

Ministry of Earth Sciences (MoES)

Summary of Important Developments – May, 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. A draft Cabinet note has been prepared and circulated for Inter-Ministerial consultations.
- 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 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:

- IMD released Updated Long Range Forecast of Rainfall during Southwest Monsoon Season (June - September), 2022 and Monthly Outlook for Rainfall and Temperature during June 2022 on 31st May.
- 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 southwest monsoon seasonal rainfall to be Above Normal for Central India (>106% of LPA) and South Peninsula (>106% of LPA). Rainfall is most likely to be Normal over Northeast India (96-106% of LPA) and Northwest India (92-108% of LPA). The southwest monsoon seasonal rainfall over the rain fed agriculture regions is most likely to be Above Normal (>106% of LPA).
- Southwest Monsoon had advanced into some parts of South Bay of Bengal, most parts of Andaman & Nicobar Islands and Andaman Sea on 16th May, 2022.
- Prevailing La Niña conditions are likely to continue over equatorial Pacific Ocean and development of negative IOD conditions over the Indian Ocean during the monsoon season is most likely.
- 14 new species of squat lobsters have been described from the deep sea collections made by FORV Sagar Sampada.
- INCOIS signed an MoU with the Indian Navy on 9th May 2022, to provide training services by conducting oceanographic courses to the School of Naval Oceanology and Meteorology (SNOM).

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)	*377 (727-350)	--	377
Automatic Rain Gauge (ARG)	589** (1382-795)	--	589

Agro AWS	200	--	194
GPS Sonde based RS/RW (Radio Sonde/ Radio Wind) Stations	56	--	56
Doppler Weather Radar (DWR)	*** 32	--	24
Ozone (Ozone Sonde + Total Ozone)	04	--	04
Surface Ozone (Electrochemical Concentration Cell method)	07	--	07
Nephelometer	12	--	09
Sky Radiometer	20	--	13
Black Carbon Monitoring Systems (Aethalometer)	25	--	16
System of Air Quality Monitoring System (SAFAR)	10 (Delhi) 10 (Mumbai) 10 (Ahmedabad)	--	09(Delhi) NIL(Mumbai)**** 10(Ahmedabad)
Hydromet (Indian Meteorological Department (IMD)& Extra-departmental excluding AWS & ARG)	---	--	3114
Aviation	79	--	79
Radiation Stations	46	---	46

*Out of Total 727, 350 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 May 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 (May 2022)

a) Important Weather Events during the month

Low Pressure Systems: A low pressure area formed over South Andaman Sea and adjoining Southeast Bay of Bengal on 6th May, 2022. Continuing to move northwest wards, it intensified into the cyclonic storm "ASANI" on 8th May and caused rainfall over Coastal Andhra Pradesh & Yanam, Rayalaseema and Odisha. A cyclonic circulation formed over Gulf of Martaban and adjoining Myanmar in the morning (0300 UTC) of 19th May, 2022. Continuing to move north-northeast wards,

it weakened into a well marked low pressure area northwest Thailand and adjoining Myanmar on 21st May.

b) Rainfall Scenario: The rainfall for the country as a whole, for the month of May 2022 has been recorded as 83.4 mm which is 134% of its Long Period Average (LPA) of 62.0 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	85
Day2 / 48 Hours	86
Day3 / 72 Hours	87

d) Temperature Scenario: The mean temperature for the month of May-2022 for the country as a whole was 29.96 °C which was above normal by +0.22 °C. The maximum temperature of 49.0 °C had been recorded at Banda (East Uttar Pradesh) on 15th May 2022 and the minimum temperature of 15.2 °C had been recorded at Delhi Ridge (Haryana, Chandigarh & Delhi) on 23rd May 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	1	0	0	1
2	Andhra Pradesh	15	3	4	7
3	Arunachal Pradesh	0	0	0	0
4	Assam	1	1	0	0
5	Bihar	9	4	5	7
6	Chandigarh	0	0	0	0
7	Chhattisgarh	1	1	1	2
8	Dadar and Nagar Haveli	0	0	0	0
9	Delhi	7	2	6	7
10	Goa	1	0	0	0
11	Gujarat	7	4	5	4
12	Haryana	7	2	5	5
13	Himachal Pradesh	1	1	0	1
14	J & K	0	0	0	0
15	Jharkhand	3	1	0	1
16	Karnataka	18	8	4	12
17	Kerala	2	0	0	2
18	Ladakh	0	1	2	0
19	Lakshdweep Islands	0	0	0	0
20	Madhya Pradesh	10	8	7	7
21	Maharashtra	15	9	6	12
22	Manipur	0	0	0	1
23	Meghalaya	1	0	0	1

S. No.	State/ UT	Thunderstorm Events	Hail Events	Dust storms	Gusty Winds
24	Mizoram	0	0	0	0
25	Nagaland	2	0	0	0
26	Odisha	14	15	8	24
27	Puducherry	1	0	0	1
28	Punjab	11	4	4	9
29	Rajasthan	15	8	15	8
30	Sikkim	0	0	0	0
31	Tamilnadu	10	4	0	12
32	Telangana	2	0	1	3
33	Tripura	1	0	0	2
34	Uttar Pradesh	19	4	18	17
35	Uttarakhand	0	0	0	0
36	West Bengal	21	8	4	8

Bulletins/Warnings/Press Releases Issued:

All India Weather Bulletins:-124, All India inference and severe weather warnings:-124, All India Weekly Weather Reports:-4, Current Weather Status & Outlook for next two weeks:- 4, Extended Range Outlook for cyclogenesis:- 4, Mountain weather bulletins issued for western and central Himalayan region:-62, Expedition forecast bulletin issued for ITBP during expedition to Mt. Abi Gamin peak:-19, Expedition forecast bulletin issued for IMF during expedition to Mt.Black peak:-11, Expedition forecast bulletin issued for J & K Rifles (Indian Army) during expedition to Mt. Nun peak:-1, Heat wave warning bulletin issued for India- 31, Marine Weather Bulletins:-62, FDP STORM Bulletins issued -31, Nowcast Guidance Bulletins for Severe Weather:-31, Press Releases issued during the month:-31.

Publications & Operational Reports:

- i) Monthly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the month ending April 2022 for use in Climate Diagnostic Bulletin of India. The same have also been uploaded in IMD Pune website
- ii) ENSO bulletin for the month of May 2022 and Seasonal Climate Outlook for South Asia for the period of May to August 2022 were issued.
(Quick Link : www.imdpune.gov.in/Clim_Pred_LRF_New/Products.html)
- iii) Four weekly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the weeks ending 04.05.2022, 11.05.2022, 18.05.2022 and 25.05.2022 and supplied for use in Agromet Advisory Services Bulletin. The same have also been uploaded in IMD Pune website.
- iv) Computed gridded SPI & 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.
- v) Four weekly Aridity Anomaly Maps for the period 28 April to 04 May, 05 to 11,12 to 18 and 19 to 25 May 2022 have been prepared and uploaded on IMD Website.
- vi) Four Biweekly Aridity Anomaly Maps for the period 21 April to 04 May, 28 April to 11 May, 05 to 18 and 12 to 25 May 2022 have been prepared and uploaded on IMD Website.
- vii) Four weekly Aridity Anomaly Maps for the period 28 April to 04 May, 05 to 11,12 to 18 and 19 to 25 May 2022 have been prepared and mailed to Agrimet for Agromet Advisory Services.
- viii) Four weekly Aridity Anomaly Outlook Maps for the period 05 to 11, 12 to 18, 19 to 25 and 26 May to 01 June 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	131

Earthquake and Tsunami monitoring

Earthquake: 82 earthquakes were monitored in the Indian region out of which 6 events were greater than the magnitude (M) of 5.0.

Tsunami: 2 seabed earthquakes (M > 6) with a potential to generate tsunami occurred. These informations were provided in less than 12 minutes of occurrence of the event.

Ocean Observation System

Type of Platform	Target	Commissioned till May, 2022	Data received during May, 2022
Argo Floats *	200	374	69
Moored Buoys	16	19	13
Tide Gauges	36	36	33
High Frequency (HF) Radars	10	12	9
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)	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)	30
5.	Coral Bleaching Alert System	10

Outreach and Awareness

- MoES and its institutes observed “Anti-Terrorism Day” on 20th May 2022 and all employees took the pledge in this regard.
- IMD organised Count-down Yoga event in association with International Yoga Day 2022 at IMD Complex on 27th May. Hon’ble Minister for Science & Technology and Earth Sciences graced the occasion.
- Heavy rainfall warning was issued by India Meteorological Department due to Cyclonic Storm "ASANI" over Bay of Bengal. In view of this, special agromet bulletins have been prepared and uploaded to the Agrimet Pune website from 8th to 12th May, 2022.
- About 300 students from colleges visited NCPOR during the month, and were briefed about expedition and research activities in polar areas.

- Training presentation on special invitation by the Tamil Nadu Pollution Control Board titled 'Marine pollution, sampling procedures, abatement of marine pollution and research activities of NCCR' was made on 25th May 2022 to the newly recruited trainee Assistant Engineers (AE) and Environmental Scientists (ES) at Guindy, Chennai.
- Two days training on "Operational use of IFLOWS-Mumbai" held at NCCR to the officials of MCGM, Mumbai from 30-31 May 2022.
- Three-day training conducted with NIDM on "Understanding coastal disaster through Geospatial Technology" from 18-20 May 2022.
- NCMRWF scientists served as resource persons and took online classes, on "Observation Processing and Data Assimilation" for the IMD direct recruit scientists training course (DRSTC), Batch No. 2. held during May 2022.
- IMD organised Familiarization training (online mode) for Exploration and Production Operators on 2nd May with about 150 participants from Directorate General of Hydrocarbons, Indian Coast Guard, Office of Health, Safety & Environment, Oil Industry Safety Directorate, Indian Navy and operators including Oil & Natural Gas Corporation, Shell, Sun Petro, Invenire, Reliance, Adani etc. During the training lectures were arranged about basics of cyclones, various bulletins issued by IMD for marine community and customised products developed for safe offshore operation.
- 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 (up to two weeks) were issued every Thursday through website and social media (Facebook, Twitter, YouTube etc.).
- 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.
- An AI/ML Virtual Training Workshop was organised during 9-10 May 2022, for scientists/students of MoES institutes, by the AI/ML virtual centre of MoES in collaboration with the DESK program of MoES. Total of 110 participants (51 from IITM and 59 from non-IITM institutions) participated in the workshop.
- Indian Institute of Tropical Meteorology (IITM), Pune is celebrating 'Azadi Ka Amrit Mahotsav' and as part of the celebrations, virtual lecture series were organized at IITM during May 2022.
- Probationary IAS Officers (2020 batch) from Pune visited IITM on 11 May 2022.
- Faculties and Students from the various colleges visited facilities and laboratories of IITM Pune, NIOT Chennai, CMLRE, Kochi.

Publications

Subject	Publications			Ph.Ds		
	April, 2022 – April, 2022	May, 2022	Total	April, 2022 – April, 2022	May, 2022	Total
Atmospheric Sciences	18	12	30	-	2	2
Ocean Science and Technology	9	4	13	-	-	-
Polar Sciences	4	6	10	-	-	-
Geosciences and resources	6	5	11	-	-	-

Total	37	27	64	-	2	2
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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	12	19	1
Sagar Anveshika	17	14	3
Sagar Kanya	0	31	0
Sagar Sampada	0	31	0

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

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New Delhi-110 003

Dated, the 12 June, 2022

CERTIFICATE

(FOR THE MONTH OF MAY, 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 May, 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 | - 09 |
| c. Number of posts totally vacant as on date | - 02 |
| d. Number of posts under additional charge arrangement | - 02 |
| e. Number of posts that would fall vacant during the next 6 months of Director, MoES will fall vacant from 02.06.2022) | - 01 (post |

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02/06/2022