

Ministry of Earth Sciences (MoES)
Summary of Important Developments – May, 2021

1. **Important policy decisions taken and major achievements during the month:** Provided in Annex I.
2. **Important policy aspects / matters held up on account of prolonged Inter- Ministerial consultations/ delays, etc.:** Nil
3. **Compliance of COS (Committee of Secretaries) decisions:**

| S. No. | Number of COS decisions pending for compliance | Proposed action plan/timelines | Remarks |
|--------|--|---|---|
| 1. | <p>Dt 14/08/2014 PROPOSAL FOR KRILL FISHING</p> <p>MoES, in collaboration with MEA (Ministry of External Affairs), will study the experience of different countries showing varied interest in krill fishing so that India could learn from their experiences. MEA, in collaboration with MoES, will examine and identify the countries with which India can collaborate for krill fishing. MoES will ascertain the interest of Indian industry in krill fishing and also explore the feasibility of Indian companies collaborating directly with foreign companies MoES will study legislations enacted by other member countries before finalising the draft legislation as part of international convention obligations.</p> <p>MoES will bring out a paper on krill fishing giving a detailed account of demand analysis, financial viability, interest of industry, experiences of other countries, criteria for fishing license, existing knowledge gap, etc. Thereafter, the CoS will meet again to decide whether India should engage in commercial krill fishing.</p> | <p>The Ministry has examined the aspect of Krill fishing. Japan & Norway have developed expertise and these countries have been tentatively identified for collaboration on Krill fishing. Their experiences have been obtained. Indian Industries have been approached for Krill fishing to ascertain their interests. However, so far we have not received any response. The draft paper is prepared and suggestions of Cabinet Secretariat have been obtained.</p> | <p>A proposal has been mooted through NITI Aayog for collaboration with Norway for krill fishing.</p> |

4. **Cases of sanction for prosecution pending in the Ministry for more than three months:** Nil
5. **Particulars of cases in which there has been a departure from the Transaction of Business rules of established policy of the Government:** Nil
6. **Status of implementation of e-Governance:** Being implemented

7. Status of Public grievances:

| No. of Public Grievances redressed during the month | No. of Public Grievances pending at the end of the month |
|---|--|
| 12 | 25 |

8. Information on the specific steps taken by the Ministry/Department 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.

9. (i) **Confirmation that the incumbency details of all posts in the Ministry/Department and its organizations falling under the purview of the ACC (Appointments Committee of Cabinets) have been updated on AVMS**

(ACC Vacancy Monitoring System): 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.

(ii) Status regarding compliance of the directions of ACC: It is also confirmed that the directions of ACC are complied with.

(iii) Status of cases where recommendations from PESB (Public Enterprise Selection Board) have been received but the proposals are yet to be submitted to the ACC Secretariat: NIL

Annex-I

Important policy decision taken and major achievements:

The following technologies developed by National Institute of Ocean Technology (NIOT), Chennai were transferred to Indian industries:

- (i) Bio surfactant from marine bacteria for environmental cleanup and waste management to M/s Eco Build Corporation Pvt. Ltd., Bengaluru.
- (ii) Recombinant ecotoine from deep sea bacteria for skin care and cosmetic applications to M/s COSMOS Bio Tech Llp, Bengaluru.

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) | 348* | | 348 |
| Automatic Rain Gauge (ARG) | 425** | -- | 425 |
| GPS Sonde based RS/RW (Radio Sonde/Radio Wind) Stations | 56 | -- | 56 |
| Doppler Weather Radar (DWR) | 28*** | -- | 26 |
| Ozone (Ozone Sonde + Total Ozone) | 04 | -- | 04 |
| Surface Ozone (Electrochemical Concentration Cell method) | 07 | -- | 07 |
| Nephelometer | 12 | -- | 12 |
| Sky Radiometer | 20 | -- | 15 |
| Black Carbon Monitoring Systems (Aethalometer) | 25 | -- | 23 |
| 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) | --- | -- | 3027 |
| Aviation | 79 | -- | 79 |
| Radiation Stations | 46 | --- | 46 |

* Out of Total 726, 378 are outlived.

** Out of total 1366, 941 are outlived.

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

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

Modelling

National Centre for Medium Range Weather Forecasting (NCMRWF) provided coupled model based Extended Range Prediction (ERP) up to next four weeks for rainfall, surface temperature, and winds to India Meteorological Department (IMD), Indian Institute of Tropical Meteorology (IITM), Space Applications Centre (SAC), Snow and Avalanche Study Establishment (SASE), Indian Air Force (IAF), Navy, Geological Survey of India (GSI), National Institute of Hydrology (NIH), Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES) representatives and Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) countries.

NCMRWF also provided the model-based track & intensity forecast input to IMD for the Arabian Sea extremely severe cyclonic storm 'Tauktae' during 14-19th May 2021 and for the Bay of Bengal very severe cyclonic storm 'Yaas' during 22-16 May 2021.

Monthly Weather Summary (May 2021)

a) Important Weather Events during the month

Low Pressure Systems: During the month, two low pressure systems have been formed namely TAUKTAE during 14-19th May 2021 over the Arabian Sea and YAAS during 23-27th May 2021 over the Bay of Bengal. These systems concentrated into a deep depression over the same region and have caused fairly widespread to widespread rainfall/thunderstorms along with isolated intense rainfall activity over Bihar, Jharkhand, Odisha, West Bengal, Sikkim, north-eastern states of India, Kerala, Karnataka and adjoining parts of Maharashtra.

b) Rainfall Scenario: The rainfall for the country as a whole for the month of May 2021 has recorded as 107.9 mm which is 174% 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): 98 |
|--------------------|--|
| | Percentage correct (in %) for Rainfall >64.4mm |
| Day1 / 24 Hours | 79% |
| Day2 / 48 Hours | 80% |
| Day3 / 72 Hours | 79% |

d) Temperature Scenario: The Mean Temp for the month of May 2021 for the country as a whole was 29.17°C which was below normal by -0.57°C.

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 | TS Days | Date of Maximum TS Activity | Hail Events | Squall Events |
|--------|------------------------|---------|-----------------------------|--|---|
| 1. | South Peninsular India | 31 | 03-05-21 | Nil | Nil |
| 2. | Northwest India | 31 | 12-05-21 | 01(Pahalgam on 05-05-21) 01(Batote on 21-05-21 & 29-05-21) 01 (Patiala on 12-05-21) 01 (Media-Nainital on 08-05-21) 01 (MO Shimla on 23-05-21) 01(Churk on 11-05-21) 01 (Mukteshwar on 02-05-21) 01(Dehradun on 09-05-21) | 02 (Ambala on 06-05-21 & 29-05-21) 01(Chandigarh on 29-05-21) 02(Patiala on 29-05-21 & 31-05-21) 01(Amritsar 31-05-21) |
| 3. | Northeast India | 29 | 31-05-21 | Nil | 01(Agartala on 13-05-21) |

| | | | | | |
|----|---------------|----|----------|---|--|
| 4. | East India | 29 | 11-05-21 | Nil | 05 (Alipore on 03-05-21, 05-05-21, 06-05-21, 11-05-21 & 27-05-21) 01(Sriniketan on 11-05-21) 01(Gaya on 17-05-21) 03(Port Blair on 07-05-21, 23-05-21 & 24-05-21) |
| 5. | Central India | 28 | 03-05-21 | Nil | 04(Nagpur on 02-05-21, 03-05-21, 16-05-21 & 21-05-21) 01(Ambikapur on 20-05-21) |
| 6. | West India | 26 | 11-05-21 | 02 (Mahabaleshwar on 02-05-21 & 04-05-21) | 01 (Ahmedabad on 01-05-21) |

Bulletins/Warnings/Press Releases Issued:

All India Weather Bulletins:- 124, All India inference and severe weather warnings:- 124, All India Weekly Weather Reports:- 4, Mountain weather bulletins including severe weather warnings for Western and Central Himalayan region:- 62, Expedition forecast bulletins issued for Central Reserve Police Force (CRPF) Training branch (31 bulletins) & High Altitude Warfare School(Indian Army) (7 bulletins): 38, Heat wave Bulletins (31) and Extended Heat wave Bulletins (4): 35, Marine Weather Bulletins:- 62, Nowcast Guidance Bulletins for severe weather:- 31, Tropical Weather Outlook to World Meteorological Organization / Economic and Social Commission for Asia and the Pacific (WMO/ESCAP) Panel member countries for the north Indian Ocean:- 31, Bulletins of the Severe Weather Forecast Programme (SWFP):- 31, Extended range outlook on Cyclogenesis:- 4, FDP bulletin for winter weather system: 31.

Indian National Centre for Ocean Information Services (INCOIS) issued warnings to all the concerned departments of coastal states through multiple modes of communication for the Tauktae and Yaas cyclones during May, 2021 formed over the eastern Arabian Sea and Bay of Bengal respectively. Sixty eights (68) INCOIS-IMD Joint Bulletins were issued during this period apart from Seventy five (75) High Wave Alerts/Warnings.

Publications & Operational Reports:

- i) Enso bulletin & Indian Ocean Dipole (IOD) Bulletin for the month of May 2021 and Seasonal Climate Outlook For South Asia for the month May to August 2021 were issued.
(Quick Link: www.imdpune.gov.in/Clim_Pred_LRF_New/Products.html)
- ii) Four weekly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the weeks ending 05.05.2021, 12.05.2021, 19.05.2021 and 26.05.2021 and supplied for use in Agromet Advisory Services Bulletin. The same have also been uploaded in IMD Pune website.
- iii) Daily all India Weather Summary and Weekly Weather Reports are being brought out on routine basis.
- iv) Monthly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the month ending April 2021 for use in Climate Diagnostic Bulletin of India. The same have also been uploaded in IMD Pune website
- v) Gridded Standard Precipitation Index (SPI) and Standardized Precipitation Evapotranspiration Index (SPEI) at 0.5*0.5 degree resolution at 4 weekly, 1, 2, 3, & 4 monthly time scales computed and the maps of the aforementioned timescales are being uploaded at weekly basis on IMD Pune website.

Important Press Releases: Very severe cyclonic storm "Yaas": 9, Extremely severe cyclonic storm "Tauktae": 15, Advance of southwest monsoon: 1, Forecast for onset date of southwest monsoon 2021 over Kerala:- 2 (both in English & Hindi), Wet spell over Western Himalayan region and plains of northwest India: 5, Current Weather Status and Outlook for next two weeks:- 4.

Seismological Observational Network

| Observation Type | Target | Commissioned so far | Data reporting during the month |
|------------------|--------|---------------------|---------------------------------|
| Seismic stations | 115 | 115 | 101 |
| GPS stations | 40 | 20# | 18 |

20 out of 40 are connected with VSAT, remaining 20 are operating in stand-alone mode.

Earthquake and Tsunami monitoring

Earthquake: 145 earthquakes were monitored in the Indian region out of which 7 events were greater than magnitude (M) of 5.0.

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

Ocean Observation System

| Type of Platform | Target | Commissioned till May, 2021 | Data received during May, 2021 |
|--|--------|-----------------------------|--------------------------------|
| Argo Floats * | 200 | 374 | 103 |
| Moored Buoys | 16 | 18 | 13 |
| Tide Gauges | 36 | 36 | 29 |
| High Frequency (HF) Radars | 10 | 12 | 11 |
| Acoustic Doppler Current Profiler (ADCP) | 20 | 20 | 18 |
| Tsunami Buoys | 4 | 7 | 3 |
| Wave Rider Buoy | 23 | 16 | 10 |

*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) | 24 |
| 2 | Tuna Fishing Advisories | 10 |
| 3 | Ocean State Forecast (OSF)-Wave, Wind, Currents, SST (Sea Surface Temperature), MLD (Mixed Layer Depth) and D20 forecasts | 31 |
| 4. | Real time global ocean analysis (daily) | 30 |
| 5. | Coral Bleaching Alert System | 10 |

Outreach and Awareness

IITM, Pune observed "Anti-Terrorism Day" on 21st May 2021 in accordance with the instructions received from Ministry of Home Affairs, Govt. of India. All the employees of the Institute took pledge at their respective places.

IITM-Environmental Information System (ENVIS), Pune observed 'International Biological Diversity Day 2021' on 21st May 2021 with Ministry of Education, Govt. of India's "Ek Bharat Shrestha Bharat (EBSB)" Program. Students from various schools and colleges were invited for this event.

IITM, Pune in association with Project Management Consultant / All India Institute of Medical Science (PMC/AIIMS) Authorities, conducted vaccination drive for its employees at IITM campus on 28 May 2021.

The Cyclone monitoring, forecasting and warning services during cyclones TAUKATE and YASS have been appreciated by many including Hon'ble Prime Minister, National Disaster Management Authority (NDMA), Cabinet Secretariat, Home Minister, Press and electronic media.

Publications

| Subject | Publications | | | Ph.Ds | | |
|------------------------------|--------------|-----------|-------|-------------|-----------|-------|
| | April, 2021 | May, 2021 | Total | April, 2021 | May, 2021 | Total |
| Atmospheric Sciences | 25 | 21 | 46 | 1 | - | 1 |
| Ocean Science and Technology | 9 | 10 | 19 | - | - | - |
| Polar Sciences | 5 | 8 | 13 | - | - | - |

| | | | | | | |
|---------------------------|----|----|----|---|---|---|
| Geosciences and resources | 6 | 6 | 12 | - | - | - |
| Total | 45 | 45 | 90 | 1 | - | 1 |

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 | 6 | 25 | 1 |
| Sagar Manjusha | 0 | 31 | 0 |
| Sagar Tara | 1 | 30 | 1 |
| SagarAnveshika | 18 | 13 | 2 |
| Sagar Kanya | 22 | 9 | 2 |
| SagarSampada | 0 | 31 | 0 |

Annex II

File No.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 ^{1st} June, 2021

CERTIFICATE

(FOR THE MONTH OF JUNE, 2021)

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, 2021. 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 | -12 |
| (c) Number of posts totally vacant as on date | -01 |
| (d) Number of posts under additional charge arrangement | -00 |
| (e) Number of posts that would fall vacant during the next 6 months-02 | |

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02/06/21