and coastal Andhra Pradesh. This in turn suggests that normal to above normal heat wave conditions are likely in the core HW zone during the season.

3. The Monsoon Mission Climate Forecast System (MMCFS)

The present temperature outlook was prepared using MMCFS. The MMCFS has been used to prepare forecasts for the monsoon rainfall since 2012. MMCFS model developed by Indian Institute of Tropical Meteorology (IITM), Pune during the Monsoon Mission Phase was implemented and run operationally at the office of Climate Research and Services (CRS), IMD, Pune from January, 2017. The MMCFS has a spatial resolution of about 38 km and improved modules of model physics. The model climatology was prepared using retrospective forecasts generated for 27 years (1982-2008). The seasonal temperature forecast outlook for the March to May 2018 is prepared based on the 2018 February initial conditions. The forecast was prepared using 34 ensemble member forecasts. The model hindcasts and forecasts were bias corrected using the probability distribution function (pdf) method. The model showed moderate skill over many subdivisions over northwest and central India during the period 1982-2008.

4. ENSO conditions in the Pacific Ocean

Currently, the SST conditions over equatorial Pacific suggest moderate La Nina conditions. Atmospheric conditions are also indicating La Nina conditions. The latest forecast from MMCFS indicates moderate La Niña conditions are likely to be moderate till spring season and are likely to start weakening thereafter.

5. Extended Range Forecast Services

IMD also provides extended range forecasts (7 –day averaged forecasts for the next four weeks) of maximum and minimum temperatures over the country updated every week. This is based on the Multi-model ensemble dynamical Extended Range Forecasting System currently operational at IMD, New Delhi. The forecasts are available through IMD, Delhi website (www.imd.gov.in).

6. Short to medium range forecast

In addition to above, IMD maintains round the clock watch and issues heat wave warnings as and when required at meteorological subdivision level valid for next five days through National Weather Forecasting centre (NWFC), New Delhi and at district level through Regional Meteorological Centres and Meteorological Centres in the states. A detailed daily bulletin on heat wave is also issued from NWFC daily indicating current status and forecast for five days.

Temperature Feb IC Forecast: 2018 Mar – May

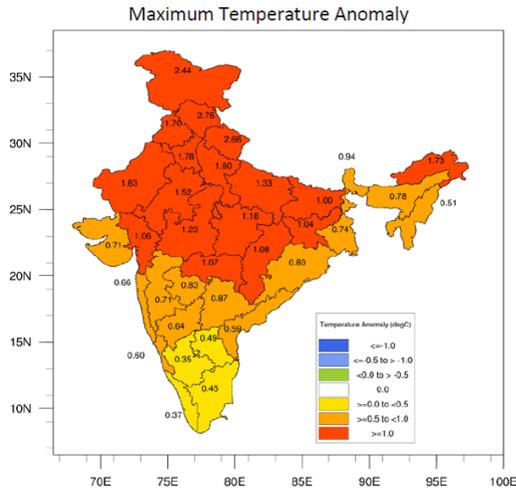


Fig.1. Maximum Temperature Anomaly forecast for March to May 2018.

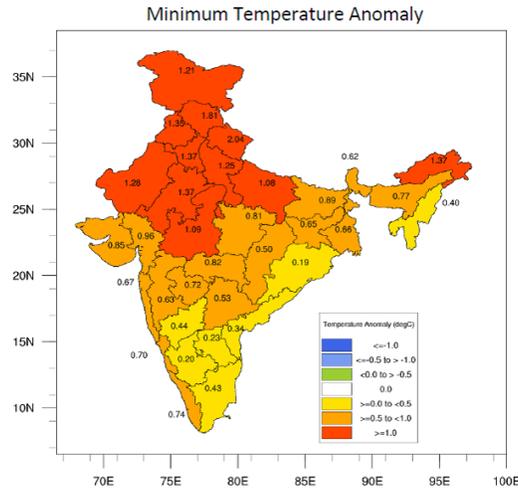


Fig.2. Minimum Temperature Anomaly forecast for March to May 2018.

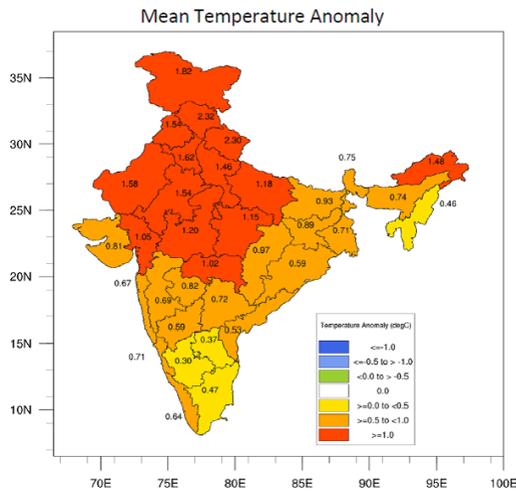


Fig.3. Mean Temperature Anomaly forecast for March to May 2018.

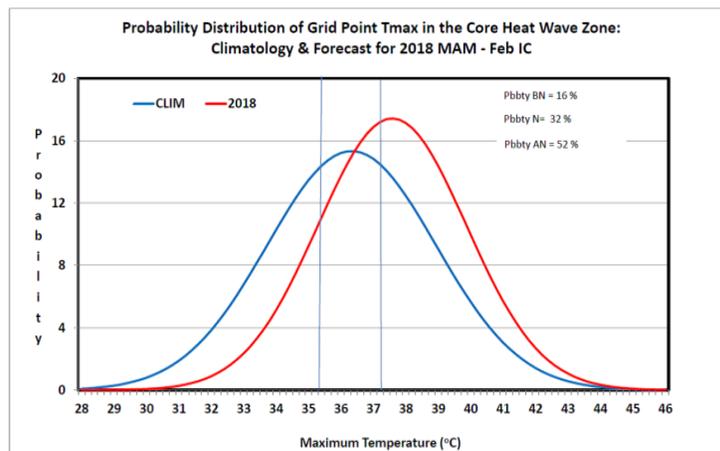


Fig.4. Climatological probability distribution of grid point maximum temperatures during March to May 2018 over Core Heat wave Zone (CHZ) along with forecast probability distribution of the same for March to May 2018.