

Ministry of Earth Sciences (MoES)

Summary of Important Developments –July,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
20	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

Important policy decision taken and major achievements:

- MoES celebrated its 15th Foundation Day on 27th July 2021. Dr. Jitendra Singh, Hon'ble Union Minister of State (Independent Charge) Science & Tech; (Independent Charge) Earth Sciences; Minister of State - Prime Minister's Office, Personnel, Public Grievances and Pensions/ Department of Personnel & Training (DOPT), Atomic Energy, Space was the Chief Guest. Prof Petteri Taalas, Secretary General, World Meteorological Organisation, delivered the Foundation Day Lecture on “World Meteorological Organization (WMO), Disasters, Climate and 26th United Nations (UN) Climate Change Conference of the Parties (COP26)”. Dr. M. Rajeevan, Secretary, MoES delivered the welcome address and announcement of MoES National Awards was done by Ms Indira Murthy, Joint Secretary, MoES. Hon'ble Minister Dr. Jitendra Singh inaugurated the Earth Sciences Data portal.
- A water quality buoy was deployed by National Centre for Coastal Research (NCCR) in the coastal water off Puducherry at 10m depth (~1.5 km from the coast) on 27.07.2021. The Chief Minister of Puducherry dedicated this buoy to the nation on 28.07.2021.
- Secretary, MoES launched web portal developed by India Meteorological Department (IMD) for urban Met. Services over Delhi on 30th July 2021.
- An agreement was signed between the Secretary-General of the WMO and the Director of IITM, to host an International Monsoons Project Office (IMPO) at the Institute for five years with effect from 30th July 2021.
- Dr. M. Rajeevan, Secretary, MoES superannuated from service on 31.07.2021.

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)	352*		352
Automatic Rain Gauge (ARG)	405**	--	405
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	--	14
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)	---	--	3243
Aviation	79	--	79
Radiation Stations	46	---	46

* Out of Total 726, 374 are outlived.

** Out of total 1370, 965 are outlived.

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

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

Modelling

During July 2021, 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 were provided in real-time to (i) Long-range forecast and Agri-Met divisions of IMD, (ii) 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) and (ix) Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) countries Met Departments. Weekly snow forecasts were also sent to SASE for use at their end.

NCMRWF is providing support to the Integrated Flood Warning System (iFLOWS) Mumbai program of MoES during the monsoon of 2021. Real-time verification of the rainfall forecasts over Mumbai were generated for the period 21/06/2021 – 20/07/2021.

Monthly Weather Summary (July 2021)

a) Important Weather Events during the month

Low Pressure Systems:Four low pressure areas have been formed during the month on 11, 12, 22 & 27th July 2021 over West central & adjoining Northwest Bay of Bengal off north Andhra Pradesh-south Odisha coasts-1, South Gujarat & adjoining Northeast Arabian Sea-1, Northwest Bay of Bengal & neighbourhood-2 respectively and caused fairly widespread to widespread rainfall/thunderstorm activity over parts of Central India, East & Northwest India, Telangana and Western Himalayan Region.

Movement of Western Disturbances and a cyclonic circulation in the lower tropospheric levels over North Pakistan and neighbourhood have caused fairly widespread to widespread rainfall/thunderstorm activity over Jammu Kashmir, Ladakh, Himachal Pradesh, Haryana, Chandigarh, Delhi, Punjab, Uttarakhand, Western Himalayan Region.

Heat Wave:Heat wave to severe heat wave conditions at isolated places had occurred over Haryana, Chandigarh, Delhi, Punjab, Uttar Pradesh, West Madhya Pradesh and West Rajasthan during the month.

b) Rainfall Scenario: The rainfall for the country as a whole for the month of July 2021 has been recorded as 266mm which is 93% of its Long Period Average (LPA) of 285.3mm.

c) Heavy Rainfall Events:

Warning issued for	No. of Heavy/Very Heavy Rainfall Events (>64.4 mm): 543
	Percentage correct (in %) for Rainfall >64.4mm
Day1 / 24 Hours	73%
Day2 / 48 Hours	70%
Day3 / 72 Hours	70%

d) Temperature Scenario: The mean temperature for the month of July 2021 for the country as a whole was 28.52⁰C, which was above normal by 0.55⁰C. The maximum temperature of 45.5⁰C had been recorded at Ganganagar (West Rajasthan) on 7th July 2021 and the minimum temperature of 15.8⁰C had been recorded at Coonoor (Tamil Nadu) on 19th July 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	Dust storms
1.	South Peninsular India	27	8 July	Nil	Nil	Nil
2.	Northwest India	31	19 July	Nil	Nil	2 {Bikaner-1(11 July), Sriganganagar-1(12 July), Jaisalmer-1 (14 July)}
3.	Northeast India	30	23July	Nil	Nil	Nil
4.	East India	31	8 July	Nil	11 {Port Blair-11 (18July- 2, 19July-3, 20July-2, 21July-2, 26July-2)}	Nil
5.	Central India	29	8 July	Nil	Nil	Nil

6.	West India	15	13 July	Nil	1 {Ahmedabad-1 (12 July)}	Nil
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Bulletins/Warnings/Press Releases Issued:

All India Weather Bulletins:-124, All India inference and severe weather warnings:-124, All India Weekly Weather Reports:-5, Mountain weather bulletins including severe weather warnings for Western and Central Himalayan region:-62, Marine Weather Bulletins:-62, Nowcast Guidance Bulletins for severe weather:-31, Special Daily Weather Report for monsoon season 2021: 31, Bulletins of the Severe Weather Forecast Programme (SWFP):-31, Tropical Weather Outlook to WMO/WSCAP Panel member countries or the north Indian Ocean:-31, Extended range outlook on Cyclogenesis (Weekly basis on every Thursday):-5.

Publications & Operational Reports:

- i) El Niño/ Southern Oscillation (ENSO) bulletin for the month of July 2021 and Seasonal Climate Outlook for South Asia for the period of July to October 2021 were issued.
Quick Link: www.imdpune.gov.in/Clim_Pred_LRF_New/Products.html
- ii) Monthly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the month ending June 2021 for use in Climate Diagnostic Bulletin of India. The same have also been uploaded in IMD Pune website.
- iii) Four weekly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the weeks ending 07.07.2021, 14.07.2021, 21.07.2021 and 28.07.2021 and supplied for use in Agromet Advisory Services Bulletin. The same have also been uploaded in IMD Pune website.
- iv) Daily All India Weather Summary and Weekly Weather Reports are being brought out on routine basis.
- v) Computed gridded SPI & Standardized Precipitation Evapotranspiration Index (SPEI) at 0.5*0.5degree 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.
- vi) Climate Diagnostic Bulletin for the month of April and May 2021 has been published.

Important Press Releases: Southwest Monsoon Rainfall Forecast for the Month of July, 2021: 2 (in Hindi & English), Southwest Monsoon (entire country coverage: 1), Fresh spell of heavy rainfall activity over northern parts of India from 17th July and continuation of ongoing enhanced rainfall activity along the west coast till 19th July: 1, Intense wet spell over Central and adjoining plains of Northwest India (west Madhya Pradesh and East Rajasthan) during 30th July-04th August 2021, Reduction of rainfall over eastern parts of India from 31st July 2021.

Seismological Observational Network

Observation Type	Target	Commissioned so far	Data reporting during the month
Seismic stations	115	124	102
GPS stations	40	20#	-

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

Earthquake and Tsunami monitoring

Earthquake: 93 earthquakes were monitored in the Indian region out of which 7 events were greater than the magnitude (M) of 5.0.

Tsunami: 2 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 July, 2021	Data received during July, 2021
Argo Floats *	200	374	103
Moored Buoys	16	19	14
Tide Gauges	36	36	31
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	9

*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)	28
2.	Tuna Fishing Advisories	17
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)	31
5.	Coral Bleaching Alert System	10

Outreach and Awareness

- The subcommittee for the technology preparedness for National disasters on “Cloudbursts”, appointed by the expert committee for preparing the nation for all kinds of national disasters, held a meeting on 13th May 2021 and prepared the final draft policy for submission to the expert committee. The policy report identified the gap areas and knowledge gaps extended 12 recommendations for the preparedness against ‘Cloudbursts’.
- Two days virtual workshop on deep water manned submersible was conducted with potential scientific community and industry during 15th & 16th July 2021.
- SwachhataPakhwada Celebrations have been conducted at all MoES Institutes.
- Dr. M. Mohapatra, Director General of Meteorology (DGM), IMD addressed Press Conference on Long Range Forecast of southwest monsoon season and participated in live discussion with the media persons on 1st July and also released Southwest Monsoon Rainfall Forecast for the Month of July, 2021.
- Dr.R. Venkatesan, Scientist G, National Institute of Ocean Technology (NIOT) is registered as a Chartered Marine Technologist and is a part of an elite group of members of the Marine Technology Register at Marine Technology Society (MTS), Society for Underwater Technology (SUT) and the Institute of Marine Engineering, Science and Technology (IMarEST) and to have title “CMarTech” to his post nominal. This recognition is from a prestigious Institution in United Kingdom, IMarEST founded 1889, Incorporated by Royal Charter 1933.
- A training course on "Principles of Ocean remote sensing & its applications" was conducted by International Training Centre for Operational Oceanography (ITCOcean), Indian

National Centre for Ocean Information Services (INCOIS), Hyderabad during 26-30, July 2021. Total there hundred and twenty eight (328) participants (including 175 foreign nationals) attended this online course.

- DGM, IMD attended the following Interviews:
 - Bloomberg TV on southwest monsoon on 5th July.
 - Reuters on southwest monsoon on 6th July.
 - News Rise on southwest monsoon on 8th July.
 - Ershot Media Group on southwest monsoon on 13th July.
 - The Indian Express on the subject “Weather forecasting and climate change” on 28th July.
 - KrishiJagran media group on southwest monsoon on 29th July.
- Webinar on "An Observing System Simulation Experiment for Indian Ocean surface partial pressure of carbon dioxide (pCO₂) measurements" was organized by International Training Centre for Operational Oceanography (ITCOcean), INCOIS, Hyderabad. In total one hundred and one (101) participants (including 20 foreign nationals) attended the online talk.
- INCOIS facilitated sea state data and advice to the sea trial of Tug 'Veeran' of Hindustan Shipyard Limited (Visakhapatnam) off Visakhapatnam coast during July 16-31, 2021.
- INCOIS provided support to the Andhra Pradesh Disaster Recovery Project (APDRP) of the Government of Andhra Pradesh with the RSS (Really Simple Syndication) feeds on the High Wave Alerts for Andhra Pradesh coast.
- The Second IITM Monsoon discussion seminar with a focus on “Advance of monsoon 2021” was organised on 16 July 2021 via <https://youtu.be/jBiE-BDOFYA>.
- WMOS2S Working Group and the International Climate and Ocean: Variability, Predictability and Change (CLIVAR) Monsoon Project Office (ICMPO) with the active support from IITM organized One day Webinar on “sub-seasonal to seasonal (S2S) forecast and its applications in South” on 28 July 2021 via <https://youtu.be/-A15D1pl0BY>.
- IITM Special Lecture in Marathi was delivered by Dr. A.A. Deo, Scientist-E, IITM on "हवामानबदलांमुळेउष्णदेशीयचक्रीवादळावरहोणारेपरिणाम: निरिक्षणेवअनुमान (Changes in tropical cyclones due to climate change) on 28 July 2021. <https://youtu.be/hkKjsj3bmw8>.
- An online workshop “Meteorological Forecast for Wind and Solar Energy Generation: Current Status and Future Perspective” was arranged on 14 July 2021, Organized by IITM, Pune jointly with MoES, IMD, NCMRWF. <https://youtu.be/qaF7AgzTVJ8>.
- In the new Nature Index for Earth & Environmental Sciences, IITM study is ranked among the top.

Publications

Subject	Publications			Ph.Ds		
	April, 2021 – June 2021	July, 2021	Total	April, 2021 – June 2021	July, 2021	Total
Atmospheric Sciences	69	21	90	3	1	4
Ocean Science and Technology	29	4	33	-	1	1
Polar Sciences	17	4	21	-	-	-
Geosciences and resources	24	16	40	-	-	-
Total	139	45	184	3	2	5

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
SagarManjusha	0	31	0
Sagar Tara	14	17	1
SagarAnveshika	0	31	0
SagarKanya	3	28	1
SagarSampada	0	31	0

Annex II

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

Prithvi Bhavan, Lodhi Road
New Delhi-110 003

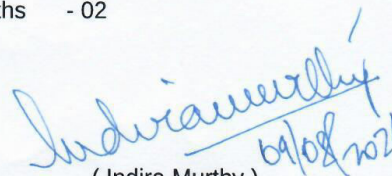
Dated, the 09 August, 2021

CERTIFICATE

(FOR THE MONTH OF JULY, 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 July, 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 | - 01 |
| d. Number of posts under additional charge arrangement | - 01 |
| e. Number of posts that would fall vacant during the next 6 months | - 02 |



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