

Ministry of Earth Sciences (MoES)

Govt. of India

Summary of Important Developments – August, 2024

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):

As a part of Special Campaign 3.0, various activities were carried out under Swachhta Abhiyan during the month of August 2024 in MoES and its institutes.

6. Status of Rationalization of Autonomous Bodies:

The Cabinet in its meeting on 13th July 2022 approved the merging of 5 Autonomous Bodies under MoES to one Autonomous Body. An umbrella Autonomous Society 'Earth System Science Council (ESSC)' has been registered in the office of the Registrar of Societies under Govt of NCT of Delhi along with Memorandum of Association and Rules and Regulations of ESSC on 26th December 2023.

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 Appointments Committee of Cabinet (ACC) have been updated on ACC Vacancy Monitoring System (AVMS) and are placed at Annex-II.

9. List of cases in which ACC directions have not been compiled with:

It is confirmed that the directions of ACC are complied with.

10. Details of Foreign Direct Investment (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:

- The four-member Indian team comprising students from Gujarat, Kerala, Chhattisgarh, and Rajasthan won three gold and bronze each and two silver medals across three competition categories at the 17th edition of the International Earth Sciences Olympiad (IESO) held in Beijing, China.
- Monthly rainfall for September 2024 over the country as a whole is most likely to be above normal (>109 % of the Long Period Average (LPA)).
- El Niño-Southern Oscillation (ENSO) neutral conditions are observed currently over the equatorial Pacific. At present, neutral Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean and are likely to continue during the remaining period of the monsoon season.
- A Met Monograph on "Disastrous Weather Event 2023" was released on 26th August 2024.
- IMD signed a Memorandum of Understanding (MoU) with Reliance Foundation to enhance cooperation and collaboration between the two agencies.
- Faunal survey in the Andaman Sea on-board the Fishery Oceanographic Research Vessel Sagar Sampada revealed a rich diversity of coral reef-associated brachyuran crabs and reported four genera, *Singhaplax* Serène & Soh, 1976, *Cavoportunus* Nguyen & Ng, 2010, *Cyrtocarcinus* Ng & Chia, 1994 and *Visayax* Mendoza & Ng, 2008 occurring in Indian waters for the first time.
- INCOIS hosted maiden National Space Day 2024 events, including a workshop on the theme "Application of Space Technology for Earth System".
- INCOIS signed an MoU with the Directorate of Fisheries, Govt. of West Bengal, and Vidyasagar University to foster collaboration in ocean information services, research, and outreach.
- Dr. Shailendra Saini, Scientist, NCPOR was elected as the Vice-Chair of the Executive Committee of COMNAP (Council of Managers of National Antarctic Program) for a three-year term.
- IITM established Climate Data Archival and Distribution System (CDAS) for disseminating climate change projections generated from India using the IITM Earth System Model (IITM-ESM).

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 7.6 million farmers in the country are getting advisories 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)	1008*	--	770
Automatic Rain Gauge (ARG)	1382**	--	467
Agro AWS	200	--	176
Global Positioning System (GPS) Sonde based Radio-Sonde (RS)/ Radio-Wind (RW) stations	56	--	56
Doppler Weather Radar (DWR)	*** 41	--	33
Ozone (Ozone Sonde + Total Ozone)	02	--	02
Surface Ozone (Electrochemical Concentration Cell method)	09	--	05
Nephelometer	12	--	09

Observation Type	Commissioned so far	Installations during the month	Data Reporting
Sky Radiometer	20	--	13
Black Carbon Monitoring Systems (Aethalometer)	25	--	23
Air Quality Monitoring System (System of Air Quality and Weather Forecasting and Research (SAFAR))	10 (Delhi) 10 (Mumbai) 10(Ahmedabad)	--	10(Delhi) NIL(Mumbai)**** NIL(Ahmedabad)
Hydromet. (India Meteorological Department (IMD) & Extra-departmental excluding AWS & ARG)	---	--	4787
Aviation	108	--	107
Radiation Stations	47	---	47

* Out of Total 1008 commissioned, 238 are outlived.

** Out of total 1382 commissioned, 915 are outlived.

*** Including 2 Doppler Weather Radar of Indian Space Research Organization.

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

Modelling

Every 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) Defence Geo-informatics Research Establishment (DGRE), (v) Indian Air Force (IAF), (vi) Navy, (vii) Geological Survey of India (GSI), (viii) National Institute of Hydrology (NIH), (ix) All regional centers of IMD and (x) Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) countries Met Departments. Additionally, snow forecasts were provided to Defence Research and Development Organisation (DRDO) and IAF for use at their end. On the last Thursday of the month,

i.e., on 29th August 2024 the monthly mean forecast valid for September 2024 were also included for the users.

Monthly Weather Summary (August 2024)

a) Important Weather Events during the month

During Aug 2024, a total of six numbers of low-pressure systems formed over Indian region. Out of that, one became well marked low pressure area, one became Depression, one became Deep depression and another became cyclone. A Low-Pressure Area formed over Gangetic West Bengal on 31st July. It caused vigorous rainfall activity over Jharkhand, Bihar, South Uttar Pradesh, Madhya Pradesh and Rajasthan. A low-pressure area formed over northwest Bay of Bengal and adjoining areas of West Bengal and Bangladesh on 16th August 2024. It intensified into a cyclonic storm “ASNA” over northeast Arabian Sea off Kachchh and adjoining Pakistan coast on 30th August. Historical data of all Cyclonic Storm over Arabian Sea in the month of August during 1891-2023 shows this Cyclonic Storm “ASNA” over North Arabian Sea has been a rare activity. That of past 123 years for 1901-2021 shows a total of 3 cyclonic storms developed over the Arabian Sea in the years 1944, 1964 and 1976. Out of these, 2 developed from low pressure area over North Bay of Bengal and neighbourhood and 1 developed over Arabian Sea. Under the influence of the cyclonic circulation over east central Bay of Bengal & neighbourhood, a low pressure area formed over central and adjoining north Bay of Bengal on 29th August, 2024.

b) Rainfall Scenario:

The rainfall for the country as a whole, for the month of August-2024 has been recorded as 293.9 mm which is 115% of its Long Period Average (LPA) of 254.9 mm.

c) Heavy Rainfall Events:

Warning issued for	No. of Heavy/Very Heavy Rainfall Events (>64.4 mm): 306
	Percentage correct (in %) for Rainfall >64.4mm
Day1 / 24 Hours	74
Day2 / 48 Hours	70
Day3 / 72 Hours	67

d) Temperature Scenario:

The mean temperature for the month of August-2024 for the country as a whole was 27.79°C which was above normal by 0.45°C. That is 4th highest since 1901. The highest maximum temperature of 39.6°C had been recorded at Pokhran & Lunding (West Rajasthan & Assam) on 23rd & 30th August 2024 and the lowest minimum temperature of 16.8°C had been recorded at Dehri (Bihar) on 3rd August 2024 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.	Met Sub-Division	Thunderstorms Days	Hail Days	Squall Days	Dust storm
1.	Andaman & Nicobar Islands	4	0	0	0
2.	Arunachal Pradesh	7	0	0	0
3.	Assam & Meghalaya	21	0	0	0
4.	Nagaland, Manipur, Mizoram &	17	0	0	0
5.	Sub-Himalayan West Bengal &	23	0	0	0
6.	Gangetic West Bengal	26	0	0	0
7.	Odisha	28	0	0	0
8.	Jharkhand	29	0	0	0
9.	Bihar	21	0	0	0
10.	East Uttar Pradesh	30	0	0	0
11.	West Uttar Pradesh	19	0	0	0
12.	Uttarakhand	21	0	0	0
13.	Haryana Chandigarh & Delhi	25	0	0	0
14.	Punjab	18	0	0	0
15.	Himachal Pradesh	23	0	0	0
16.	Jammu & Kashmir and Ladakh	20	0	0	0
17.	West Rajasthan	21	0	0	0
18.	East Rajasthan	20	0	0	0
19.	West Madhya Pradesh	17	0	0	0
20.	East Madhya Pradesh	18	0	0	0
21.	Gujarat Region	11	0	0	0

S. No.	Met Sub-Division	Thunderstorms Days	Hail Days	Squall Days	Dust storm
22.	Saurashtra & Kutch	11	0	0	0
23.	Konkan & Goa	3	0	0	0
24.	Madhya Maharashtra	7	0	0	0
25.	Marathawada	0	0	0	0
26.	Vidarbha	19	0	0	0
27.	Chhattisgarh	29	0	0	0
28.	Coastal Andhra Pradesh & Yanam	23	0	0	0
29.	Telangana	17	0	0	0
30.	Rayalaseema	16	0	0	0
31.	Tamilnadu Puducherry & Karaikal	23	0	0	0
32.	Coastal Karnataka	6	0	0	0
33.	North Interior Karnataka	8	0	0	0
34.	South Interior Karnataka	13	0	0	0
35.	Kerala & Mahe	11	0	0	0
36.	Lakshadweep	7	0	0	0

Bulletins/Warnings/Press Releases Issued:

All India Weather Bulletins:- 124, All India inference and severe weather warnings:- 124, All India Weekly Weather Reports:- 5, Daily Tropical Weather Outlook with cyclogenesis forecast for next 5 days: 31, Daily Severe Weather Guidance for next 5 days under Severe Weather Forecasting Programme: 31, Daily Warnings for Fishermen in North Indian Ocean for next 5 days: 31, Fleet Forecast for Indian Navy for next 12 hours: 62, Bulletins for ships in deep sea under Global Maritime Distress Safety System for next 36 hours: 62, Mountain weather bulletins issued for western and central Himalayan region:- 62, Expedition Forecast bulletins issued for Mt. Kamet & Mt. Abi Gamin expedition by ITBP:- 31, Expedition Forecast bulletins issued for Siachen Glacier Trek by Army Adventure Wing:- 6, Expedition Forecast bulletins issued for Mt. Mukut East expedition by BSF:- 6, Nowcast Guidance Bulletins for Severe Weather:- 31, FDP STORM Bulletins: 31, Current Temperature Status and Heat Wave Warning bulletins:-31, Press Releases issued during the month:- 43, Daily Tropical Weather Outlook with cyclogenesis forecast for next 7 days: 31, Daily Severe Weather Guidance for next 5 days under Severe Weather Forecasting Programme: 31, Daily Warnings for Fishermen in North Indian Ocean for next 5 days: 31, Fleet

Forecast for Indian Navy for next 12 hours: 62, Bulletins for ships in deep sea under Global Maritime Distress Safety System for next 36 hours: 62.

Publications & Operational Reports:

1. Climate Summary for the month of July 2024 Issued.
2. Climate Diagnostic Bulletin for the month May, June and Pre-monsoon 2024 has been published and uploaded on the website.
3. ENSO bulletin for the month of August 2024 and Seasonal Climate Outlook for South Asia for the period of August to November 2024 were issued.

(Quick Link:

https://imdpune.gov.in/cmpg/Product/ENSO_Bulletin/ENSO_IOD_Update_Bulletin_08_24.pdf)

Seismological Observational Network:

Observation Type	Commissioned so far	Data reporting during the month
Seismic stations	157	112

Earthquake and Tsunami monitoring

Earthquake:

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

Tsunami:

3 seabed earthquakes (M>6.5) with a potential to generate tsunami have occurred during the month.

Ocean Observation System

Type of Platform	Commissioned till during the month	Data received during the month
Argo Floats	119	75
Moored Buoys	19	12
Tide Gauges	36	29
High Frequency (HF) Radars	10	7
Acoustic Doppler Current Profiler (ADCP)	20	17

Tsunami Buoys	7	4
Wave Rider Buoy	16	8

Ocean Science Services

S. No.	Types of forecasts	No. of advisories issued during the month
1.	Integrated Potential Fishing Zone (PFZ) advisories	31
2.	Tuna Fishing Advisories	7
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	11

Outreach and Awareness

- 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.).
- Daily interviewed was provided by the forecasters within the country.
- 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.
- India Meteorological Department organised 20th Annual Attachment Training for Tropical Cyclone Forecasters in 13 WMO/ESCAP Panel member countries (19-30 August). There were a total of 43 international participants with 9 joining in -person and remaining 34 joining online apart from the participants from India. The training aimed at building capacity of the cyclone forecasters in the region by understanding the latest developments in observations, monitoring, modelling, prediction and early warning services of cyclones over the Bay of Bengal and the Arabian Sea region.

- Delegates from Tamil Nadu Disaster Risk Reduction Agency (TNDRRA) visited NCMRWF on 27th August 2024, for a familiarization of ongoing research works at NCMRWF.
- MoES and its institutes celebrated the 78th Independence Day on 15th August 2024.
- Students/ faculties from various schools/ colleges/ universities/ institutes visited INCOIS and IITM.
- ITCOO-INCOIS organized a Training Session for Officials of Mauritius on 'PFZ & Operational Services' during July 29-Aug 2,2024.
- INCOIS issued the followings:
 - One hundred and sixty-nine (169) High wave/Swell Surge Alert/ Rough Sea Alert were issued to the West and East Coast of India, Andaman & Nicobar Islands.
 - Twirty-one (31) days forecasts as Regional Specialized Meteorological Centre (RSMC) for (i) Numerical Ocean Wave Prediction (wave and swells) and (ii) Global Numerical Ocean Prediction (currents, conservative temperature, MLD, absolute salinity) for the Indian Ocean.
 - Thirty-one (31) days ocean state forecasts to Pacific Islands (PI) and Colombo Security Conclave (CSC) Countries.
 - Weekly updates, including past week briefing and upcoming week forecast of Ocean State Forecast information (Wave, Wind, Current, Swell, Sea Surface Temperature) for Indian Ocean to South Asia Hydromet Forum (SAHF) which is administrated by RIMES.
 - Thirty-one (31) days Algal Bloom Information Service, and one day alert was generated.
 - Provided OSF consultancy services of wave and swell parameters at Mulapeta port location to M/s Vishwa Samudra.

Publications

Subject	Publications			Ph.Ds.		
	Apr - Jul 2024	Aug 2024	Total	Apr - Jul 2024	Aug 2024	Total

Atmospheric Sciences	35	13	48	2	2	4
Ocean Science and Technology	25	5	30	1	0	1
Polar Sciences	14	1	15	0	0	0
Geosciences and resources	11	3	14	6	0	6
Total	85	22	107	9	2	11

Utilization of Ocean Research Vessels during the month

Vessel	Days at Sea/ Utilization	Maintenance/ Inspection/ Scientific Logistics/ Cruise Preparation	No. of Cruises
Sagar Nidhi	28	3	3
Sagar Manjusha	18	13	2
Sagar Tara	8	23	1
Sagar Anveshika	9	22	1
Sagar Kanya	0	31	0
Sagar Sampada	4	27	1

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

Prithvi Bhavan, Lodhi Road
New Delhi-110 003
Dated, the 10th September, 2024

**CERTIFICATE
(FOR THE MONTH OF AUGUST, 2024)**

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, 2024. A summary of the status as on 31.08.2024 is given below:-

a. The total number of posts required to be entered on AVMS	–	13
b. Number of posts filled	–	11
c. Number of posts totally vacant	–	01
d. Number of posts under additional charge arrangement	–	01
e. Number of posts that would fall vacant during the next 6 months	–	00



(D. Senthil Pandiyan)
Joint Secretary

js@moes.gov.in
