

Ministry of Earth Sciences (MoES)

Summary of Important Developments –August, 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
15	27

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:

- Rainfall over the country as a whole during the second half (August to September period) of the 2021 southwest monsoon season is most likely to be normal (95 to 105 % of Long Period Average (LPA)) with a tendency to be in the positive side of the normal.
- Joint OMNI-RAMA Indian Ocean Data Portal developed by INCOIS jointly with NIOT and PMEL-NOAA was launched during the signing ceremony of the RAMA-OMNI Indian Ocean Moored Buoy Array Implementing Arrangement between NOAA and MoES on 9 August 2021. Dr. Ashutosh Sharma, Secretary MoES launched the portal in the presence of Mr. Craig McLean, Assistant Administrator for Research and Acting Chief Scientist NOAA.
- Indian Tsunami Early Warning Centre (ITEWC), INCOIS has detected an earthquake of Magnitude 7.4 at South Sandwich Islands Region (South Atlantic Ocean) occurred on 13 August 2021 at 00:02 hrs IST and NO THREAT bulletins were issued to India and Indian Ocean countries. A minor tsunami was observed with a maximum sea level of 64 cm at King Edward point tide gauge (SAO) and 48 cm at Marion Island in the Indian Ocean.
- Dr. Jitendra Singh, Hon'ble Minister of State (IC), Ministry of Science & Technology and Earth Sciences visited Ministry of Earth Sciences (MoES) for rendering of National Anthem by Indian Scientific Fraternity at Mahika Hall, MoES on 13th August, 2021. Senior officers participated in the event to commemorate "Azadi ka Amrit Mahotsav".

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)	337*		337
Automatic Rain Gauge (ARG)	389**	--	389
GPS Sonde based RS/RW (Radio Sonde/Radio Wind) Stations	56	--	56
Doppler Weather Radar (DWR)	28***	--	25
Ozone (Ozone Sonde + Total Ozone)	04	--	04

Surface Ozone (Electrochemical Concentration Cell method)	07	--	07
Nephelometer	12	--	12
Sky Radiometer	20	--	13
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)	---	--	3354
Aviation	79	--	79
Radiation Stations	46	---	46

* Out of Total 727, 390 are outlived.

** Out of total 1377, 988 are outlived.

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

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

Modelling

During August 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), (ix) All regional centres of IMD and (x) 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.

Monthly Weather Summary (August 2021)

a) Important Weather Events during the month

Low Pressure Systems: Three low pressure areas have been formed during the month on 1, 16 & 28th August 2021 over southeast Uttar Pradesh-1, West central & adjoining Northwest Bay of Bengal off north Andhra Pradesh- south Odisha coasts-1, Northwest and adjoining West central Bay of Bengal off south Odisha-north Andhra Pradesh coasts-1 respectively and caused fairly widespread to widespread rainfall/ thunderstorm activity over parts of Central India, East & Northwest India and South India.

b) Rainfall Scenario: The rainfall for the country as a whole for the month of August 2021 has been recorded as 196.2mm which is 76% of its Long Period Average (LPA) of 258.2mm.

c) Heavy Rainfall Events:

Warning issued for	No. of Heavy/Very Heavy Rainfall Events (>64.4 mm): 450
	Percentage correct (in %) for Rainfall >64.4mm
Day1 / 24 Hours	75%

Day2 / 48 Hours	74%
Day3 / 72 Hours	74%

d) Temperature Scenario: The mean temperature for the month of August 2021 for the country as a whole was 28.07⁰C, which was above normal by 0.52⁰C. The maximum temperature of 43.4⁰C had been recorded at Agra (West Uttar Pradesh) on 22 & 29th August 2021 and the minimum temperature of 17⁰C had been recorded at Narsinghpur (East Madhya Pradesh) on 7th August 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	27 August	Nil	Nil	Nil
2.	Northwest India	31	9 August	Nil	Nil	Nil
3.	Northeast India	24	7 August	Nil	Nil	Nil
4.	East India	30	27 August	Nil	1 (Port Blair on 2 August)	Nil
5.	Central India	26	30 August	Nil	Nil	Nil
6.	West India	5	--	Nil	1 (Ahmedabad on 17 August)	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, Mountain weather bulletins including severe weather warnings for Western and Central Himalayan region:-62, Expedition forecast bulletins issued for Indo-Tibetan Border Police (ITBP): 19, Expedition forecast bulletins issued for 14 Mech INF (Mechanised Infantry Regiments, Indian Army): 21, 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):-4.

Publications & Operational Reports:

- i) India Meteorological Department (IMD) has released Southwest Monsoon Rainfall Forecast for the Month of August, 2021 on 2nd August 2021 through a Virtual Press Conference. It started with a presentation by Dr. M. Mohapatra, Director General of Meteorology, IMD followed by interaction with the media.
- ii) Monthly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the month ending July 2021 for use in Climate Diagnostic Bulletin of India. The same have also been uploaded in IMD Pune website.

- iii) ENSO bulletin for the month of August 2021 and Seasonal Climate Outlook for South Asia for the period of August to November 2021 were issued.
(Quick Link: www.imdpune.gov.in/Clim_Pred_LRF_New/Products.html)
- iv) Four weekly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the weeks ending 04.08.2021, 11.08.2021, 18.08.2021 and 25.08.2021 and supplied for use in Agromet Advisory Services Bulletin. The same have also been uploaded in IMD Pune website.
- v) Daily All India Weather Summary and Weekly Weather Reports are being brought out on routine basis.
- vi) 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.
- vii) Dissemination of Agromet Advisories to the users' community through SMS and IVR technology is being continued in the country through Kisan Portal and under PPP mode. At present Agromet Advisories are reaching to 25.39 million farmers in the country through SMS directly.
- viii) Statement of Climate in 2020, Regional Climate, South Asia published in Bulletin of American Meteorological Society. Authors: Dr. O. P. Sreejith, A. K. Srivastava
- ix) Nine (9) research paper accepted for publication in MAUSAM Journal and Twenty Two (22) new papers received for consideration for publication.
- x) Climate Diagnostic Bulletin for the month of June 2021 and Pre monsoon season 2021 has been published.

Important Press Releases: India Meteorological Department (IMD) has released Southwest Monsoon Rainfall Forecast for the Month of July, 2021. Total 35 Press Releases were issued by IMD during the month.

Seismological Observational Network

Observation Type	Target	Commissioned so far	Data reporting during the month
Seismic stations	115	150	130

Earthquake and Tsunami monitoring

Earthquake: 198 earthquakes were monitored in the Indian region out of which 12 events were greater than the magnitude (M) of 5.0.

Tsunami: 6 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 August, 2021	Data received during August, 2021
Argo Floats *	200	374	96
Moored Buoys	16	19	12
Tide Gauges	36	36	31
High Frequency (HF) Radars	10	12	12
Acoustic Doppler Current Profiler (ADCP)	20	20	18
Tsunami Buoys	4	7	3
Wave Rider Buoy	23	16	7

*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	27
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)	31
5.	Coral Bleaching Alert System	10

Outreach and Awareness

- DGM, IMD presented the 3rd stage update on the long-range forecast for second half of southwest monsoon season and the month of August. Also addressed the media persons live after the press release. The press briefing is available at You Tube Link: <https://youtu.be/qHV60HwNbjg>.
- The latest global model forecasts indicate that the prevailing neutral ENSO conditions are likely to continue over the equatorial Pacific Ocean. However, sea surface temperatures over central and east equatorial Pacific Ocean is showing cooling tendency and there is an increased possibility of re-emergence of the La Nina condition in the end of the monsoon season or thereafter.
- A Refresher Course on "Impact Based Weather Services" was organized online on 30th August to 3rd September, 2021 as part of capacity building at IMD.
- IMD issued daily weather forecasting video of about 5 minutes duration in English & Hindi through YouTube, Facebook, Twitter and IMD website.
- DD Shillong interviewed DGM IMD on 4th August 2021 on southwest monsoon.
- Correspondent of Russian TV interviewed DGM IMD on 04th August, 2021 regarding southwest monsoon rainfall in India.
- Correspondent from Thomson Reuters interviewed DGM IMD on 06th August, 2021.
- IANS, Journalist Ms. Nivedita Khandekar interviewed DGM IMD on 11th August, 2021 regarding southwest monsoon.
- DGM IMD was interviewed by Environment Journalist Mr. Ishaan Kukreti regarding evolution of IMD on 18th August, 2021.
- DGM IMD was interviewed by Mr. Pawan Kumar of Newsrise on 24th August, 2021 regarding southwest monsoon rainfall.
- The Indian National Centre for Ocean Information Services (INCOIS), MoES, and the National Institute of Disaster Management (NIDM), MHA, Govt. of India, jointly organizing a Webinar on "Tsunami Risk Reduction and Resilience" on 10 August 2021. INCOIS Scientist, Mr. Ch. Patanjali Kumar, Ms. M.V. Sunanda and Mr. B. Ajay Kumar made presentations on the Indian Tsunami Early Warning System, Guidelines for Tsunami Emergency Response SOPs, and Tsunami ready Programme.
- A specialized online training course was organized by International Training Centre for Operational Oceanography (ITCOcean), INCOIS, Hyderabad for Naval Hydrography Officers on "Advance Hydrography" on 18 August, 2021.

- A training course on "Fundamental of Ocean Data Management" was conducted by International Training Centre for Operational Oceanography (ITCOcean), INCOIS, Hyderabad, during 23-27, August 2021. Total one hundred and two (102) participants (including 70 foreign nationals) were attended the online training course.
- 75th Independence Day Celebrations was conducted at all MoES Institutes.
- An interview of Director, INCOIS broadcasted on August 7, 2021 at 10:10 AM (IST) in Telangana and Andhra Pradesh Regions on All India Radio (AIR) on the Progress made by India in the field of Ocean Information Services (Tsunami Early Warning, Ocean State Forecast, Potential Fishing Zone Advisories, etc).
- Shri. Biswajit Haldar, Sci- C, NIOT received best paper award for paper titled "Effect of Mooring Motion on Temperature Profile Measurements in OMNI Buoy Systems A Case Study" during OSICON 2021 Conference held during 12th-14th August 2021.
- Advanced Hydrography Course was organised for the Naval Officers of National Institute of Hydrography, Goa at NCPOR, Goa.
- The 18th International Conference on Clouds and Precipitation ICCP 2021 was organized by the International Commission on Clouds and Precipitation (ICCP) and hosted by IITM in virtual mode during 2-6 August 2021. The conference hosted 639 authors contributing to the conference from 32 countries. 120 participants from around the world. For the first time, a CAIPEEX cloud modelling case was represented in the International Cloud Modelling Workshop. ICCP Short Course on Radar was conducted on 7 August 2021. Day-wise sessions are made available on IITM YouTube channel: https://www.youtube.com/channel/UC_K_3pxWrgRCJ-RMF82IBJw/videos.
- A new publication which is probably the first of its kind that discusses many aspects of summer monsoon teleconnections with 23 chapters contributed by several authors. The book presents the improved understanding of Indian Monsoon teleconnections (ENSO and Non-ENSO), new advances, and preferred future steps. (<https://www.elsevier.com/books/indian-summer-monsoon-variability/chowdary/978-0-12-822402-1>).
- Embargoed media briefing event was held by IPCC on 8-9 August 2021 jointly by IPCC, IITM and Ministry of Earth Sciences (MoES), Govt. of India. The press conference of the IPCC AR6 WG1 report titled "Climate Change 2021: the Physical Science Basis" was released on 9 August 2021. Scientists addressed the media for IPCC Report on 9th August which was streamed through IPCC YouTube channel: <https://bit.ly/IPCCCLIVE> and on the IPCC Facebook page. The scientists also addressed media regarding IITM contributions towards IPCC Report vide IITM Press Meet organized jointly by IITM & MoES on 9th Aug 2021. Press Release is available on IITM website: <https://www.tropmet.res.in/other-pdfs/Media-IITM-MoES.pdf>.
- 'Fit India Freedom Run 2.0' as a part of 'Azadi ka Amrit Mahotsav – India at 75' has been organized by all MoES Institutes and it was an initiative by the Ministry of Youth affair and Sports.

Publications

Subject	Publications			Ph.Ds		
	April, 2021 – July 2021	August, 2021	Total	April, 2021 – July 2021	August, 2021	Total
Atmospheric Sciences	90	14		4		
Ocean Science and	33	6		1		

Technology					
Polar Sciences	21	7		-	
Geosciences and resources	40	9		-	
Total	184			5	

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	7	24	1
Sagar Anveshika	0	31	0
Sagar Kanya	6	25	1
Sagar Sampada	0	31	0

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

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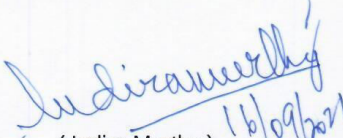
Dated, the 16th September, 2021

CERTIFICATE

(FOR THE MONTH OF AUGUST, 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 August, 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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