



**Ministry of Earth Sciences (MoES)  
India Meteorological Department**

**Press Release**

**Dated: 14<sup>th</sup> January, 2021**

**Subject: Celebration of 146<sup>th</sup> Foundation Day of India Meteorological Department (IMD) at Mahika Hall, Ministry of Earth Sciences (MoES), Prithvi Bhawan, Lodi Road, New Delhi -110003**

IMD is celebrating 146<sup>th</sup> Foundation Day on 15<sup>th</sup> January 2021 and the function will be organized **virtually at Mahika Hall Ministry of Earth Sciences (MoES), Prithvi Bhawan, Lodi Road New Delhi-11003** during **1500 to 1545 hrs IST**. It is requested to participate in this function through virtual platform. Link for the same is given below:

**Webcast Video Link: <https://webcast.gov.in/moes/imd/>**

With a humble beginning in 1875, IMD has marched forward with various milestones and paradigms to serve the society. A brief on the initiatives and achievements of IMD during 2020 are given below.

**RECENT ACHIEVEMENTS**

**Observations:**

- **29 Doppler Weather Radars** are operational across the country including **one portable DWR** at Sonemarg, one X-band Radar each at Kufri and Mukteswar.
- **Satellite derived products were augmented** with establishment of Multi Mission Data Receiving and Processing System (MMDRPS).
- **Current Weather Instrument Systems (CWIS)** have been installed in 32 airports and 12 systems have been supplied to IAF for installation in Myanmar.
- Agromet Observatories have been installed at 122 Agro-Meteorological Field Units (AMFUs) and 89 other stations.
- Preparation of **real time rainfall statistics** was enhanced from 683 to 690 districts.
- 203 new **raingauge stations** were added in the District-wise Rainfall Monitoring Scheme (DRMS) taking the total number of stations to 4940.
- 190 **District Agro-meteorological Units** have been established in addition to existing 130 units.

## Enhancement in Modelling & Weather and Climate Services:

- **Global Forecast System (GFS)** model has been running 4 times a day to generate forecasts twice a day.
- Regional **WRF** mesoscale model has been running at 3 km resolution to generate forecasts twice a day. Meteograms for 720 locations across the country and for SAARC countries are being prepared daily for location specific forecasts.
- **Cyclone specific Hurricane WRF models have been** run as coupled model at a **resolution of 2 km** in collaboration with **INCOIS** to generate six hourly forecasts.
- New numerical models, SILAM and ENFUSER were made operational for **Air Quality Early Warning System for Delhi** during 2020.
- NWP Model based gridded rainfall data (WRF & GFS) are provided to **Central Water Commission for their flood forecasting model** for all 153 river catchments (valid upto 3 days) and **Extended Range model products** for 10 river basins(valid upto 4 weeks).
- **The Flood warning system for Mumbai has been made operational** as a part of augmentation of urban meteorological services.
- Generation and issue of Flash flood Guidance for all watersheds of the country and Flash flood Guidance to Nepal, Bhutan, Bangladesh, Sri Lanka every 6 hours commenced with effect from the Monsoon season 2020.
- IMD in collaboration with NCMRWF & IITM implemented **Thunderstorm and Lightning Modelling and Warning System with installation of lightning detectors at 82 locations to provide location specific lightning warning.**
- **Location specific forecast** within the capital cities as well as nowcast have been extended to 526 and 894 stations respectively. Also **three hourly nowcast warnings are now issued for severe weather** for 739 districts.
- Under the flagship programme of Government of India, Integrated Agromet Advisory Services, Gramin Krishi Mausam Sewa (GKMS) is being implemented in the country successfully in collaboration with a number of Central Government Ministries and organizations, state level institutions, private agencies, NGOs, progressive farmers and media. **More than 43 million** farmers have subscribed for the information through mobile for planning their agricultural activities.
- Increase in issue of District Level agrometeorological advisories from 593 to 698 districts by 2020 and Block level advisories to 2300 Blocks
- The tourism forecast is being provided in collaboration with Incredible India through integration of information in website and mobile app.
- **Impact based forecast** was provided for all types of severe weather including cyclone, heat wave, cold wave, fog, heavy rain, thunderstorm at 739 districts and 25 capital cities.

- **New normal for onset and withdrawal dates of monsoon was introduced based on the latest data of 1961-2010**
- **169 New names of cyclones** over the north Indian Ocean were introduced beginning with cyclone, Nisarga in June 2020.
- **Climate of capital cities and smart cities** has been prepared along with the trend analysis.
  - **Climatological Summaries have been published for 22 airports during the year 2020**
- The **online Climate Data Portal** has been developed for supply of data to various users.
  - **Long range forecast** of temperature and rainfall was issued for all the seasons under South Asia Climate Outlook Forum (SASCOF).
- **Health guidance** product based on Extended Range (up to Two Weeks)forecast for all meteorological subdivisions and districts.
  - Meteorological Centres/Regional Meteorological Centres issued Extended Range Forecasts for their area of responsibility on weekly basis every Thursday.

#### Outreach:

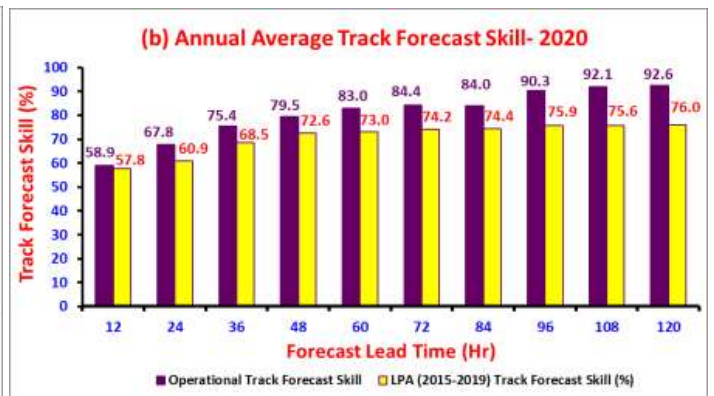
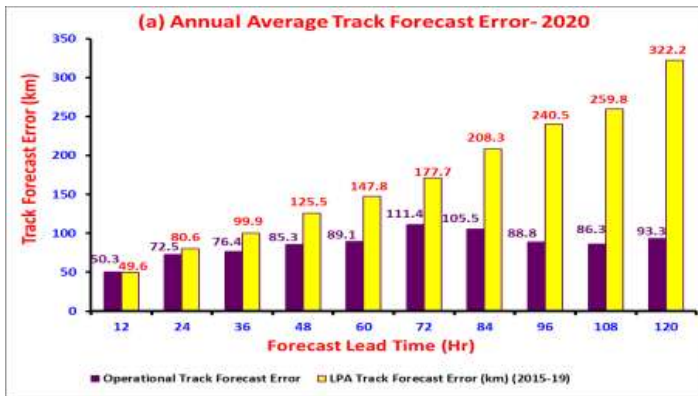
- IMD launched its **new mobile App, Mausam**. IMD also worked jointly with MEiTY for development and dissemination of weather information in **Umang Mobile App**.
- IMD introduced **web-GIS based interactive map** for cyclone, heat wave and cold wave warning.
- **Social media** interaction has been enhanced significantly with the presence in facebook, twitter, instagram, telegram, You Tube and Whats App groups established at IMD HQ and MC/RMC etc.
- **Application Programming Interface (API)** for weather observed and forecast products Of IMD has been developed and provided to different states, different central Government organizations including NITI Aayog, Tourism, DD News etc. About 10 states have implemented this API for their services.
- **Common Alert Protocol (CAP)** has been implemented as per WMO standard for severe weather warning. It is being utilized for **Global Multi-hazard Alert System (GMAS)** of WMO. Google International is also using CAP for Google Alert.
- **Crowd Source** Platform has been launched through website and mobile app for collecting the weather observations from people.
- The **Journal Mausam** is being made **on line** like any other international Journals.
- **Meteorological Centre, Leh** was established and inaugurated by Hon'ble Minister of Earth Sciences on 29<sup>th</sup> December 2020.

### **Improvement in Forecast Accuracy:**

- There has been significant **improvement in forecast** accuracy of severe weather events by 15 to 35% during the last 5 years.
- The **probability of detection of 24 hr heavy rainfall** has increased to about 80% in 2020. Similarly, the probability of detection of **heat wave** has increased to **93%** in 2019.
- The annual average landfall time forecast errors in 2020 have been 2.4 hrs, 2.8 hrs and 2.0 hrs respectively for 24, 48 and 72hrs against the past five year average error of been 3.0 hrs, 5.4 hrs and 8.6 hrs based on data of 2015-2019.
- The annual average track forecast errors in 2020 have been 73 km, 85 km and 111 km respectively for 24, 48 and 72hrs against the past five year average error of 81, 126 and 178 km based on data of 2015-2019.

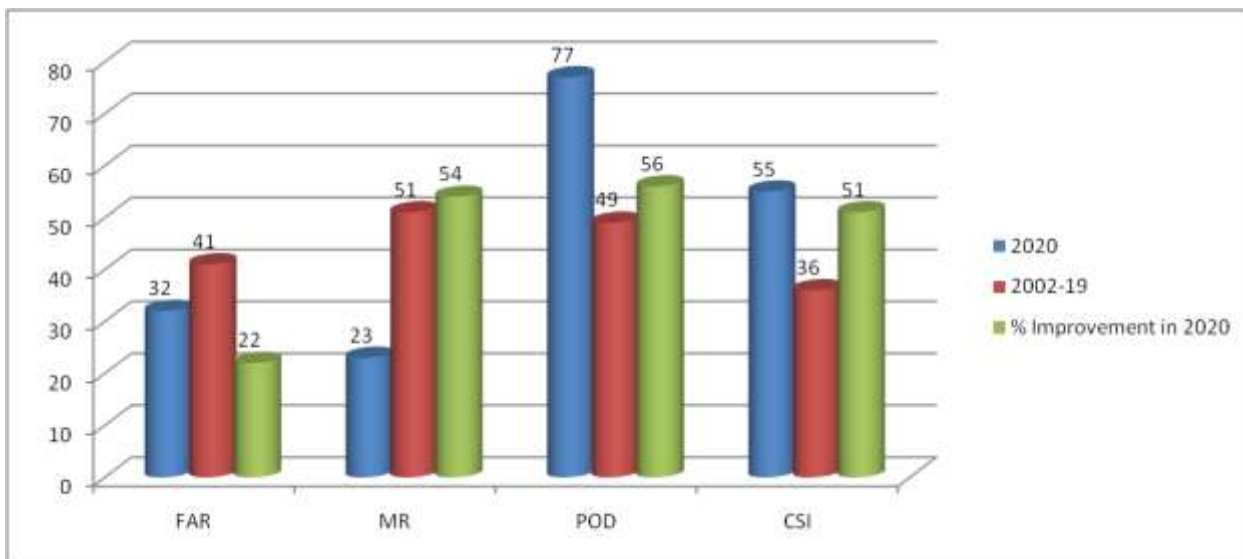
### **Awards and Appreciations:**

- **WMO** recognized 7 observatories of **IMD in 2020; these are Alipore (Kolkata), Gopalpur, Patna, Port Blair, Puri, Ahmedabad and Srinagar** as a long-term observing station for more than 100 years.
- IMD earned **appreciations** from **United Nations** and **Hon'ble President of India, Govt. of West Bengal and Odisha** for accurate prediction of Super **cyclone Amphan**, from **Govt of Maharashtra** for accurate prediction of **cyclone Nisarga** and **establishment of Mumbai Flood Warning System**.
- Appreciation letters were also received from the State Governments of **Gujarat, West Bengal, Tripura, Telangana and Uttar Pradesh** for **exemplary services provided by the IMD**.



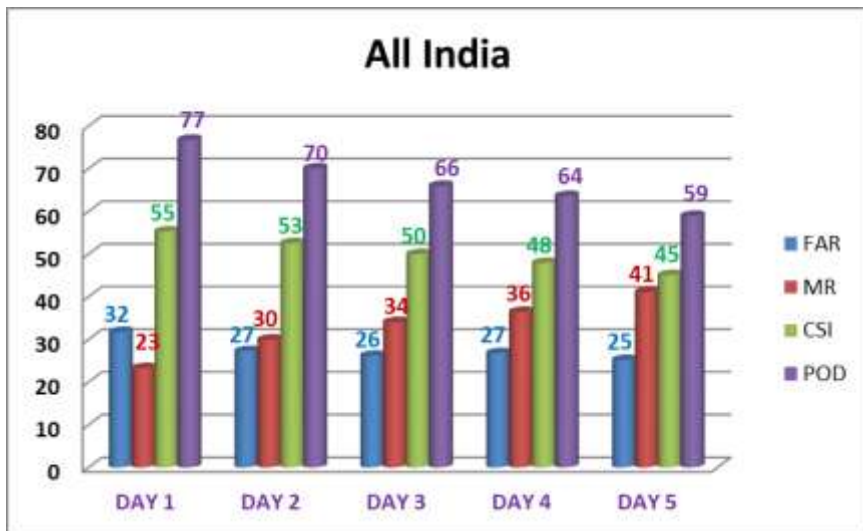
Annual average (a) track forecast errors (km) and (b) track forecast skill (%) during 2020 compared to long period average errors during 2015-19.

### Heavy rainfall verification skill during 2020



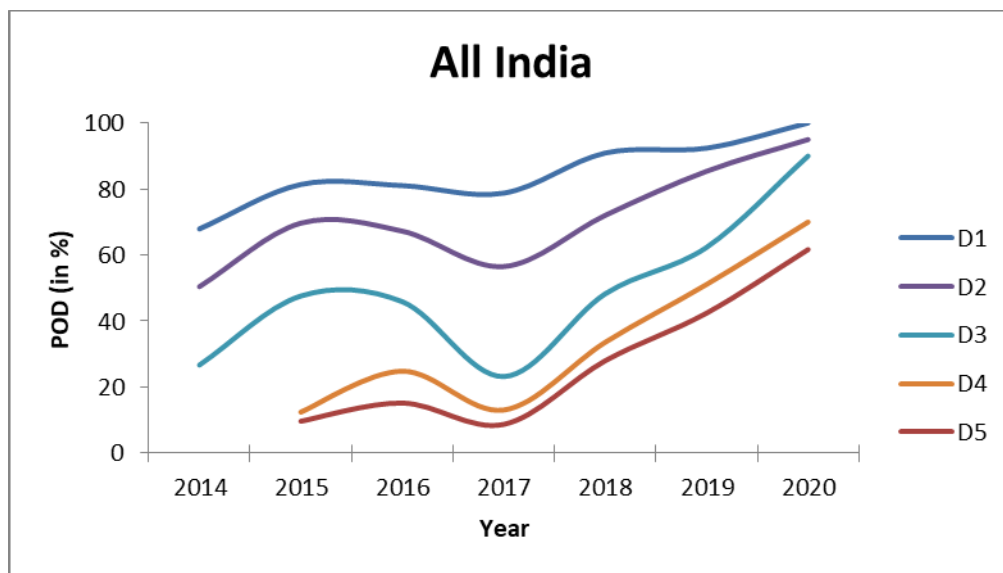
FAR (False Alarm Rate), Missing Rate (MR), PoD (Probability of Detection) and CSI (Critical Success Index)

There is significant improvement in forecast skill scores of southwest monsoon as compared to previous years



IMD has high skill for heavy rainfall warning upto Day 5 as POD for Day 5 is more than 50%.

Heat Wave verification skill during last 7 years



Probability of Detection (PoD) of heat wave shows significant improvement specifically from Day 3 to Day 5