

Ministry of Earth Sciences (MoES)

Summary of Important Developments – April, 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	11

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:

1. The first stage long range forecast for 2021 south-west monsoon season rainfall was issued by IMD. Quantitatively, the monsoon seasonal (June to September) rainfall is likely to be 98 % of the Long Period Average (LPA) with a model error of 5%.
2. Locomotion trials of Underwater Mining Machine was successfully demonstrated in depths of 5270 m in the Central Indian Ocean by National Institute of Ocean Technology (NIOT).
3. An ebook titled "Systematic account of a few Indian lobsters from deep-sea and coral-reef ecosystems" has been uploaded in the Centre for Marine Living Resources and Ecology (CMLRE) website. The highlights of this study are 2 new geographical records of *N. rahayuae* and *G. gibberosus* for the Indian waters.
4. India marks four successful decades of scientific endeavour in Antarctica with the return of the 40th Scientific Expedition to Antarctica in April 2021.
5. An earthquake of Magnitude 6.4 occurred in Sonitpur, Assam on 28th April 2021. A total of 6-number of aftershocks of magnitude range of 3.2 to 4.7 were located in and around Sonitpur, Assam.

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)	351*		338
Automatic Rain Gauge (ARG)	418**	--	418
GPS Sonde based RS/RW (Radio Sonde/Radio Wind) Stations	56	--	56
Doppler Weather Radar (DWR)	30***	--	27

Ozone (Ozone Sonde + Total Ozone)	04	--	04
Surface Ozone (Electrochemical Concentration Cell method)	07	--	07
Nephelometer	12	--	11
Sky Radiometer	20	--	19
Black Carbon Monitoring Systems (Aethalometer)	25	--	23
System of Air Quality Monitoring System (SAFAR)	10 (Delhi) 10 (Mumbai) 10 (Ahmedabad)	--	09 (Delhi) 10 (Mumbai) 10 (Ahmedabad)
Hydromet. (Indian Meteorological Department (IMD)& Extra-departmental excluding AWS &ARG)	---	--	3046
Aviation	79	--	79
Radiation Stations	46	---	46

* Out of Total 724, 371 are outlived.

** Out of total 1363, 932 are outlived.

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

Modelling

National Centre for Medium Range Weather Forecasting (NCMRWF) provided coupled model based Extended Range Prediction (ERP) up to next four weeks to Space Applications Centre (SAC) / Indian Space Research Organisation (ISRO), Snow and Avalanche Study Establishment (SASE) / Defence Research and Development Organisation (DRDO), Indian Air Force (IAF), Navy, Geological Survey of India (GSI), National Institute of Hydrology (NIH) and Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) countries. Weekly anomaly of snow forecasts was sent to SASE/DRDO.

Monthly Weather Summary (April 2021)

a) Important Weather Events during the month

Low Pressure Systems: A low pressure area formed over southeast Bay of Bengal (BoB) & adjoining south Andaman Sea in the early morning of 31st March 2021 and caused light to moderate rainfall at most places over Andaman Islands. Ten Western Disturbances and four induced cyclonic circulations have affected northwest India during April 2021 and caused fairly widespread to widespread rainfall/snowfall/thunderstorm activity over Western Himalayan Region, Northwest India and northern parts of Central India, Peninsular India, Tamil Nadu, Puducherry & Karaikkal and Kerala & Mahe, Telengana, North Interior Karnataka, Madhya Maharashtra, Marathwada, Vidarbha and Chhattisgarh, Northeast India and adjoining areas of East India. Dust raising winds had been reported from parts of Rajasthan during the first week of the month.

Heat Wave: Heat wave to Severe heat wave conditions prevailed at many places over South Coastal Andhra Pradesh, northern parts of Tamil Nadu, East and west Rajasthan, Puducherry & Karaikkal, Gangetic West Bengal, Coastal areas of Odisha, Haryana, Chandigarh, Delhi, Madhya Pradesh and Vidarbha, Telengana, Rayalaseema, southern parts of Uttar Pradesh and Saurashtra & Kutch during the month.

b) Rainfall Scenario: The rainfall for the country as a whole for the month of April 2021 has recorded as 31.0 mm which is 79% of its Long Period Average (LPA) of 39.3 mm.

c) Heavy Rainfall Events:

Warning issued for	No. of Heavy/Very Heavy Rainfall Events (>64.4 mm): 0
	Percentage correct (in %) for Rainfall >64.4mm
Day1 / 24 Hours	-

Day2 / 48 Hours	-
Day3 / 72 Hours	-

d) Temperature Scenario: The Mean Temp for the month of April 2021 for the country as a whole was 28.4°C; which was near normal by 0.38°C. The highest maximum temperature of 45.2°C had been recorded at Banda (East Uttar Pradesh) on 28th April 2021 and the lowest minimum temperature of 4.8°C had been recorded at Pantnagar (Uttarakhand) on 3rd April 2021 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	TS Days	Date of Maximum TS Activity	Hail Events	Squall Events
1.	South Peninsular India	Nil	Nil	01(Media-Humchadakatte on 27-04-21)	Nil
2.	Northwest India	Nil	Nil	01(Kupwara on 05-04-21) 01(Pahalgam on 18-04-21) 01(Bikaner-Media on 20-04-21) 01 (MO Shimla on 21-04-21) 01(Tehri on 23-04-21) 01 (Mukteshwar on 24-04-21)	01(Ambala on 29-04-21)
3.	Northeast India	Nil	Nil	01(Dibrugarh on 01-04-21) 01(Passighat on 02-04-21) 01(Tezpur on 03-04-21) 01(Guwahati on 13-04-21) 01(Dhubri on 18-04-21) 01(Guwahati on 28-04-21)	01(Dibrugarh on 01-04-21) 01 (N/Lakhimpur on 04-04-21) 01(Agartala on 17-04-21) 01(Guwahati on 18-04-21) 01(Agartala on 21-04-21)
4.	East India	Nil	Nil	02(Diamond Harbour, Haldia on 04-04-21) 01(Alipore on 05-04-21) 02(Coochbehar, Keonjhar on 08-04-21) 01(Coochbehar on 10-04-21) 01(Gangtok on 14-04-21) 02(Pakyong, Darjeeling on 15-04-21) 05(Gangtok, Tadong, Pakyong, Darjeeling, Jalpaiguri on 16-04-21) 03(Gangtok, Coochbehar, Jalpaiguri on 18-04-21) 01(Jalpaigudi on 22-04-21) 03(Gangtok on 26-04-21, 28-04-21 & 30-04-21)	01(Sriniketan on 04-04-21) 01(Paradeep on 18-04-21)

5.	Central India	Nil	Nil	Nil	02(Nagpur, Raipur-Mana on 10-04-21) 01(Nagpur on 14-04-21)
6.	West India	Nil	Nil	02(Media-Beed, Kagal on 26-04-21) 01(Mahabaleshwar on 27-04-21) 02(Kolhapur, Media Osmanabad on 29-04-21)	01(Ahmedabad on 27-04-21)

Bulletins/Warnings/Press Releases Issued:

All India Weather Bulletins:- 120, All India inference and severe weather warnings:- 120, All India Weekly Weather Reports:- 5, Mountain weather bulletins including severe weather warnings for Western and Central Himalayan region:- 60, Marine Weather Bulletins:- 60, Nowcast Guidance Bulletins for severe weather:- 30, Tropical Weather Outlook to WMO/ WSCAP Panel member countries for the north Indian Ocean:- 30, Bulletins of the Severe Weather Forecast Programme (SWFP):- 30, Extended range outlook on Cyclogenesis:- 5, FDP bulletin for winter weather system: 30.

Publications & Operational Reports:

- i) ENSO & Indian Ocean Dipole (IOD) Bulletin for the month of April 2021 and Seasonal Climate Outlook for South Asia for the month of April to July 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 07.04.2021, 14.04.2021, 21.04.2021 and 28.04.2021 and supplied for use in Agromet Advisory Services Bulletin. The same have also been uploaded in IMD Pune website.
- iii) 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.

Important Press Releases: IMD issued Press release on Long Range Forecast for the 2021 Southwest Monsoon Season Rainfall on 16th April 2021 through an online press conference chaired by Dr. M. Rajeevan, Secretary MoES in the presence of Dr. M. Mohapatra, DGM IMD. Forecast for Uttarakhand:- 5, Long Range Forecast for 2021 southwest monsoon rainfall: 2 (both in English & Hindi), Current Weather Status and Outlook for next two weeks:- 5, Nineteenth Session of South Asian Climate Outlook Forum (SASCOF-19) & Climate Services Users Forum Online Session, 26-28 April 2021: 1, Wet spell over South Peninsular India during 12th to 18th April and over northwest India / Western Himalayan region: 2, Depression over north Andaman Sea & neighbourhood: 1.

Seismological Observational Network

Observation Type	Target	Commissioned so far	Data reporting during the month
Seismic stations	115	115	105
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: 135 earthquakes were monitored in the Indian region out of which 4 events were greater than magnitude (M) of 5.0.

Tsunami: 0 seabed earthquakes (M> 6) with a potential to generate tsunami occurred.

Ocean Observation System

Type of Platform	Target	Commissioned till April, 2021	Data received during April, 2021
Argo Floats *	200	374	110

Moored Buoys	16	19	12
Tide Gauges	36	36	32
High Frequency (HF) Radars	10	12	10
Acoustic Doppler Current Profiler (ADCP)	20	20	18
Tsunami Buoys	4	7	3
Wave Rider Buoy	23	16	12

*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)	29
2	Tuna Fishing Advisories	28
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

National Centre for Polar and Ocean Research (NCPOR) celebrated its Foundation Day virtually on 5th April, 2021. Prof. Steven L. Chown from Monash University, Australia delivered a Foundation Day lecture entitled 'Collaborative International Antarctic Research and Our Coming Future'. Around 250 participants attended the lecture online.

NCPOR has organised a webinar series- Indian Polar and Ocean Mission from April 30 to June 4, 2021 to celebrate the 75 years of India's Independence in 2022 as a part of Azadi ka Amrit Mahotsav.

IITM, Pune celebrated Earth Day 2021 on 22 April 2021.

National Centre for Earth Science Studies (NCESS) organized a one-day webinar on "Invited Lectures on Recent Advances in Atmospheric Sciences" on 30th April 2021 as a part of 'Bharat ka Amrut Mahotsav' programme.

A one-week online training course on "Fishery Oceanography for Future Professionals" was conducted by International Training Centre for Operational Oceanography (ITCOcean), Indian National Centre for Ocean Information Services (INCOIS). Total one hundred and forty (140) participants attended this online course during 19-23, April 2021.

Publications

Subject	Publications			Ph.Ds		
	April 2020 - March 2021	April, 2021	Total	April 2020 - March 2021	April, 2021	Total
Atmospheric Sciences	255	25	280	4	1	5
Ocean Science and Technology	120	9	129	2	0	2
Polar Sciences	56	5	61	1	0	1
Geosciences and resources	57	6	63	0	0	0
Total	488	45	533	7	1	8

Utilization of Ocean Research Vessels during the month

Vessel	Days at Sea / Utilization	Maintenance/ Inspection /Scientific Logistics / Cruise Preparation	No. of Cruise
Sagar Nidhi	30	0	1
Sagar Manjusha	0	30	0
Sagar Tara	6	24	1
Sagar Anveshika	9	21	1

Sagar Kanya	29	1	1
Sagar Sampada	0	30	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 May, 2021

CERTIFICATE

(FOR THE MONTH OF MAY, 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 April, 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 | - 11 |
| 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 |

(Anju Bhalla)

Joint Secretary

js@moes.gov.in