

# Ministry of Earth Sciences (MoES)

## Summary of Important Developments – March, 2022

- 1. Important policy decisions taken and major achievements during the month:** Provided in Annex I.
- 2. Important policy matters held up on account of prolonged Inter- Ministerial consultations:** Nil
- 3. No. of cases of ‘sanction for prosecution’ pending for more than three months:** Nil
- 4. Particulars of cases in which there has been a departure from the Transaction of Business Rules or established policy of the Government:** Nil
- 5. Status of ongoing Swachhta Abhiyan (progress under Special Campaign):** Routine cleaning of the campus.
- 6. Status of Rationalization of Autonomous Bodies:** Discussed internally within MoES and directors of MoES autonomous institutions (ABs), and arrived a new proposal to merge all 5 ABs under one society. All existing ABs will function under one society. The detailed note regarding is will be sent to MoF for their concurrence and agreement.
- 7. Information on specific steps taken for utilization of the Space Technology based tools and applications in Governance and Development:** Potential Fishing Zone advisories are generated using the satellite derived parameters viz. Sea Surface Temperature, and Chlorophyll. Further, data from Global satellite data are used on continuous basis for generating short range and medium range weather forecasts.
- 8. Vacancy position of senior level appointments in the Ministry/ Department, including Autonomous Bodies/ PSUs:** It is confirmed that the incumbency details of all the posts in the Ministry/Department and its organizations falling under the purview of the ACC have been updated on AVMS and are placed at Annex-II.
- 9. List of cases in which ACC (Appointments Committee of Cabinets) directions have not been compiled with:** It is also confirmed that the directions of ACC are complied with.
- 10. Details of FDI Proposals cleared during the month and status of FDI proposals awaiting approval in the Ministry/ Department:** Not Applicable.

\*\*\*\*\*

### Important policy decision taken and major achievements:

- The cabinet in its meeting on 16<sup>th</sup> March 2022 approved the introduction of Indian Antarctic Bill, 2022 in parliament.
- HMoES Dr. Jitendra Singh released India’s Arctic Policy titled “India and the Arctic: building a partnership for sustainable development” on 17<sup>th</sup> March 2022.
- The Indian Antarctic expedition vessel, M/V Vasiliy Golovnin reached the Indian Barrier off Maitri station on 11 March 2022. Vessel commenced the return voyage on 26<sup>th</sup> March 2022 with 27 India members, 02 helicopters and their crew on board.
- Indian Institute of Tropical Meteorology (IITM) was awarded with the Rajbhasha Karyanvayan Ratna Samman in a conference and workshop organized by Parivartan Rajbhasha Academy, New Delhi held in Goa from 10-12 March 2022.
- National Centre for Coastal Research (NCCR) developed an open-source web- Geographic Information System (GIS) based National Shoreline Assessment System (N-SAS). As part of N-SAS, an atlas “National Assessment of Shorelines changes along Indian Coast” has been prepared by NCCR, with about 526 maps on 1:25000 scale covering the Indian coast for identifying the erosion and accretion hotspots. The status of the shoreline classifying them as an eroding, accreting or a stable coast is disseminated to all State Governments and Coastal Stakeholders.
- IMD & Manikaran Analytics Limited signed Letter of Agreement on 4<sup>th</sup> March 2022 for Research & Development on weather services for power sector.

There was no matter pending before the Cabinet requiring decision/approval.

### Minimum Government, Maximum Governance:

- Dissemination of Agromet Advisories to user communities through SMS and IVR technology is continued in the country through Kisan Portal and under PPP (Public Private Partnership) mode. Presently, about 28.78 million farmers in the country are getting advisories through SMS directly.
- Adverse-weather SMS warnings are being sent through mobile to the State Government officials / Disaster-related officials / Central Government organizations/common man.
- Daily forecast along with warning and city forecast for many cities are disseminated through email to all users including state authorities, electronic and print media.

### Atmospheric Observation Systems Network

Observation Type	Commissioned so far	Installations during the month	Data Reporting
Automatic Weather Station (AWS)	*356 (727-371)	--	356
Automatic Rain Gauge (ARG)	587** (1382-795)	--	587
Agro AWS	198	--	194
GPS Sonde based RS/RW (Radio Sonde/ Radio Wind)	56	--	56

Stations			
Doppler Weather Radar (DWR)	*** 32	--	29
Ozone (Ozone Sonde + Total Ozone)	04	--	04
Surface Ozone (Electrochemical Concentration Cell method)	07	--	07
Nephelometer	12	--	12
Sky Radiometer	20	--	13
Black Carbon Monitoring Systems (Aethalometer)	25	--	23
System of Air Quality Monitoring System (SAFAR)	10 (Delhi) 10 (Mumbai) 10 (Ahmedabad)	--	09(Delhi) NIL(Mumbai)**** Nil(Ahmedabad)
Hydromet (Indian Meteorological Department (IMD)& Extra-departmental excluding AWS & ARG)	---	--	3137
Aviation	79	--	79
Radiation Stations	46	---	46

\*Out of Total 727, 371 are outlived.

\*\* Out of total 1382, 795 are outlived.

\*\*\*Including 2 Doppler Weather Radars of Indian Space Research Organization (ISRO).

\*\*\*\* Contract with the firm is not renewed.

## Modelling

During March 2022, every week on Thursdays, National Centre for Medium Range Weather Forecasting (NCMRWF) coupled model based Extended Range Prediction (ERP) for four weeks for rainfall, surface temperature and winds (full fields and anomalies) were provided in real-time to (i) Long-range forecast and Agri-Met divisions of IMD, (ii) Indian Institute Of Tropical Meteorology (IITM) ERP group, (iii) Space Applications Centre (SAC), (iv) Snow and Avalanche Study Establishment (SASE), (v) Indian Air Force (IAF), (vi) Navy, (vii) Geological Survey of India (GSI), (viii) National Institute of Hydrology (NIH), (ix) All regional centres of IMD and (x) Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) countries Met Departments. Additionally, snow forecasts were provided to SASE/ DRDO an IAF for use at their end.

## Monthly Weather Summary (March 2022)

### a) Important Weather Events during the month

Low Pressure Systems: A total number of two deep depressions have formed over Southeast Bay of Bengal and South Bay of Bengal during 4<sup>th</sup> and 20<sup>th</sup> March 2022. Two western disturbances activity had been occurred during the month. These had caused fairly widespread to widespread rainfall/snowfall /thunderstorm activity over Western Himalayan Region, Jammu Kashmir & Ladakh and Himachal Pradesh.

b) **Rainfall Scenario:** The rainfall for the country as a whole, for the month of March 2022 has been recorded as 8.9 mm which is 29% of its Long Period Average (LPA) of 30.4 mm.

c) **Heavy Rainfall Events:**

Warning issued for	No. of Heavy/Very Heavy Rainfall Events (>64.4 mm): 19
	Percentage correct (in %) for Rainfall >64.4mm
Day1 / 24 Hours	97
Day2 / 48 Hours	98
Day3 / 72 Hours	97

d) **Temperature Scenario:** The mean temperature for the month of March 2022 for the country as a whole was 26.67°C which was above normal by +1.61°C. The maximum temperature of 44.2°C had been recorded at Chandrapur (Vidarbha) on 30<sup>th</sup> March 2022 and the minimum temperature of 7.4°C had been recorded at Pantnagar (Uttarakhand) on 3<sup>rd</sup> March 2022 over the plains of the country during the month.

e) **Thunder squall & Hailstorm activity:** Thunder squall & Hailstorm activity during the month (till 0830 IST of last date of the month) is given in the table below:

S. No.	State/ UT	Thunderstorm Events	Hail Events	Dust storms	Gusty Winds
1	Andaman & Nicobar Islands	0	0	0	1
2	Andhra Pradesh	0	0	0	1
3	Arunachal Pradesh	0	0	0	0
4	Assam	0	0	0	0
5	Bihar	0	0	0	0
6	Chandigarh	0	0	0	0
7	Chhattisgarh	0	0	0	0
8	Dadar and Nagar Haveli	0	0	0	0
9	Delhi	1	1	1	1
10	Goa	0	0	0	0
11	Gujarat	1	1	1	1
12	Haryana	0	0	0	0
13	Himachal Pradesh	0	1	0	0
14	J & K	0	0	0	0
15	Jharkhand	0	0	0	0
16	Karnataka	7	4	1	3
17	Kerala	2	0	0	0
18	Ladakh	0	0	0	0
19	Lakshdweep Islands	0	0	0	0

S. No.	State/ UT	Thunderstorm Events	Hail Events	Dust storms	Gusty Winds
20	Madhya Pradesh	0	0	0	0
21	Maharashtra	7	1	1	3
22	Manipur	0	0	0	0
23	Meghalaya	0	0	0	0
24	Mizoram	0	0	0	0
25	Nagaland	0	0	0	0
26	Odisha	0	0	0	0
27	Puducherry	0	0	0	0
28	Punjab	0	0	0	0
29	Rajasthan	1	1	1	0
30	Sikkim	0	0	0	0
31	Tamilnadu	8	3	6	6
32	Telangana	0	0	0	0
33	Tripura	0	0	0	0
34	Uttar Pradesh	2	2	2	2
35	Uttarakhand	0	0	0	0
36	West Bengal	1	1	1	1

#### **Bulletins/Warnings/Press Releases Issued:**

All India Weather Bulletins:-124, All India inference and severe weather warnings:-124, All India Weekly Weather Reports:-5, Current Weather Status & Outlook for next two weeks:-5, Mountain weather bulletins issued for western and central Himalayan region:-62, Heat wave warning bulletin issued for India-31, Marine Weather Bulletins:-62, Forecast Demonstration Project (FDP) Thunderstorm Observation and Regional Modelling (STORM) Bulletins issued -31, Nowcast Guidance Bulletins for Severe Weather:-31, Bulletins of the Severe Weather Forecast Programme Severe Weather Forecast Programme(SWFP):-31, Tropical Weather Outlook to World Meteorological Organization (WMO)/Economic and Social Commission for Asia-Pacific (ESCAP) Panel member countries for the north Indian Ocean:-31, RSMC bulletins issued :- 17, National bulletins issued :-4, Special Messages with formation of Low Pressure Area-4, Extended range outlook on Cyclogenesis (Weekly basis on every Thursday):-5, Press Releases issued during the month:-33.

#### **Publications & Operational Reports:**

- i) Computed gridded Standardized Precipitation Index (SPI) & Standardized Precipitation Evapotranspiration Index (SPEI) at 0.5\*0.5 degree resolution at 4 weekly, 1, 2,3, &4 monthly time scales. Uploaded the maps of the aforementioned timescales at weekly basis on IMD Pune website.
- ii) El Niño-Southern Oscillation (ENSO) bulletin for the month of March 2022 and Seasonal Climate Outlook for South Asia for the period of March to Jun 2022 were issued. (Quick Link: [www.imdpune.gov.in/Clim\\_Pred\\_LRF\\_New/Products.html](http://www.imdpune.gov.in/Clim_Pred_LRF_New/Products.html))

- iii) Climate Diagnostic Bulletin for November, December 2021 and January 2022 has been published
- iv) Four weekly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the weeks ending 02.03.2022, 09.03.2022, 16.03.2022, 23.03.2022 and 30.03.2022 and supplied for use in Agromet Advisory Services Bulletin. The same have also been uploaded in IMD Pune website.
- v) Five weekly Aridity Anomaly Maps for the period 24 February to 02 March, 03 to 09 ,10 to 16, 17 to 23 and 24 to 30 March 2022 have been prepared and uploaded on IMD Website.
- vi) Five Biweekly Aridity Anomaly Maps for the period 17 February to 02 March, 24 February to 09 March,03 to16, 10 to 23 and 17 to 30 March 2022 have been prepared and uploaded on IMD Website.
- vii) Monthly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the month ending February 2022 for use in Climate Diagnostic Bulletin of India. The same have also been uploaded in IMD Pune website.
- viii) Five weekly Aridity Anomaly Outlook Maps for the period 03 to 09, 10 to 16, 17 to 23, 24 to 30 and 31 March to 06 April 2022 have been prepared and uploaded on IMD Website.

### Seismological Observational Network

Observation Type	Target	Commissioned so far	Data reporting during the month
Seismic stations	115	152	145

### Earthquake and Tsunami monitoring

**Earthquake:** 124 earthquakes were monitored in the Indian region out of which 6 events were greater than the magnitude (M) of 5.0.

**Tsunami:** 3 seabed earthquakes (M> 6) with a potential to generate tsunami occurred. These information were provided in less than 12 minutes of occurrence of all the events.

### Ocean Observation System

Type of Platform	Target	Commissioned till February, 2022	Data received during March, 2022
Argo Floats *	200	374	75
Moored Buoys	16	19	14
Tide Gauges	36	36	29
High Frequency (HF) Radars	10	12	11
Acoustic Doppler Current Profiler (ADCP)	20	20	17
Tsunami Buoys	4	7	3
Wave Rider Buoy	23	16	11

\*The remaining floats/drifters have completed their life time and as such no data can be received from them.

### Ocean Science Services

No	Types of forecasts	No. of advisories issued during the month
1.	Integrated Potential Fishing Zone (PFZ) advisories (Sea Surface Temperature (SST), Chlorophyll., wind)	31
2.	Tuna Fishing Advisories	28
3.	Ocean State Forecast (OSF)-Wave, Wind, Currents, SST (Sea Surface Temperature), MLD (Mixed Layer Depth) and D20 forecasts	28

4.	Real time global ocean analysis (daily)	30
5.	Coral Bleaching Alert System	10

### **Outreach and Awareness**

- Indian National Centre for Ocean Information Services (INCOIS) hosted The International Indian Ocean Conference (IIOSC) on virtual mode during 14-18 March 2022. Hon'ble Minister Dr. Jitendra Singh inaugurated the conference and delivered the inaugural address. The conference was attended by 400+ registered participants, representing 20 countries.
- India Meteorological Department (IMD) released the Seasonal Temperature Outlook for March to May 2022 and Monthly outlook for the Temperature and Rainfall for March 2022 and April 2022 through a Press Conference.
- INCOIS issued 32 bulletins associated with the deep depression in the Bay of Bengal during 3-6 & 20-23 March 2022 and also predicted high wave height off Puducherry on 5th March 2022 with very good accuracy.
- Indian Institute of Tropical Meteorology (IITM) celebrated the World Meteorological Day 2022 on 23 March 2022. A special session was organised to mark World Meteorological during the 7<sup>th</sup> International Workshop on Monsoons (IWM) under the World Weather Research Programme (WWRP) of the World Meteorological Organization (WMO).
- IITM is celebrating 'Azadi Ka Amrit Mahotsav' and as part of the celebrations, virtual lecture series and national science day activities were organized at IITM during March 2022.
- Nowcast Unit of IMD Conducted five days' Workshop on "Interpretation and Application of Product for Nowcasting" from 21-25 March 2022.
- IMD issued daily weather forecasting video of about 5 minutes duration in English & Hindi through YouTube, Facebook, Twitter and IMD website.
- Weekly Video on extended range forecast (upto two weeks) were issued every Thursday through website and social media (Facebook, Twitter, YouTube etc.).
- Daily interviewed was provided by the forecasters within the country.
- The forecast videos in regional language were issued by regional offices of IMD regularly.
- Bulletins and Warnings along with graphics were also communicated through Social Media including Facebook, Twitter, Instagram, YouTube and IMD Blog page.
- Thirty Indian Air Force (IAF) Officers/Airmen visited NCMRWF. Lectures on various aspects of Numerical Weather Prediction (NWP) are arranged for the visiting IAF officers/Airmen.
- The International Women's Day was celebrated on March 8, 2022 by various Institutes under Ministry of Earth Sciences.

### **Publications**

Subject	Publications			Ph.Ds		
	April, 2021 – February 2022	March, 2022	Total	April, 2021 – February 2022	March, 2022	Total
Atmospheric Sciences	209	16	225	7	2	9
Ocean Science and Technology	102	11	113	4	-	4
Polar Sciences	42	10	52	1	-	1

Geosciences and resources	106	8	114	3	-	3
Total	459	45	504	15	2	17

**Patents: 1**

**Utilization of Ocean Research Vessels during the month**

Vessel	Days at Sea / Utilization	Maintenance/ Inspection /Scientific Logistics / Cruise Preparation	No. of Cruise
Sagar Nidhi	0	31	0
Sagar Manjusha	0	31	0
Sagar Tara	17	14	1
Sagar Anveshika	4	27	1
Sagar Kanya	25	6	1
Sagar Sampada	0	31	0



No.MoES/20/01/2017-Estt.  
Government of India  
Ministry of Earth Sciences

Prithvi Bhavan, Lodhi Road  
New Delhi-110 003

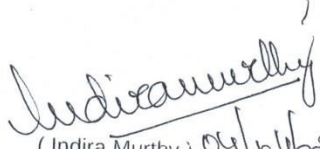
Dated, the 4<sup>th</sup> April, 2022

CERTIFICATE

(FOR THE MONTH OF MARCH, 2022)

It is certified that the detailed status regarding all the posts pertaining to Ministry of Earth Sciences have been updated on AVMS as on last day of the month of March, 2022. A summary of the status is given below:-

- |  |      |
|--|------|
| a. The total number of posts required to be entered on AVMS        | - 13 |
| b. Number of posts filled as on date                               | - 10 |
| c. Number of posts totally vacant as on date                       | - 02 |
| d. Number of posts under additional charge arrangement             | - 01 |
| e. Number of posts that would fall vacant during the next 6 months | - 01 |

  
(Indira Murthy) 04/04/2022  
Joint Secretary  
js@moes.gov.in

इन्दिरा मूर्ति / INDIRA MURTHY  
संयुक्त सचिव / Joint Secretary  
पृथ्वी विज्ञान मंत्रालय / Ministry of Earth Sciences  
भारत सरकार / Government of India  
नई दिल्ली / New Delhi