

PRESS RELEASE
New Delhi, 30th November, 2019



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

**Seasonal Temperature Outlook during
December 2019 to February, 2020**

Highlights

- The upcoming winter season (December to February) is likely to experience warmer than average minimum temperatures over most parts of the country except over northern most parts of India, thus indicating a warmer winter season over 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 the Monsoon Mission Coupled Forecasting System (MMCFS) Model developed under MoES's monsoon mission project. IMD has now prepared Seasonal outlook for the subdivision averaged temperatures during the upcoming winter season of December 2019 to February 2020 and the same is presented here.

The MMCFS has a spatial resolution of about 38 km and improved modules of model physics. The model climatology was prepared based on retrospective forecasts for 27 years (1982-2008). The seasonal temperature forecast outlook for the period December 2019 to February 2020 presented here is prepared using MMCFS simulations based on the 2019 November initial conditions. The forecast was prepared using 36 ensemble member forecasts. The model hindcasts and forecasts were bias corrected using the probability distribution function (pdf) method. The model hindcasts show moderate skill over many subdivisions over northwest and central India during the period 1982-2008.

2. Forecast for the DJF Season (December 2019 to February 2020)

Fig.1, Fig.2 & Fig.3 show the sub-divisional forecasts for averaged maximum, minimum and mean temperature anomalies (departures from the long term normal) respectively for December 2019 to February 2020 (DJF) season. The forecast indicates that DJF season averaged minimum temperatures are likely to be warmer than average over most parts of the country except over northern most parts of India. Minimum temperatures over most parts of central and peninsular India are likely to be warmer than normal by $\geq 1^{\circ}\text{C}$. The season averaged mean temperatures are likely to be warmer than normal by 0.5°C over most subdivisions of the peninsular India and some subdivisions of east and central India. The season averaged maximum temperatures are likely to be colder than normal over some part of central Indian region and warmer than normal over few subdivisions in the peninsular region.

There is relatively higher probability for above normal minimum temperatures in the core Cold Wave (CW) zone during December 2019 to February 2020 with (Fig.4). The Core CW 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 met subdivisions of Jammu, Kashmir & Ladakh, Marathwada, Vidharbha, Saurashtra and Madhya Maharashtra.

3. ENSO conditions in the Pacific Ocean

Currently, warm ENSO-neutral conditions are prevailing over the equatorial Pacific Ocean and the latest MMCFS forecast indicates these conditions are likely to cool and turn to ENSO-neutral conditions during forthcoming winter season.

4. 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).

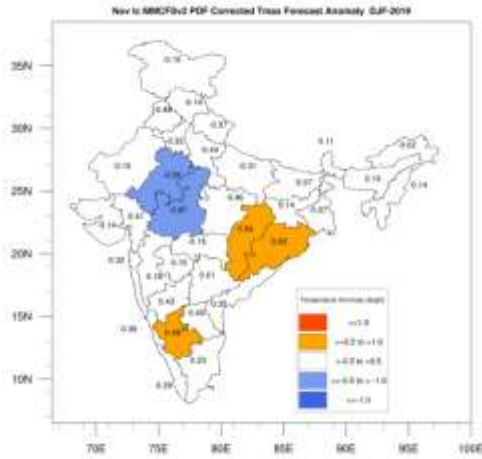


Fig.1.Subdivision averaged Maximum Temperature Anomaly forecast for December 2019 to February 2020

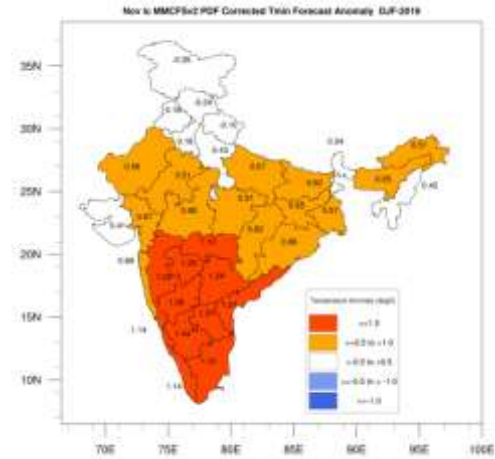


Fig.2. Subdivision averaged Minimum Temperature Anomaly forecast for December 2019 to February 2020

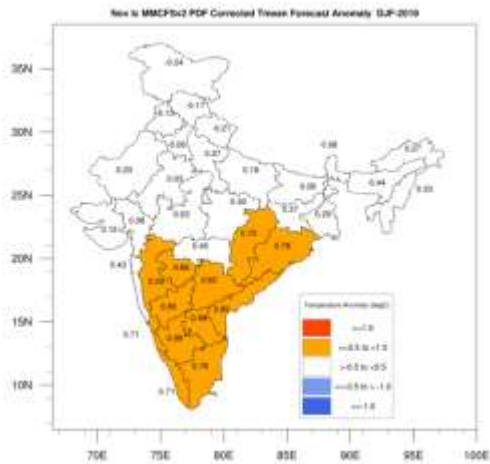


Fig.3. Subdivision averaged Mean Temperature Anomaly forecast for December 2019 to February 2020.

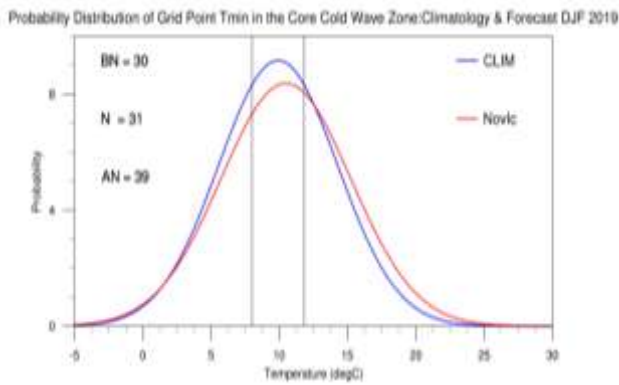


Fig.4. Climatological probability distribution of grid point minimum temperatures during December 2019 to February 2020 over Core Cold wave Zone (CCZ) is shown along with forecast probability distribution of the same for December 2019 to February 2020