

# Ministry of Earth Sciences (MoES)

## Summary of Important Developments – June, 2022

- 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:** Discussed internally within MoES and directors of MoES autonomous institutions (ABs), and arrived a new proposal to merge all 5 ABs under one society. All existing ABs will function under one society. The final Cabinet note has been submitted for Cabinet approval.
- 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 also 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:

- An inter-ministerial delegation led by Union Minister of State (Ind. Charge) for Earth Sciences, Dr Jitendra Singh and constituting Secretary, MoES, JS, UNES, JS Fisheries, Director, NCCR and Programme Director, MoES visited Lisbon, Portugal for participation in the 2<sup>nd</sup> United Nations Oceans conference from June 27<sup>th</sup> to July 1<sup>st</sup> 2022 to support the Implementation of Sustainable Development Goal 14: Conserve and Sustainably use the oceans, seas and marine resources for sustainable development. The Conference was co-hosted by the Governments of Portugal and Kenya. The overarching theme of the Conference was “Scaling up ocean action based on science and innovation for the implementation of Goal 14: stocktaking, partnerships and solutions”.
- Union Minister of State (Ind. Charge) for Earth Sciences Dr Jitendra Singh on June 21<sup>st</sup>, 2022 inaugurated a Seismological Observatory at Udhampur , Jammu & Kashmir.
- Union Minister of State (Ind. Charge) for Earth Sciences, Dr Jitendra Singh, accompanied by Dr. M. Ravichandran, Secretary MoES visited NCMRWF on June 23<sup>rd</sup>, 2022.
- A delegation led by Secretary MoES, and constituting Director INCOIS and Programme Director, MoES visited UNESCO Headquarters, Paris, France to attend the 55<sup>th</sup> session of the IOC Executive Council, Inter-sessional Financial Advisory Group and IOC Officer’s meeting (June 13<sup>th</sup> – 17<sup>th</sup> 2022) and the UN Ocean Decade Tsunami Programme Scientific Committee and Preparatory Meeting (June 20<sup>th</sup> – 23<sup>rd</sup> 2022). The IOC-UNESCO meeting was preceded by a bilateral meeting between Secretary, MoES and French Ambassador for Oceans and Poles regarding the India-France Roadmap on Blue Economy and Ocean Governance.
- Dr. S. Rajan, Former Director, NCPOR of India elected as a member of the Commission on the Limits of the Continental Shelf (CLCS), United Nation.
- Dr. Mrutyunjay Mohapatra, DGM IMD was conferred Shrikrishetra Samman-2022 for bringing paradigm shift in cyclone warning services and for his laudable contribution to society by voluntary service organization Shree Shrikrishetra Soochana, Puri during the 20th Folk Fair & 13<sup>th</sup> Krishi Fair-2022 at Puri, Odisha.
- The 5<sup>th</sup> meeting of the India-Norway task force on Blue Economy for sustainable development was held at MoES on June 23<sup>rd</sup>, 2022.
- INCOIS was conferred with the “World Congress on Disaster Management- Disaster Risk Reduction (WCDM-DRR) Excellence Award-2021” at WCDM Awards Ceremony function held on June 22<sup>nd</sup>, 2022 at India International Centre, New Delhi.
- India Meteorological Department was conferred World Congress Disaster Management- Disaster Risk Reduction Award for outstanding contribution in weather forecasting and early warning services for cyclones and extreme weather events on June 22<sup>nd</sup>, 2022.
- A MoU was signed between INCOIS and Amrita University for R&D, training activities, and community awareness.

- A MoU was signed between IITM and ADANI Green Energy Limited for, a) to enhance the accuracy of wind speed forecasting, wind power forecasting, solar availability forecasting, rain forecasting; b) setting up of weather research and forecasting (WRF) mesoscale model; c) to create a platform for technical collaboration in the field of atmospheric modelling and renewable energy.
- A MoU was signed between NCMRWF and Naval Oceanography and Meteorology, Indian Navy for research and application collaborations on weather and Climate.
- A MoU was signed between IMD and Power System Operation Cooperation (POSOCO) for developing customized services for Power Sector.

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)	*427 (775-348)	48	427
Automatic Rain Gauge (ARG)	599** (1382-783)	--	599
Agro AWS	200	--	191
GPS Sonde based RS/RW (Radio Sonde/ Radio Wind) Stations	56	--	56
Doppler Weather Radar (DWR)	*** 32	--	22
Ozone (Ozone Sonde + Total Ozone)	04	--	04
Surface Ozone (Electrochemical Concentration Cell method)	07	--	05
Nephelometer	12	--	09
Sky Radiometer	20	--	13
Black Carbon Monitoring Systems (Aethalometer)	25	--	15
System of Air Quality	10 (Delhi)	--	09(Delhi)

Monitoring System (SAFAR)	10 (Mumbai) 10 (Ahmedabad)		NIL(Mumbai)**** 10(Ahmedabad)
Hydromet (Indian Meteorological Department (IMD)& Extra-departmental excluding AWS &ARG)	---	--	3054
Aviation	79	--	79
Radiation Stations	46	---	46

\*Out of Total 775, 348 are outlived. \*\* Out of total 1382, 783 are outlived.

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

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

### Modelling

During June 2022, 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 DRDO and IAF for use at their end.

### Monthly Weather Summary (June 2022)

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

##### Low Pressure Systems:

An east-west trough at mean sea level across the plains on many days, cyclonic circulations/ troughs in westerlies in the lower tropospheric levels and convergence of strong south westerlies/ southerlies from Bay of Bengal causing moisture incursion over to the area had caused fairly widespread to widespread rainfall/ thunderstorm activity over the country. Under the influence of an off shore trough and convergence of monsoon westerlies along the west coast, fairly widespread to widespread rainfall/ thunderstorm activity had occurred over the country.

A Low Pressure Area had formed over East central & adjoining Northeast Arabian Sea off north Konkan-south Gujarat coasts had caused widespread rainfall/ thunderstorm activity over Konkan & Goa and Gujarat state.

About five Western Disturbances had affected Northwest India during the month had caused fairly widespread to widespread rainfall/ thunderstorm activity over Western Himalayan, Punjab Haryana, Rajasthan, Madhya Pradesh, Chandigarh & Delhi, Jammu Kashmir & Ladakh, Uttarakhand and Madhya Pradesh. Hailstorm activity also had occurred over Western Himalayan Region.

**b) Rainfall Scenario:** The rainfall for the country as a whole, for the month of June 2022 has been recorded as 152.3 mm which is 92% of its Long Period Average (LPA) of 165.3 mm.

#### c) Heavy Rainfall Events:

Warning issued for	<b>No. of Heavy/Very Heavy Rainfall Events (&gt;64.4 mm): 330</b>
	<b>Percentage correct (in %) for Rainfall &gt;64.4mm</b>
Day1 / 24 Hours	78

Day2 / 48 Hours	77
Day3 / 72 Hours	76

**d) Temperature Scenario:** The mean temperature for the month of June 2022 for the country as a whole was 29.62<sup>0</sup>C which was above normal by +0.37<sup>0</sup>C. The highest maximum temperature of 47.5<sup>0</sup>C had been recorded at Ganganagar (West Rajasthan) on 4th June 2022 and the lowest minimum temperature of 16.8<sup>0</sup>C had been recorded at Khargone (West Madhya Pradesh) on 24th June 2022 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.	State/ UT	Thunderstorm Events	Hail Events	Dust storms	Gusty Winds
1	Andaman & Nicobar Islands	0	0	0	0
2	Andhra Pradesh	12	2	0	4
3	Arunachal Pradesh	0	0	0	0
4	Assam	6	2	1	2
5	Bihar	10	4	3	5
6	Chandigarh	1	0	0	0
7	Chhattisgarh	6	1	2	1
8	Dadar and Nagar Haveli	0	0	0	0
9	Delhi	6	2	4	3
10	Goa	0	0	0	0
11	Gujarat	16	4	3	9
12	Haryana	12	5	8	10
13	Himachal Pradesh	2	0	0	0
14	J & K	0	0	0	0
15	Jharkhand	2	0	0	4
16	Karnataka	7	5	3	9
17	Kerala	2	0	0	3
18	Ladakh	0	1	2	0
19	Lakshdweep Islands	0	0	0	0
20	Madhya Pradesh	15	7	9	6
21	Maharashtra	35	15	8	19
22	Manipur	0	0	0	0
23	Meghalaya	1	0	0	0
24	Mizoram	0	0	0	0
25	Nagaland	1	0	0	0
26	Odisha	6	6	0	3
27	Puducherry	0	0	0	0
28	Punjab	8	6	5	5
29	Rajasthan	13	7	18	10
30	Sikkim	0	0	0	0
31	Tamilnadu	3	0	0	1
32	Telangana	9	6	4	2
33	Tripura	2	0	0	1
34	Uttar Pradesh	16	6	11	12

S. No.	State/ UT	Thunderstorm Events	Hail Events	Dust storms	Gusty Winds
35	Uttarakhand	3	1	0	1
36	West Bengal	11	3	0	5

### **Bulletins/Warnings/Press Releases Issued:**

All India Weather Bulletins:- 120, All India inference and severe weather warnings:- 120, All India Weekly Weather Reports:- 5, Special Daily Weather Report for Southwest Monsoon 2022:- 30, Current Weather Status & Outlook for next two weeks:- 5, Extended Range Outlook for cyclogenesis:- 5, Mountain weather bulletins issued for western and central Himalayan region:- 60, Expedition forecast bulletin issued for ITBP during expedition to Mt. Abi Gamin peak:-2, Expedition forecast bulletin issued for Navy during expedition to Mt. Shigri Parvat:- 11, Expedition forecast bulletin issued for IMF during expedition to Mt. Srikanth peak:- 6, Expedition forecast bulletin issued for IMF during expedition to Mt. Black peak:-2, Expedition forecast bulletin issued for J & K Rifles (Indian Army) during expedition to Mt. Nun peak:-30, Heat wave warning bulletin issued for India- 30, Marine Weather Bulletins:- 60, FDP STORM Bulletins issued:- 30, Nowcast Guidance Bulletins for Severe Weather:- 30, Press Releases issued during the month:- 37.

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

- i) ENSO bulletin for the month of June 2022 and Seasonal Climate Outlook for South Asia for the period of June to September 2022 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))
- ii) Monthly Climate Summary for the month of May 2022 is published and uploaded on website.
- iii) Climate Summary for pre-monsoon season 2022 is published and uploaded on website
- iv) 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.
- v) Four weekly cumulative Standardized Precipitation Index (SPI) maps were prepared for the weeks ending 01.06.2022, 08.06.2022, 15.06.2022, 22.06.2022 and 29.06.2022 and supplied for use in Agromet Advisory Services Bulletin. The same have also been uploaded in IMD Pune website.
- vi) Monthly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the month ending May 2022 for use in Climate Diagnostic Bulletin of India. The same have also been uploaded in IMD Pune website.
- vii) Five weekly Aridity Anomaly Maps for the period 26 May to 01 June, 02 to 08, 09 to 15, 16 to 22 and 23 to 29 June 2022 have been prepared, uploaded on IMD website and mailed to Agrimet for Agromet Advisory Services.
- viii) Five Biweekly Aridity Anomaly Maps for the period 19 May to 01 June, 26 May to 08 June, 02 to 15, 09 to 22 and 16 to 29 June 2022 have been prepared and uploaded on IMD Website.
- ix) Five weekly Aridity Anomaly Outlook Maps for the period 02 to 08, 09 to 15, 16 to 22, 23 to 29 June and 30 June to 06 July 2022 have been prepared and uploaded on IMD Website.
- x) Cyclone Warning Division prepared Tropical Cyclone Operational Plan (TCP-21) Edition 2021 and sent it to WMO for publication. The same is also available on RSMC website at [https://rsmcnewdelhi.imd.gov.in/uploads/report/28/28\\_06dbff\\_TCP21\\_Edition%202021.pdf](https://rsmcnewdelhi.imd.gov.in/uploads/report/28/28_06dbff_TCP21_Edition%202021.pdf)
- xi) Cyclone Warning Division prepared country report of India including updates on various components including meteorological observations, modeling, warning dissemination

mechanism, cyclone warning services, hydrology, disaster risk reduction, research & training. The country report of India was sent to WMO and also presented during PTC-49 meeting during 27th-30th June, 2022.

### **Seismological Observational Network**

Observation Type	Target	Commissioned so far	Data reporting during the month
Seismic stations	115	152	135

### **Earthquake and Tsunami monitoring**

**Earthquake:** 130 earthquakes were monitored in the Indian region out of which 14 events were greater than the magnitude (M) of 5.0.

**Tsunami:** 1 seabed earthquake (M>6) with a potential to generate tsunami occurred. This information was provided in less than 12 minutes of occurrence of the event.

### **Ocean Observation System**

Type of Platform	Target	Commissioned till June, 2022	Data received during June, 2022
Argo Floats *	200	374	61
Moored Buoys	16	19	13
Tide Gauges	36	36	32
High Frequency (HF) Radars	10	12	8
Acoustic Doppler Current Profiler (ADCP)	20	20	17
Tsunami Buoys	4	7	3
Wave Rider Buoy	23	16	11

\*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)	15
2.	Tuna Fishing Advisories	2
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)	30
5.	Coral Bleaching Alert System	11

### **Outreach and Awareness**

- MoES and its institutes celebrated World Ocean Day on June 8<sup>th</sup>, 2022 recognized by United Nations General Assembly (UNGA). INCOIS celebrated World Ocean Day on June 8<sup>th</sup>, 2022 as Open Day. As a part of this, more than five hundred (500+) students from Schools /Engineering colleges from Hyderabad visited INCOIS facilities and various labs and interacted with scientists of INCOIS. NCCR organized an event “Marine Litter on the Sea Floor and Beaches- Educating & Engaging students and fishing community”. An interaction session with local community and students was conducted to educate them on the menace of

marine litter. Participants were connected with the live program being conducted at the Ministry of Earth Sciences (MoES), New Delhi.

- MoES and its institutes celebrated World Environment Day on June 5<sup>th</sup>, 2022. INCOIS celebrated World Environment Day on June 5<sup>th</sup>, 2022 as Open Day. As a part of this around three hundred (300) students from various colleges, schools, and ordinary citizens visited INCOIS facilities and various labs and interacted with scientists of INCOIS. CMLRE organised marine mammal watch program on the occasion of World Environment Day. 60 students from three Schools participated in the boat cruise.
- ITCOcean/INCOIS conducted two days training course on “Operational Oceanography, Marine Meteorology & Operational Ocean Forecasting, Warning and Advisory Services for Offshore E&P Industries” for the ten (10) officers of Directorate General –Hydro Carbons (DG-HC) during 13-14 June 2022.
- INCOIS conducted the IOC-UNESCO Tsunami Ready start-up program for the Alappad community at Amritapuri, Kollam Dist., Kerala on 9 June 2022 in coordination with Amrita Vishwa Vidyapeetham.
- MoES and its institutes celebrated 8th International Yoga Day during June 2022 by organizing a Yoga Camp with the theme “Yoga for Humanity” for the benefit of its employees.
- On June 9<sup>th</sup>, 2022, INCOIS hosted thirty-five (35) officials undergoing training at Extension Education Institute (EEI), Hyderabad, & briefed on INCOIS services & activities including PFZ Tsunami Early Warning Centre & Oceansat ground station.
- Training conducted for dissertation students from Department of Hydrochemistry, CUSAT, Kochi onboard CRV Sagar Anveshika on June 18<sup>th</sup>, 2022. Operation of CTD, Niskin’s sampler and Van Veen grab were demonstrated.
- A webinar on "Seaweed and Blue forest in relation to Marine Spatial Planning" conducted on June 17<sup>th</sup>, 2022 as part of the Indo-Norway collaborative program.
- IITM started its annual Monsoon Discussion Seminar from June 2022. The first seminar of this series was held on June 30<sup>th</sup>, 2022 with a focus on “Monsoon-2022”.
- CCCR Scientist co-organized the Climate Assembly for Children and Youth - Kerala, with support from Kerala Legislative Assembly and UNICEF, at the Kerala Govt Legislative Assembly Complex, Thiruvananthapuram on June 6<sup>th</sup>, 2022.
- Indian Institute of Tropical Meteorology (IITM), Pune is celebrating 'Azadi Ka Amrit Mahotsav' and as part of the celebrations, virtual lecture series were organized at IITM during June 2022.
- 105 students visited High Altitude Cloud Physics Laboratory (HACPL) on June 6<sup>th</sup>, 2022.
- Dr. M. Mohapatra, DGM IMD joined various live interviews & TV shows during the Month.
- A special interview with Dr. Mrutyunjay Mohapatra, DGM IMD on the subject “Khush Haal Jiwan Ke Liye Avashyak Hai Mausam Ka Purvanuman” was published in CSIR July Monthly Issue.
- 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 socialmedia (Facebook, Twitter, YouTube etc.).
- 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.

### **Publications**

Subject	Publications			Ph.Ds		
	April, 2022 – May, 2022	June, 2022	Total	April, 2022 – May, 2022	June, 2022	Total
Atmospheric Sciences	30	16		2	2	
Ocean Science and Technology	13	4		-		
Polar Sciences	10			-		
Geosciences and resources	11	4		-		
Total	64			2		

### **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	30	0
Sagar Manjusha	0	30	0
Sagar Tara	0	30	0
Sagar Anveshika	3	27	1
Sagar Kanya	3	27	1
Sagar Sampada	0	30	0

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

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Dated, the 6<sup>th</sup> July, 2022

CERTIFICATE

(FOR THE MONTH OF JUNE, 2022)

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 June, 2022. 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                               | - 10 |
| 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 | - 00 |

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