

Ministry of Earth Sciences (MoES)
Govt. of India
Summary of Important Developments – May, 2023

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:

The Cabinet in its meeting on 13th July 2022 approved the merging of 5 Autonomous Bodies under MoES to one Autonomous Body. Efforts are underway to implement the same.

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 Cabinet) directions have not been compiled with:

It is 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:

- Hon'ble Union Minister of State (Independent Charge) of Earth Sciences, Dr Jitendra Singh chaired the first Steering Committee Meeting of Deep Ocean Mission on 10th May 2023.
- Hon'ble Union Minister Shri Kiren Rijiju took charge of the Ministry of Earth Sciences on 19th May 2023.
- Hon'ble Union Minister of Earth Sciences Shri Kiren Rijiju visited National Centre for Medium Range Weather Forecasting (NCMRWF) on 24th May 2023 accompanied by Secretary, MoES.
- Hon'ble Union Minister of Earth Sciences Shri Kiren Rijiju visited National Centre for Polar and Ocean Research (NCPOR) on 26th May 2023 and a virtual interaction session was organized with the 43rd Indian Scientific Expedition to Antarctica (ISEA) winter over team members of Bharati station in Antarctica.
- The G20 Research Innovation and Initiative Gathering (RIIG) Conference on Scientific Challenges and Opportunities for a Sustainable blue-economy was organized by MoES on 19-20 May 2023 at Diu.
- Indian delegation visited the University of South Pacific (USP), Fiji from 6-14 May 2023 for the establishment of Sustainable Coastal and Ocean Research Institute (SCORI) at Fiji which is being funded by Government of India. A Memorandum of Understanding (MoU) has been signed between USP and National Centre for Coastal Research (NCCR).
- Memorandum of Agreement (MoA) for the preparation of Shoreline Management Plan for Tamil Nadu was signed by NCCR, Chennai with the Department of Environment & Climate Change, Govt., of Tamil Nadu on 18th May 2023.
- Dr. Mrutyunjay Mohapatra, Director General, India Meteorological Department (IMD) got elected to the position of 'Third Vice President of World Meteorological Organisation'.
- IMD signed a MoU with World Food Programme on 1st May 2023.

- Southwest monsoon seasonal (June to September) rainfall over the country as a whole is most likely to be normal (96 to 104% of Long Period Average (LPA)). The LPA of the seasonal rainfall over the country as a whole for the period 1971-2020 is 87 cm.
- In view of persistence of south-westerly winds in the lower tropospheric levels and fairly widespread rainfall activity over the area, Southwest Monsoon has advanced into Bay of Bengal, Andaman & Nicobar Islands during the Month.

Atmospheric Observation Systems Network

Observation Type	Commissioned so far	Installations during the month	Data Reporting
Automatic Weather Station (AWS)	*472	--	472
Automatic Rain Gauge (ARG)	**486	--	486
Agro AWS	200	--	192
GPS Sonde based RS/RWStns.	56	--	56
Doppler Weather Radar (DWR)	***39	--	26
Ozone (Ozone Sonde + Total Ozone)	02	--	02
Surface Ozone (Electrochemical Concentration Cell method)	07	--	05
Nephelometer	12	--	09
Sky Radiometer	20	--	17
Black Carbon Monitoring Systems (Aethalometer)	25	--	19
Air Quality Monitoring System (SAFAR)	10 (Delhi) 10 (Mumbai) 10(Ahmedabad)	--	09(Delhi)
Hydromet. (IMD & Extra-departmental excluding AWS & ARG)	---	--	3122
Aviation	94	--	94
Radiation Stations	47	---	47

* Out of Total 808 commissioned, 336 are outlived.

** Out of total 1382 commissioned, 896 are outlived.

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

Modelling

During May 2023, 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) Defence Geo-informatics Research Establishment (DGRE), (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 Defence Research and Development Organisation (DRDO) and IAF for use at their end. On the last Thursday of the month, i.e., on 25th May 2023 the monthly mean forecast valid for June 2023 were also included for the users.

Monthly Weather Summary (May 2023)

a) Important Weather Events during the month

Western Disturbances:

About eight Western Disturbances had affected Northwest India and adjoining areas of Central India during the month. These systems had caused rainfall/ thunderstorm activity over Western Himalayan Region, North India, Central India, East India and Rajasthan.

A Low Pressure Area formed over southeast Bay of Bengal (BoB) and adjoining south Andaman Sea on 8th May 2023. It moved north-northwestwards and intensified into a Cyclonic Storm (CS) “Mocha” pronounced as “Mokha” on 11th May 2023 over southeast BoB.

Heat Wave:

Due to the severe weather activity prevailed across the country, the frequency of occurrence of heat wave to severe heat wave condition reported across the country had been less during the month.

b) Rainfall Scenario:

The rainfall for the country as a whole, for the month of May-2023 has been recorded as 67.5 mm which is 110% of its Long Period Average (LPA) of 61.4 mm.

c) Heavy Rainfall Events:

Warning issued for	No. of Heavy/Very Heavy Rainfall Events (>64.4 mm): 122
	Percentage correct (in %) for Rainfall >64.4mm
Day1 / 24 Hours	88
Day2 / 48 Hours	87
Day3 / 72 Hours	87

d) Temperature Scenario:

The mean temperature for the month of May-2023 for the country as a whole was 29.48°C which was below normal by -0.26°C. The maximum temperature of 46.5°C had been recorded at Jhansi (West Uttar Pradesh) on 22nd May 2023 and the minimum temperature of 14.2°C had been recorded at Delhi Ridge (Delhi) on 4th May 2023 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.	Region	Thunder Storm Days	Hail Events	Squall Events	Dust storms
1.	South Peninsular India	29	Nil	Nil	Nil
2.	Northwest India	27	20 {Jammu-6 May, Banihal-13 May, Katra-6 May, Kupwara-7 May, Gulmerg-7 May, Etawah-14 May, Batote-19,24 May, Pahalgam-19,25 May, Kangra-23 May, Shimla- 23,29	1 {Chandigarh-24 May}	11 {Churu-14,23,24 May, Anupgarh-15 May, Sriganganagar-15 May, Ambala-18 May, Bareilly-23 May, Bikaner-24

S. No.	Region	Thunder Storm Days	Hail Events	Squall Events	Dust storms
			May, Kota-28 May, Jaisalmer-25,28 May, Nagaur-25 May, Bikaner-25 May, Sriganganagar-25 May, Dehradun-30 May}		May, Jaipur- 24 May, Etawah- 27 May, Gorakhpur- 27 May)
3.	Northeast India	28	Nil	Nil	Nil
4.	East India	30	7 {Sriniketan-17,23 May, Valmikingar-17 May, Bankura-18 May, Keojarangh-18 May, Jalpaiguri-21 May, Jamshedpur-23 May}	20 {Alipore-15, 18, 23, 25, 26 May, Dumdum-15, 18, 19, 23,26 May, Portblair- 13, 14 May, Malda- 14, 21, 23 May, Bankura-15, 25 May, Balasore- 15 May, Sriniketan-17 May, Patna-26 May}	Nil
5.	Central India	27	2 { Jabalpur-2 May, Pendra Road- 27 May}	3 {Jabalpur-27 May, Raipur- 9 May, Nagpur- 29 May}	Nil
6.	West India	14	Nil	Nil	Nil

Bulletins/ Warnings/ Press Releases Issued:

All India Weather Bulletins:- 124, All India inference and severe weather warnings:- 124, All India Weekly Weather Reports:- 4, Daily Tropical Weather Outlook with Cyclogenesis forecast for next 5 days: 23, Daily Severe Weather Guidance for next 5 days under Severe Weather Forecasting Programme: 31, Weekly Extended Range Outlook for Cyclogenesis for next 2 weeks: 4, Daily Warnings for Fishermen in North Indian Ocean for next 5 days: 36, Fleet Forecast for Indian Navy for next 12 hours: 62,

Bulletins for ships in deep sea under Global Maritime Distress Safety System for next 36 hours: 50, Mountain weather bulletins issued for western and central Himalayan region:- 62, Expedition Forecast bulletins issued for Mt. Trishul Expedition conducted by AAW (Army Adventure Wing):- 31, Expedition Forecast bulletins issued for Mt. Reo Purgyl Expedition conducted by NIMAS (National Institute of Mountaineering and Adventure Sports): 13, Expedition Forecast bulletins issued for Dirang Expedition conducted by NIMAS (National Institute of Mountaineering and Adventure Sports): 14, Expedition Forecast bulletins issued for Mt. Bhagirathi-II conducted by NDRF (National Disaster response force): 13, Nowcast Guidance Bulletins for Severe Weather:- 31, Forecast Demonstration Project (FDP) Severe Thunder Storm Observation and Regional Modeling (STORM) Bulletins: 31, Heat wave Bulletins:-31, Press Releases issued during the month:- 45.

Publications & Operational Reports:

1. El Niño-Southern Oscillation (ENSO) bulletin for the month of May 2023 and Seasonal Climate Outlook for South Asia for the period of May to August 2023 were issued.
(Quick Link: www.imdpune.gov.in/Clim_Pred_LRF_New/Products.html)
2. Climate Summary for the month of April 2023 Issued.
3. Climate Diagnostic Bulletin for January 2023 and Annual Climate Summary 2022 has been published and uploaded on the website.

Seismological Observational Network:

Observation Type	Commissioned so far	Data reporting during the month
Seismic stations	152	133

Earthquake and Tsunami monitoring

Earthquake:

137 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 have occurred during the month. These information were provided in less than 12 minutes of occurrence of the events.

Ocean Observation System

Type of Platform	Commissioned till during the month	Data received during the month
Argo Floats	80	50
Moored Buoys	19	15
Tide Gauges	36	33
High Frequency (HF) Radars	12	6
Acoustic Doppler Current Profiler (ADCP)	20	17
Tsunami Buoys	7	4
Wave Rider Buoy	16	14

Ocean Science Services

S. No.	Types of forecasts	No. of advisories issued during the month
1.	Integrated Potential Fishing Zone (PFZ) advisories (Sea Surface Temperature (SST), Chlorophyll., wind)	30
2.	Tuna Fishing Advisories	2
3.	Ocean State Forecast (OSF)-Wave, Wind, Currents, SST (Sea Surface Temperature), MLD (Mixed Layer Depth) and D20 forecasts	30
4.	Real time global ocean analysis (daily)	29
5.	Coral Bleaching Alert System	10

Outreach and Awareness

- A workshop on development of the Regional Environmental Management Plan (REMP) for the Indian Ocean, was jointly organized by the International Seabed Authority (ISA) and MoES- National Institute of Ocean Technology (NIOT), during 1-5 May 2023 at NIOT Chennai.
- MoES participated in the G20 events.
- Students from the various colleges/ institutes/ universities visited Indian Institute of Tropical Meteorology (IITM), Indian National Centre for Ocean Information Services (INCOIS), NIOT and NCMRWF.
- Training Programme on “Seaweed Cultivation - An alternative livelihood for Fisher-Women Communities” conducted at NCCR Field Research Centre, Mandapam on 29th May 2023. The program was attended by Officials from

Government Departments, Scientist and faculties and 90 locals from two villages.

- The World Bank facilitated study visits of the Government of Bangladesh and Sri Lanka delegates to Indian organizations as part of Hydromet and Early Warning Joint Learning Exercise II, from 1-9 May 2023. In this connection, twenty (21) member delegations visited INCOIS and NIOT and discussed various collaborative aspects.
- On May 3, the Decade Collaborative Centre for the Indian Ocean Region (DCC-IOR) INCOIS hosted the first Indian Seas Regional Team online meeting of Mercator Ocean International's United Nation (UN) Ocean Decade endorsed Ocean Prediction program. The ocean forecasts experts and user interaction paved the way for better regional collaborations.
- Dr. Cherdsak Virapat, Director General of Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP), Dhaka, Bangladesh visited INCOIS on 10 May 2023.
- On May 12, 2023 INCOIS facilitated a visit of twenty-two (22) Met trainees along with Sr. Instructors from Air Force Academy, Dundigal. The trainees were provided an overview on operational services & ocean observations related to Meteorology.
- INCOIS provided Ocean State Forecast (OSF) consultancy services of surface and sub-surface Currents at their rig location to M/s McDermott for exploration services.
- IITM Pune provided technical support to Odisha State Disaster Management Authority (OSDMA) for the development of software on Lightning and Thunderstorm Prediction Early Warning Dissemination.
- IITM, Pune observed "World Migratory Bird Day 2023" on 12th May 2023.
- 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.

Publications

Subject	Publications			Ph.Ds		
	April 23	May 23	Total	April 23	May 23	Total
Atmospheric Sciences	13	12	25	4	1	5
Ocean Science and Technology	10	13	23	1	1	2
Polar Sciences	-	1	1	-	-	-
Geosciences and resources	1	3	4	1	1	2
Total	24	29	53	6	3	9

Utilization of Ocean Research Vessels during the month

Vessel	Days at Sea/ Utilization	Maintenance/ Inspection/Scientific Logistics/ Cruise Preparation	No. of Cruises
Sagar Nidhi	26	5	2
Sagar Manjusha	15	16	3
Sagar Tara	27	4	3
Sagar Anveshika	0	31	0
Sagar Kanya	0	31	0
Sagar Sampada	0	31	0

MoES/20/01/2017-Estt.

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

Prithvi Bhavan, Lodhi Road
New Delhi-110 003
Dated, the 08 June, 2023

**CERTIFICATE
(FOR THE MONTH OF MAY, 2023)**

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 May, 2023. 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	-	11
c. Number of posts totally vacant as on date	-	02
d. Number of posts under additional charge arrangement	-	00
e. Number of posts that would fall vacant during the next 6 months	-	01


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