

**Ministry of Earth Sciences (MoES)**  
**Govt. of India**  
**Summary of Important Developments – August, 2023**

**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):**

Routine cleaning of the campus.

**6. Status of Rationalization of Autonomous Bodies:**

The Cabinet in its meeting on 13<sup>th</sup> July 2022 approved the merging of 5 Autonomous Bodies under MoES to one Autonomous Body. Efforts are underway to implement the same.

**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 ACC have been updated on AVMS and are placed at Annex-II.

**9. List of cases in which ACC (Appointments Committee of Cabinet) directions have not been compiled with:**

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

**10. Details of FDI Proposals cleared during the month and status of FDI proposals awaiting approval in the Ministry/ Department:**

Not Applicable.

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**Important policy decision taken and major achievements:**

- Hon'ble Minister of Earth Sciences chaired a meeting on 21<sup>st</sup> August 2023 to discuss research action plans of each institution of MoES.
- The United Nation Ocean Decade Collaborative Centre for the Indian Ocean Region (DCC-IOR) was launched on 23<sup>rd</sup> August, 2023 at Indian National Centre for Ocean Information Services (INCOIS).
- The Eighth National Conference of Ocean Society of India (OSICON 23) was organised at the Indian National Centre for Ocean Information Services (INCOIS), Hyderabad during 23 – 25 August 2023.
- A Coastal Water Quality Buoy deployed by INCOIS at Visakhapatnam.
- INCOIS was designated as World Meteorological Organization-Regional Specialized Meteorological Centres (WMO-RSMC) for Numerical Ocean Wave Prediction & Global Numerical Ocean Prediction.
- As a part of Azadi Ka Amrit Mahotsav, three 'Mega Awareness Campaigns on Ocean Information and Advisory Services' were conducted in August by INCOIS. As a part of the campaign at Digha, inaugurated the "Coastal Station" of INCOIS & Coastal Observatory and Outreach Centre (COOC), Vidyasagar University were inaugurated.
- C-band radar at Solapur is made operational.
- Monthly rainfall for September 2023 over the country as a whole is most likely to be normal (91-109 % of Long Period Average (LPA)).
- Currently, weak El Niño conditions are prevailing over the equatorial Pacific region.
- Above normal maximum temperatures are likely over most parts of the country, except over some areas in south peninsular India and some pockets of west central India, where normal to below normal maximum temperatures are likely.
- During August 2023, country as a whole received 162.7 mm rainfall (deficient rainfall), which is 36% less than its Long Period Average (LPA) 254.9 mm.
- During August 2023, country experienced one exceptionally heavy rainfall event (> 204.4 mm of rainfall) were recorded mainly over Himachal Pradesh,

Uttarakhand, Assam & Meghalaya, Sub Himalayan West Bengal & Sikkim, Bihar, Odisha and East Madhya Pradesh.

- A total 197 fish and invertebrate samples were collected by Centre for Marine Living Resources and Ecology (CMLRE) from 2 fisheries harbors in Kerala (Kalamukku and Sakthikulangara) and 1 harbour in the Andaman.
- India Meteorological Department (IMD) signed a Memorandum of Understanding (MoU) with Indian Institute of Science Education and Research Pune (IISER), Pune on 4<sup>th</sup> May 2023 to promote research and development between the two organisations.
- IMD signed a MoU with Shiksha 'O' Anusandhan Deemed to be University, Bhubaneswar on 12<sup>th</sup> August 2023 to promote research and development between the two institutes.

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**

<b>Observation Type</b>	<b>Commissioned so far</b>	<b>Installations during the month</b>	<b>Data Reporting</b>
Automatic Weather Station (AWS)	*491	--	491
Automatic Rain Gauge	**447	--	447

Observation Type	Commissioned so far	Installations during the month	Data Reporting
(ARG)			
Agro AWS	200	--	193
GPS Sonde based RS/RWStns.	56	--	56
Doppler Weather Radar (DWR)	***40	--	35
Ozone (Ozone Sonde + Total Ozone)	02	--	02
Surface Ozone (Electrochemical Concentration Cell method)	07	--	05
Nephelometer	12	--	09
Sky Radiometer	20	--	17
Black Carbon Monitoring Systems (Aethalometer)	25	--	19
Air Quality Monitoring System (SAFAR)	10 (Delhi) 10 (Mumbai) 10 (Ahmedabad)	--	09 (Delhi) ****NIL (Mumbai) NIL (Ahmedabad)
Hydromet. (IMD & Extra-departmental excluding AWS & ARG)	---	--	3142
Aviation	99	--	99
Radiation Stations	47	---	47

\* Out of Total 808 commissioned, 317 are outlived.

\*\* Out of total 1382 commissioned, 935 are outlived.

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

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

## Modelling

During August 2023, 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 (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 centres 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 31<sup>st</sup> August 2023 the monthly mean forecast valid for August 2023 were also included for the users.

### **Monthly Weather Summary (August 2023)**

#### **a) Important Weather Events during the month**

##### Low Pressure Systems:

A total of 5 Western Disturbances (WDs) (1-6, 7-9, 13-16, 16-20 and 21-30 Aug 2023) affected weather over north India. These caused very heavy to extremely heavy rainfalls and floods mainly during 7-16 Aug and 21-22 Aug by triggering southerly/ south-westerly winds from Arabian Sea. A cyclonic circulation laid over North Odisha and adjoining Gangetic West Bengal on 29th July. Under its influence, a low pressure area formed over the same region. The system and its remnant cyclonic circulation caused intense rainfall activity over east and central parts of India (Odisha, Jharkhand, Chhattisgarh, Madhya Pradesh, Bihar and Gangetic West Bengal) during 31st July to 8th August and caused Riverine and Flash Floods over these areas.

#### **b) Rainfall Scenario:**

The rainfall for the country as a whole, for the month of August-2023 has been recorded as 162.7 mm which is 64% of its Long Period Average (LPA) of 254.9 mm.

#### **c) Heavy Rainfall Events:**

<b>Warning issued for</b>	<b>No. of Heavy/Very Heavy Rainfall Events (&gt;64.4 mm): 306</b>
	<b>Percentage correct (in %) for Rainfall &gt;64.4mm</b>
Day1 / 24 Hours	80

Day2 / 48 Hours	80
Day3 / 72 Hours	80

**d) Temperature Scenario:**

The mean temperature for the month of August-2023 for the country as a whole was 28.4°C which was above normal by +0.9°C. The maximum temperature of 41.7°C had been recorded at Madurai (Tamilnadu) on 6th August 2023 and the minimum temperature of 17°C had been recorded at Chikmangaluru (South Interior Karnataka) on 27th August 2023 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	Thunder Storm Days	Hail Events	Squall Events	Dust storms
1.	South Peninsular India	22	Nil	Nil	Nil
2.	Northwest India	31	Nil	Nil	Nil
3.	Northeast India	23	Nil	Nil	Nil
4.	East India	24	Nil	Nil	Nil
5.	Central India	24	Nil	Nil	Nil
6.	West India	7	Nil	Nil	Nil

**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: 28, Special Tropical Weather Outlook during 1-3 August: 11, National Bulletin during 1-3 August: 11, Daily Severe Weather Guidance for next 5 days under Severe Weather Forecasting Programme: 31, Weekly Extended Range Outlook for Cyclogenesis for next 2 weeks: 5, 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 (Mt) weather bulletins issued for western and central Himalayan region:- 62, Expedition Forecast bulletins issued for Mt. Mana Expedition conducted by Indian Army (50(I) Parachute (PARA) Brigade): 6, Current Temperature Status and Heat Wave Warning bulletins:- 31, Press Releases issued during the month:- 39.

### **Publications & Operational Reports:**

1. Climate Summary for the month of July- 2023 issued.
2. El Nino Southern Oscillation (ENSO) bulletin for the month of August 2023 and Seasonal Climate Outlook for South Asia for the period of August to November 2023 were issued.  
(Quick Link: [www.imdpune.gov.in/Clim\\_Pred\\_LRF\\_New/Products.html](http://www.imdpune.gov.in/Clim_Pred_LRF_New/Products.html))
3. Digital Current Weather Indication System (DCWIS) and Present Weather Detector (PWD) systems were installed at Moradabad airport (Runway (RWY) 12) and Surat Airport (RWY 22).
4. PWD systems were installed at Mumbai airport (RWY 32), Juhu airport (RWY 08), Calicut airport (RWYs १० & २८) of MC Thiruvananthapuram and Salem (RWY 04), Coimbatore (RWY 23), Madurai (RWY 27) Under Regional Meteorological Centre (RMC), Chennai.
5. Twenty Three research papers were received and ten research papers were accepted by the Publication division.

### **Seismological Observational Network:**

<b>Observation Type</b>	<b>Commissioned so far</b>	<b>Data reporting during the month</b>
Seismic stations	153	123

### **Earthquake and Tsunami monitoring**

#### Earthquake:

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

#### Tsunami:



No seabed earthquake (M>6) with a potential to generate tsunami has occurred during the month.

### **Ocean Observation System**

<b>Type of Platform</b>	<b>Commissioned till during the month</b>	<b>Data received during the month</b>
Argo Floats	80	42
Moored Buoys	19	14
Tide Gauges	36	33
High Frequency (HF) Radars	10	8
Acoustic Doppler Current Profiler (ADCP)	20	17
Tsunami Buoys	7	2
Wave Rider Buoy	16	10

### **Ocean Science Services**

<b>S. No.</b>	<b>Types of forecasts</b>	<b>No. of advisories issued during the month</b>
1.	Integrated Potential Fishing Zone (PFZ) advisories (Sea Surface Temperature (SST), Chlorophyll., wind)	27
2.	Tuna Fishing Advisories	3
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	11

### **Outreach and Awareness**

- MoES and its institutes celebrated the Independence Day.
- India Meteorological Department (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 (upto 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.
- Essay writing and insta-reel making competitions were arranged at Modern College of Arts, Science & Commerce Pune, by IITM, Pune to increase awareness and motivate students on E-waste management on 22 August 2023.
- As a part of 'Har Ghar Tiranga - Azadi Ka Amrit Mahotsav', all employees of MoES recited National Anthem at Flag Post on 7 August 2023.
- Shruti Saini, IITM has been selected for Young Scientist Award in Wave Propagation and Remote Sensing at Union radio-scientific international/ International Union of Radio Science 2023, 19-26 August 2023, Sapporo, Japan.
- Students from various colleges/ institutes/ universities/ schools visited IITM & INCOIS.
- One hundred and fifty-nine (159) High wave/ Swell Surge Alert/ Rough Sea Alert were issued to West and East Coast of India, Andaman & Nicobar Islands by INCOIS.
- Thirty-one (31) days of Algal Bloom Information Service were issued.

### **Publications**

Subject	Publications			Ph.Ds		
	April 2023 – July 2023	August 23	Total	April 2023 – July 2023	August 23	Total
Atmospheric Sciences	56	10	66	7	-	7
Ocean Science and Technology	36	6	42	2	-	2
Polar Sciences	7	4	11	-	-	-
Geosciences and resources	18	6	24	2	2	4
<b>Total</b>	<b>117</b>	<b>26</b>	<b>143</b>	<b>11</b>	<b>2</b>	<b>13</b>

**Patents: 2**

**Utilization of Ocean Research Vessels during the month**

<b>Vessel</b>	<b>Days at Sea/ Utilization</b>	<b>Maintenance/ Inspection/ Scientific Logistics/ Cruise Preparation</b>	<b>No. of Cruises</b>
Sagar Nidhi	15	16	1
Sagar Manjusha	10	21	1
Sagar Tara	14	17	1
Sagar Anveshika	13	18	1
Sagar Kanya	0	31	0
Sagar Sampada	0	31	0

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

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'Prithvi Bhawan', Lodhi Road,  
New Delhi-110 003.  
Dated, the 12 September, 2023

**CERTIFICATE  
(FOR THE MONTH OF AUGUST, 2023)**

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, 2023. 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 posts under additional charge arrangement	-00
(e). Number of posts that would fall vacant during the next 6 months	-02

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