

**Ministry of Earth Sciences (MoES)**  
**Summary of Important Developments –August, 2020**

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 &amp; 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>

☐ **Cases of sanction for prosecution pending in the Ministry for more than three months:** Nil

☐ **Particulars of cases in which there has been a departure from the Transaction of Business rules of established policy of the Government:** Nil

☐ **Status of implementation of e-Governance :** Being implemented

☐ **Status of Public grievances:**

No. of Public Grievances redressed during the month	No. of Public Grievances pending at the end of the month
17	13

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

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### Annex-I

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

1. Tsunami Ready Programme of the UNESCO-IOC (United Nations Educational, Scientific and Cultural Organization-Intergovernmental Oceanographic Commission) in India has been initiated by MoES to improve coastal community preparedness for tsunami emergencies. This has been implemented in two villages viz., Venkatraipur in Ganjam District, Noliasahi in Jagatsingpur District, Odisha. India is the first country to implement Tsunami Ready Programme in the Indian Ocean Region.
2. A Memorandum of Understanding (MoU) and Non-Disclosure Agreement (NDA) between IITM-MoES (Indian Institute of Tropical Meteorology) and WRLDC (Western Regional Load Dispatch Centre), POSOCO (Power System Operation Corporation Limited, a government of India Enterprise, Ministry of Power) for sharing of weather forecasting data has been signed on 19 August 2020.
3. Hon. Chief Minister of Maharashtra appreciated the Weather Services provided by the IMD during 3-6 August 2020, in the context of entire Konkan area receiving Extremely Heavy Rainfall including Mumbai, Thane.

All instructions / guidelines regarding lockdown due to COVID-19 issued by the government are strictly adhered.

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, 42.57 million farmers in the country are getting advisories through SMS directly.
- Impact Based Forecast (IBF) and Flood guidance (IFLOWS) initiated for various regions and was found to be very effective and appreciated too.

#### **Atmospheric Observation Systems Network**

Observation Type	Commissioned so far	Installations during the month	Data Reporting
Automatic Weather Station (AWS)	322*	-	265
Automatic Rain Gauge (ARG)	356**	--	320
GPS Sonde based RS/RW (Radio Sonde/Radio Wind) Stations	56	--	54
Doppler Weather Radar (DWR)	25***	--	22
Ozone (Ozone Sonde + Total Ozone)	04	--	04
Surface Ozone (Electrochemical Concentration Cell method)	07	--	07
Nephelometer	12	--	12

Sky Radiometer	20	--	15
Black Carbon Monitoring Systems (Aethalometer)	25	--	23
System of Air Quality Monitoring System (SAFAR)	10 (Delhi) 10 (Mumbai) 10 (Ahmedabad)	--	09 (Delhi) 10 (Mumbai) 10 (Ahmedabad)
Hydromet. (Indian Meteorological Department (IMD) & Extra-departmental excluding AWS & ARG) 3700	---	--	3221
Aviation	79	--	79
Radiation Stations	46	---	46

\* Out of Total 722, 400 are outlived.

\*\* Out of total 1356, 1000 are outlived.

\*\*\* In addition, there are 2 Doppler Weather Radars of ISRO.

Frangible Mast was installed at Mumbai Airport on 14th August 2020 and HWSR (High Wind Speed Recording) system was installed at Goa on 17th August 2020.

### Modelling

National Centre for Medium Range Weather Forecasting (NCMRWF) has generated Seasonal Monsoon Rainfall forecast for month of September 2020 and Sept-Oct-Nov 2020 Season from NCMRWF coupled model with August 2020 initial conditions. The forecast indicates normal to above normal rainfall for Sept 2020 .

NCMRWF provided model based local weather forecast input to IMD for Special event at Ayodhya Bhoomi Poojan of Ram Temple, during 29th July-7th August, 2020.

NCMRWF started providing regional model (at 4 km resolution) based hourly forecast data to 72 hours for an army site near Devlali, Maharashtra on an experimental basis .

### Monthly Weather Summary (August 2020)

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

**Low Pressure Systems:** During the month, five low pressure systems formed during 4-10 , 9-11, 13-18 , 19-26 and 24-31 August 2020 among which four has reached the intensity of Well Marked Low excluding the one which formed during 9-11. These systems moved west-north-westwards in general and have caused very intense rainfall activity during the month over east, central, west and northwest India. Very intense rainfall activity associated with these systems; especially that related with the last two systems have lead to riverine flood scenario over Odisha, Telengana, Madhya Pradesh, Gujarat and Rajasthan during the month.

**b) Rainfall Scenario:** The rainfall for the country as a whole for the month of August 2020 has recorded as 327.0mm which is 27% higher than its Long Period Average (LPA) of 258.2mm. It is the highest percentage departure for the month in last 44-years after 1976 and the fourth highest in last 120 years. The highest percentage departure for the month during the last 120 years had been 33.1% recorded in the year 1926. The cumulative rainfall for the SW monsoon season i.e. for the month of June, July & August 2020 was 780.3 which is 10% higher than its LPA of 710.4mm.

#### c) Heavy Rainfall Events:

Warning issued for	No. of Heavy/Very Heavy Rainfall Events (>64.4 mm): 596
	Percentage correct (in %) for Rainfall >64.4mm
Day1 / 24 Hours	72%
Day2 / 48 Hours	72%
Day3 / 72 Hours	70%

**d) Temperature Scenario:** The Mean Temp for the month for the country as a whole was 28.14°C; this was near normal (+0.59°C above the monthly normal temperature of 27.55°C). The highest maximum temperature of 43.1°C had been recorded at Jaisalmer (West Rajasthan) on 5th August 2020, over the plains of the country during the month.

**e)Thunder squall & Hailstorm activity:** Thundersquall (TS) & Hailstorm activity during the month (till 0830 IST of 31-08-2020) is recorded as under:

S. No.	Region	TS Days	Date of Maximum TS Activity	Hail Events	Squall Events
1.	South Peninsular India	28	01-08-20	Nil	Nil
2.	Northwest India	31	19-08-20	Nil	Nil
3.	Northeast India	31	06-08-20	Nil	Nil
4.	East India	30	04-08-20	Nil	02 (Port Blair on 11/08/20 & 13/08/20)
5.	Central India	28	01-08-20	Nil	Nil
6.	West India	03	-	Nil	Nil

Note: The convective activities mentioned above had been predicted and corresponding warnings were issued about 4-5 days in advance of the occurrence of the event. In addition to that, now casts were also given by corresponding RMCs/MCs (Regional Meteorological Centre / Meteorological Centre) with respect to these events.

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

All India Weather Bulletins – 124 (issued four times daily), All India inference and severe weather warnings – 124 (issued four times daily), Nowcast Guidance Bulletins for severe weather – 31, All India Weekly Weather Reports – 4 (issued every Thursday), Current weather status and outlook for next two weeks – 4, Mountain weather bulletins including severe weather warnings for Western and Central Himalayan region – 62, Marine Weather Bulletins: 62, Special Bulletins for Mt. Gorichen Expedition: - 6l, Tropical Weather Outlook for the north Indian Ocean – 31, Bulletins of the Severe Weather Forecast Programme -31, Extended range outlook on Cyclogenesis over the north Indian Ocean – 4, Press release related to intense rainfall activity over different parts of the country- 8.

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

- i)** ENSO (El Nino – Southern Oscillation) and Indian Ocean Dipole (IOD) bulletin for the month of August 2020 and Seasonal Climate Outlook for South Asia for the months of August to November 2020 were issued. ([www.imdpune.gov.in/Clim\\_Pred\\_LRF\\_New/Products.html](http://www.imdpune.gov.in/Clim_Pred_LRF_New/Products.html))
- ii)** Daily All India Weather Summary and Weekly Weather Reports are being brought out on routine basis.
- iii)** Four(4) weekly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the weeks ending 05,12,19 & 26 August 2020 prepared and uploaded at IMD Pune website.
- iv)** Gridded Standardized Precipitation Index (SPI) & Standardized Precipitation Evapotranspiration Index (SPEI) at 0.5\*0.5 degree resolution at 4 weekly 1, 2, 3 & 4 monthly time scales computed and maps of same timescales are being uploaded at weekly basis on IMD Pune website.

#### **Geoscience Research**

The national network project “Mission SGD (Submarine Groundwater Discharge)” coordinated by National Centre for Earth Science Studies (NCESS) with nine working groups, has completed one year of implementation for different geographical regions along the east and west coasts of India. Total 42 Electrical Resistivity Tomography (ERT) surveys were conducted to define the subsurface lithology and understand the relationship between groundwater and seawater from Kanyakumari to Malappuram.

### Seismological Observational Network

Observation Type	Target	Commissioned so far	Data reporting during the month
Seismic stations	115	115	102
GPS stations	40	20#	18

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

### Earthquake and Tsunami monitoring

Earthquake: 123 earthquakes were monitored in the Indian region out of which 4 events were greater than magnitude (M) of 5.0.

Tsunami: 4 seabed earthquakes (M > 6) with a potential to generate tsunami occurred. This information was provided in less than 12 minutes of occurrence of both the events. The Indian Tsunami Warning Centre (ITEWC) has detected an earthquake of (i) Magnitude 6.7 at Luzon, Philippines (Pacific Ocean) occurred on 18 August 2020 at 0533 hrs IST (0003 UTC), (ii) Magnitude 6.5 and 6.9 at Southern Sumatra, Indonesia (Indian Ocean) occurred on 19 August 2020 at 0353 hrs and 0359 hrs IST (18 August 2020 at 2223 and 2229 hrs UTC) respectively and (iii) Magnitude 6.6 at Banda Sea, Indonesia (Indian Ocean) occurred on 21 August 2020 at 0939 hrs IST (0409 UTC) and issued a "No Tsunami Threat" bulletin to India and Indian Ocean Countries for each of the earthquakes

### Ocean Observation System

Type of Platform	Target	Commissioned till August, 2020	Data received during August, 2020
Argo Floats *	200	374	136
Moored Buoys	16	19	12
Tide Gauges	36	36	25
High Frequency (HF) Radars	10	12	10
Acoustic Doppler Current Profiler (ADCP)	20	20	18
Tsunami Buoys	7	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	20
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	10

### Outreach and Awareness

As an initiative by the Ministry of Earth Sciences (MoES), Indian Institute of Tropical Meteorology (IITM) organized "Earth Sciences Popular Lectures" webinar series in coordination with MoES & its Institutions. Total 7 talks were delivered by MoES institutes in the month of August, 2020.

One week online training session entitled "Discovery and Use of Operational Ocean Data Products and Services" started on 31 August 2020 under the umbrella of (International Training Centre for Operational Oceanography (ITC Ocean). This was held during 31 Aug – 04 Sep, 2020 at INCOIS. Total one hundred and one (101) students from thirteen (13) Indian Ocean RIM countries participated in this 5 days training program.

DGM (Director General of Meteorology) attended a review meeting through VC on the situation of flood and flood management in the country under Chairmanship of Hon'ble PM on 10th August. Hon'ble PM appreciated the joint effort of IMD and CWC (Central Water Commission) in providing the warning for floods.

DGM made presentation at MoES before Hon'ble Minister of S&T (Science & Technology) and Earth Sciences regarding - Monsoon 2020 Status, Forecast for next 1 month and Flood Situation in the country on 27th August.

**Publications**

Subject	Publications			Ph.Ds		
	April-July 2020	August, 2020	Total	April-July 2020	August, 2020	Total
Atmospheric Sciences	82	20	102	4	-	4
Ocean Science and Technology	68	4	72	-	-	-
Polar Sciences	15	5	20	1	-	1
Geosciences and resources	7	6	13	-	-	-
Total	172	35	207	5	-	5

**Patents Awarded : 3**

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

Vessel	Days at Sea / Utilization	Maintenance/ Inspection /Scientific Logistics / Cruise Preparation	No. of Cruise
Sagar Nidhi	8	23(Corona Lockdown)	1
Sagar Manjusha	0	31(Corona Lockdown)	0
Sagar Tara	0	31(Corona Lockdown)	0
Sagar Anveshika	13	18(Corona Lockdown)	1
Sagar Kanya	0	31(Corona Lockdown)	0
Sagar Sampada	0	31 (Corona Lockdown)	0

## Annex II

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

Prithvi Bhavan, Lodhi Road  
New Delhi-110 003

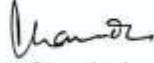
Dated, the September, 2020

### CERTIFICATE

(FOR THE MONTH OF August, 2020)

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,2020. 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                               | - 12 |
| (c) | Number of posts totally vacant as on date                       | - 01 |
| (d) | Number of posts under additional charge arrangement             | - 02 |
| (e) | Number of posts that would fall vacant during the next 6 months | - 01 |

  
( Dr. Vipin Chandra )  
Joint Secretary  
js@moes.gov.in

डा. विपिन चन्द्र / Dr. VIPIN CHANDRA  
संयुक्त सचिव / Joint Secretary  
पृथ्वी विज्ञान मंत्रालय / Ministry of Earth Sciences  
भारत सरकार / Government of India  
नई दिल्ली / New Delhi