

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
 April to June, 2019**

Highlights

- The April to June (AMJ) season average maximum temperatures are likely to be warmer than normal by 0.5°C over most of the meteorological subdivisions from central India and some subdivisions from northwest India. Near normal maximum temperatures are likely in the remaining subdivisions.
- The seasonal average minimum & mean temperatures over West Rajasthan are likely to be above normal by more than 1.0°C.
- Above normal heat wave conditions are likely in the core heat wave (HW) zone during the season (April to June).

1. Background

Since 2016, India Meteorological Department (IMD), has been issuing seasonal forecast outlooks for sub-divisional seasonal temperatures over the country during both hot and cold weather seasons. These seasonal outlooks are based on model simulations from the Monsoon Mission Coupled Forecasting System (MMCFS) Model developed under the Monsoon Mission project. This year IMD had issued temperature outlook for the hot weather season of March to May on 1st March, 2019. IMD has now prepared an updated seasonal outlook for the average temperatures during the hot weather season of April to June, 2019.

The MMCFS has a spatial resolution of about 38 km and improved modules of physics. The model climatology was prepared based on retrospective forecasts for 27 years (1982-2008). The seasonal temperature forecast outlook for the April to

June, 2019 presented here is prepared using MMCFS simulations based on the initial conditions of March, 2019. The forecast was prepared using 38 ensemble member forecasts. The model hindcasts and forecasts were bias corrected using the probability distribution function (pdf) method. The model shows moderate skill over many subdivisions over northwest and central India during the period 1982-2008.

2. Forecast for the AMJ Season (April to June 2019)

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 April-June (AMJ) season, 2019. The forecast indicates AMJ season averaged temperatures are likely to be warmer than normal by $\geq 0.5^{\circ}\text{C}$ to $< 1^{\circ}\text{C}$ over most of the subdivisions except over a few subdivisions from North, Northeast, and South India where near normal temperatures are most likely.

The season averaged maximum temperatures (**Fig.1**) are likely to be warmer than normal by $\geq 0.5^{\circ}\text{C}$ to $< 1^{\circ}\text{C}$ over Haryana, Chandigarh & Delhi (HCD), west & east Uttar Pradesh, west & east Rajasthan, west & east Madhya Pradesh, Chhattisgarh, Jharkhand, Odisha, Gujarat, Madhya Maharashtra, Vidharbha, Marathawada, Coastal Karnataka, North Interior Karnataka, Rayalaseema and Telangana. Subdivisions from rest of the country are likely to experience near normal maximum temperatures (Departure from normal between -0.5°C and 0.5°C).

The season averaged minimum temperatures (**Fig.2**) are likely to be near normal (departure from normal between -0.5°C and 0.5°C) in Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sub Himalayan West Bengal and Sikkim, Assam and Meghalaya, Arunachal Pradesh and Nagaland, Manipur, Mizoram & Tripura (NMMT). It is likely to be warmer than normal by $\geq 1^{\circ}\text{C}$ over west & east Rajasthan and warmer than normal by $\geq 0.5^{\circ}\text{C}$ to $< 1^{\circ}\text{C}$ over remaining subdivisions of the country.

The season averaged mean temperatures (**Fig.3**) are likely to be near normal (Departure from normal between -0.5°C and 0.5°C) in Jammu and Kashmir, Punjab, Himachal Pradesh, Uttarakhand, Sub Himalayan West Bengal and Sikkim, Gangetic west Bengal, Assam and Meghalaya, Arunachal Pradesh and NMMT. It is likely to be warmer than normal by $\geq 1^{\circ}$ over west Rajasthan and warmer than normal by $\geq 0.5^{\circ}\text{C}$ to $< 1^{\circ}\text{C}$ over remaining subdivisions of the country.

There is about 44% probability of maximum temperatures in the core heat wave (HW) zone during April to June 2019 to be above normal (**Fig.4**). Core HW zone covers states of Punjab, Himachal Pradesh, Uttarakhand, Delhi, Haryana, Rajasthan, Uttar Pradesh, Gujarat, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, West Bengal, Odisha and Telangana and meteorological subdivisions of Marathawada,

Vidharbha, Madhya Maharashtra and coastal Andhra Pradesh. **This in turn suggests that above normal heat wave conditions are likely in the core HW zone during the season.**

3. ENSO conditions in the Pacific Ocean

Current observations suggest that weak El Niño conditions are prevailing over the equatorial Pacific Ocean. The latest MMCFS forecast indicates that these conditions are likely to persist during this period April-June.

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 Thursday. 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).

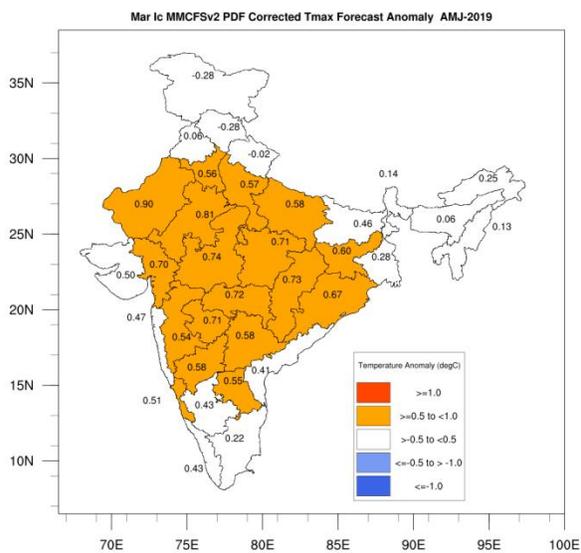


Fig.1.Subdivision averaged Maximum Temperature Anomaly forecast for April to June 2019

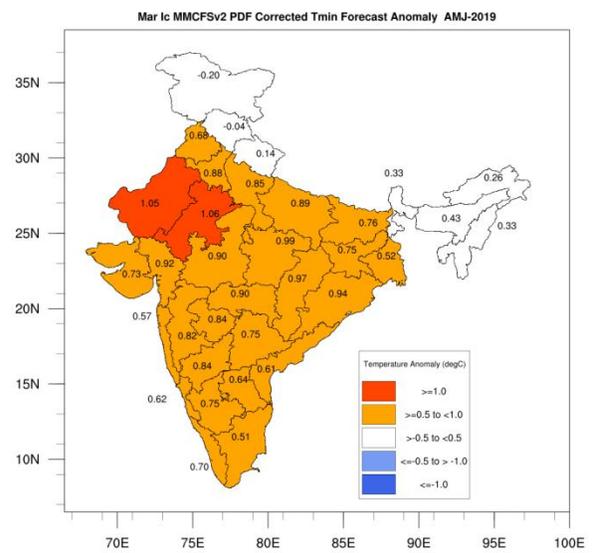


Fig.2. Subdivision averaged Minimum Temperature Anomaly forecast for April to June 2019.

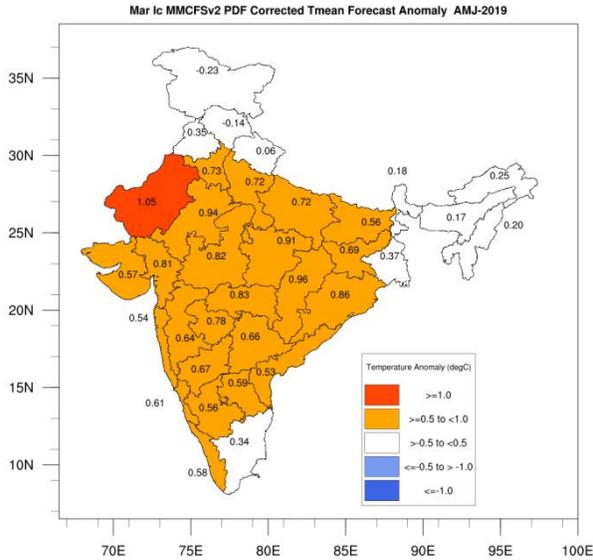


Fig.3. Subdivision averaged Mean Temperature Anomaly forecast for April to June 2019.

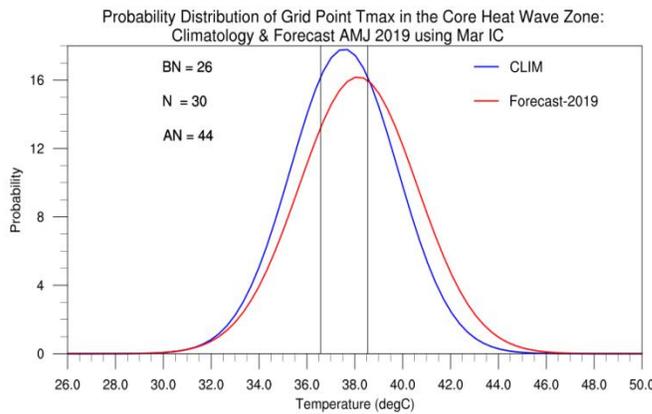


Fig.4. Climatological probability distribution (Blue colour) of maximum temperatures over the Core Heat wave Zone (CHZ) along with forecast probability distribution (Red colour) of the same for April to June 2019 suggesting above normal temperatures during the 2019 season.