

**Ministry of Earth Sciences (MoES)**  
**Summary of Important Developments –July,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 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, 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
11	12

**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 have been updated on AVMS:** 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 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:

Foundation day of Ministry of Earth Sciences was celebrated on 27th July, 2020. On this occasion, Life Time Excellence Award, National Awards in the field of Atmospheric Science & Technology; Ocean Science; Geoscience & Technology; and Ocean Technology/Polar Science, Two Young Researcher awards and Dr Anna Mani National Award for Woman Scientist were announced. Margaret Leinen, Director, Scripps Institution of Oceanography & Vice Chancellor, University of California-San Diego delivered the talk on "Ocean Science for the 21st Century" through video recording.

The Union Minister of Health, Science and Technology and Earth Sciences launched Mobile App "Mausam" of India Meteorological Department and the World-Class Knowledge Resource Centre Network (KRCNet) Portal. The App "Mausam" is dedicated to the general public and is designed to communicate the weather information and forecasts in a simple manner without technical jargons. The App is available on Google Play Store and the Apple App Store. Under KRCNet, the traditional libraries of the MoES system will be upgraded into a top-notch Knowledge Resource Centres (KRC). KRCs will be connected with each other and integrated into the KRCNet portal.

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 mode. Presently, 40.1 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)	*322 (722-400)	02 (J&K--Kishtwar & Maharashtra- Lonar)	268
Automatic Rain Gauge (ARG)	356** (1356-1000)	--	322
GPS Sonde based RS/RW Stations	56	--	54
Doppler Weather Radar (DWR)	*** 25	--	22

Ozone (Ozone Sonde + Total Ozone)	04	--	04
Surface Ozone ( <u>Electrochemical Concentration Cell</u> method)	07	--	07
Nephelometer	12	--	12
Sky Radiometer	20	--	15
Black Carbon Monitoring Systems (Aethalometer)	25	--	23
Air Quality Monitoring System (SAFAR)	10 (Delhi) 10 (Mumbai) 10 (Ahmedabad)	--	09 (Delhi) 10 (Mumbai) 10 (Ahmedabad)
Hydromet. (IMD & Extra-departmental excluding AWS & ARG) 3700	---	--	3110
Aviation	79	--	79
Radiation Stations	46	---	46
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 Radar of ISRO.

High Wind Speed Recording (HWSR) system was installed at Vishakhapatnam, Machilipatnam & Chennai.

## Modelling

National Centre for Medium Range Weather Forecasting(NCMRWF) has generated Seasonal Monsoon Rainfall forecast for August-September 2020 period from NCMRWF coupled model with July 2020 initial conditions The prediction is indicating normal to above normal rainfall for August-September 2020 period of monsoon season.

NCMRWF global coupled model and global Ocean data assimilation based Extended Range (multi-week) rainfall, T-max, T-min and wind forecast products were generated and provided to Space Application Centre(SAC)/Indian Space Research Organisation(ISRO), Snow and Avalanche Study Establishment(SASE)/Defence Research Development Organisation(DRDO), Indian Air Force(IAF) (Met), Navy (Met/Ocean), and BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation), countries. Five such forecasts were issued in July 2020 (once a week on every Thursday in real-time).

NCMRWF's global and regional model rainfall forecasts and the weather-regime algorithm for Indian region developed jointly by NCMRWF and UKMO are being used in generating the experimental landslide early warnings by GSI.

## Monthly Weather Summary (July 2020)

### a) Important Weather Events during the month

- During the first week of the month, a Low pressure area formed over southern parts of Gujarat & neighbourhood which became more marked in the second half of the week. Further, an offshore trough lay off the west coast, a shear zone lay roughly around 16°N and the monsoon trough lay south of its normal position; especially during the second half of the week. Under the influence of these systems, widespread rain/thunderstorms along with intense to very intense rainfall activity had occurred over Gujarat State and over coastal and interior parts of Maharashtra on most of the days during the week.
- Another Low pressure area formed over Northwest Bay of Bengal off Odisha and Gangetic West Bengal coasts in the middle of the first week and it moved inland subsequently maintaining its intensity for about forty eight hours before merging with the monsoon trough. Under its influence, fairly widespread to widespread rain/thunderstorms along with heavy to very heavy and extremely heavy rainfall had been observed over East India and over eastern parts of Central India and East Uttar Pradesh during the first week of the month.

- c) Shifting of the eastern end of the monsoon trough to the north and its positioning close to the foot hills of the Himalayas and convergence of strong southwesterly to southerly winds from Bay of Bengal had caused fairly widespread to widespread rainfall with heavy to very heavy and extremely heavy falls over Northeast and adjoining parts of East India in two to three spells during the month leading to floods over Assam & Bihar.
- d) Interaction of the western end of monsoon trough with a trough in middle latitude westerlies supported by strong moisture incursion from the Arabian Sea and circulations in the lower levels have caused fairly widespread to widespread rainfall/thunderstorms along with intense to very intense rainfall activity over Western Himalayan Region and plains of northwest and adjoining Central India during 3<sup>rd</sup> week of the month.
- e) Formation of a cyclonic circulation in the lower and middle tropospheric levels over Comorin and adjoining Maldives area and its subsequent northward movement along and off the west coast had caused fairly widespread to widespread rainfall/thunderstorms along with intense to very intense rainfall activity along the west coast and adjoining interior parts of peninsular India.

b) **Rainfall Scenario:** The rainfall for the country as a whole for the month of July 2020 was recorded as 257.6mm which is 10% lower than its Long Period Average (LPA) of 285.3mm. The cumulative rainfall for the SW monsoon season i.e. for the month of June & July 2020 was 453.3 against the LPA 452.2mm.

c) **Heavy Rainfall Events:**

warning issued for	No. of Heavy/Very Heavy Rainfall Events (>64.4 mm): 566
	Percentage correct (in %) for Rainfall >64.4mm
Day1 / 24 Hours	67%
Day2 / 48 Hours	67%
Day3 / 72 Hours	66%

d) **Temperature Scenario:** The mean temperature for the month for the country as a whole was 28.54°C; this was near normal (+0.56°C above the monthly normal temperature of 27.98°C). Heat wave conditions had been observed at isolated pockets over East and West Rajasthan on one day each during the week. The highest maximum temperature of 46.3°C had been recorded at Ganganagar (West Rajasthan) on 4<sup>th</sup> July 2020, 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 31-07-2020) is recorded as under:

S. No.	Region	TS Days	Date of Maximum	Hail Events	Squall Events
1.	South Peninsular India	31	28/07/20	Nil	Nil
2.	Northwest India	31	19/07/20	Nil	02 (Amritsar on 04/07/20 & 10/07/20)
3.	Northeast India	30	01/07/20	Nil	Nil
4.	East India	31	21/07/20	Nil	04 (Port Blair on 02/07/20, 03/07/20, 03/07/20 & 14/07/20)
5.	Central India	28	05/07/20	Nil	Nil
6.	West India	15	09/07/20	Nil	02 (Ahmedabad on 08/07/20 & 09/07/20)

**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, nowcasts were also given by corresponding RMCs/MCs with respect to these events.

**Bulletins/Warnings/Press Releases Issued:** All India Weather Bulletins(124), All India inference and severe weather warnings(124), Press Releases related to (a)Long range forecast of monsoon (b)Weather Status for June & its

verification and Outlook for July, 2020, (c) forecast of SW Monsoon 2020 rainfall of SW Monsoon(02),(d)intense southwest monsoon rainfall spell(08),Nowcast Guidance Bulletins for severe weather (31), All India Weekly Weather Reports (5), Current weather status and outlook for next two weeks( 5), Mountain weather bulletins including severe weather warnings for Western and Central Himalayan region (62), and Marine Weather Bulletins(62).

Publications & Operational Reports issued: Preliminary report of Severe Cyclonic Storm NISARGA during 1<sup>st</sup> – 4<sup>th</sup> June 2020, Best track parameters of Cyclonic Storms over north Indian Ocean during 2019, Tropical Weather Outlook for the north Indian Ocean , Extended range outlook on Cyclogenesis over the north Indian Ocean, aily All India Weather, Summary and Weekly Weather Reports, ENSO and Indian Ocean Dipole (IOD) bulletin for the month of July 2020 and Seasonal Climate Outlook for South Asia for the months of July to October 2020 were issued. ([www.imdpune.gov.in/Clim\\_Pred\\_LRF\\_New/Products.html](http://www.imdpune.gov.in/Clim_Pred_LRF_New/Products.html)) Daily All India Weather Summary and Weekly Weather Reports, Five(5) weekly and cumulative Standardized Precipitation Index (SPI) maps prepared for the weeks ending 01,08,15,22 and 29 July 2020 prepared and uploaded at IMD Pune website, 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, Cyclone e-atlas has been updated with up to 2019 data and uploaded in RMC Chennai website.

## **Geoscience Research**

### **Seismological Observational Network**

Observation Type	Target	Commissioned so far	Data reporting during the month
Seismic stations	115	115	101
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: 40 earthquakes were monitored in the Indian region out of which 5 events were greater than magnitude (M) of 5.0.

Tsunami: 2 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.

### **Ocean Observation System**

Type of Platform	Target	Commissioned till July, 2020	Data received during July, 2020
Argo Floats *	200	374	150
Moored Buoys	16	22	13
Tide Gauges	36	36	27
High Frequency (HF) Radars	10	12	9
Acoustic Doppler Current Profiler (ADCP)	20	20	18
Tsunami Buoys	7	9	3
Wave Rider Buoy	16	28	8

\*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
2	Ocean State Forecast (OSF)-Wave, Wind, Currents, SST, MLD 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 8 talks were delivered by MoES institutes in the month of July, 2020.

A two-day online training programme was conducted for scientists/participants of Flood Meteorological Offices (FMOs) on 1<sup>st</sup> July, 2020. The programme was attended by 75 participants from across India. IMD organised an on line training on flash flood guidance system during 8<sup>th</sup>-10<sup>th</sup> July for forecasters of south Asia.

The India Meteorological Department and the Regional Centre of South Asia Flash Flood Guidance System (SAFFGS) conducted an online international training programme on 'Flash Flood Guidance System; during 8-10 July 2020. Total 130 forecasters from Bhutan, Bangladesh, India, Nepal and Sri Lanka attended the programme.

A webinar series was jointly organised by NDMA & IMD on "Cloud burst & Heavy Rainfall Hydromet system for flood forecast" on 21<sup>st</sup> July, 2020.

A short term online Training Course on "Preparation and Dissemination of Agromet Advisories at Block level under Gramin Krishi Mausam Seva (GKMS) scheme" was organized during 27<sup>th</sup> July - 1<sup>st</sup> Aug, 2020 for subject specialists of agrometeorology & observers of 25 District Agro. Met Units (DAMU).

Online IT and Administration training under the South Asia Flash Flood Guidance system was imparted by World Meteorological organisation (WMO) and the US Hydrologic Research Center (HRC) to 15 participants at Regional Centre, IMD Pune during 17 June to 17 July 2020.

Swachhata Pakhwada 2020 was observed by the Ministry, its attached and subordinate offices and autonomous institutes during 1-15 July 2020.

## **Publications**

Subject	Publications			Ph.Ds		
	April-June 2020	July, 2020	Total	April-June 2020	July, 2020	Total
Atmospheric Sciences	71	11	82	2	2	4
Ocean Science and Technology	36	32	68	-	-	-
Polar Sciences	12	3	15	-	1	1
Geosciences and resources	-	7	7	-	-	-
Total	119	53	172	2	3	5

**Utilizati**

## **on of Ocean Research Vessels during the month**

Vessel	Days at Sea / Utilization	Maintenance/ Inspection /Scientific Logistics / Cruise Preparation	No. of Cruise
Sagar Nidhi	6	25(Corona Lockdown)	1
Sagar Manjusha	0	31(Corona Lockdown)	1
Sagar Tara	0	31(Corona Lockdown)	0
Sagar Anveshika	12	19(Corona Lockdown)	0
Sagar Kanya	0	31(Corona Lockdown)	0
Sagar Sampada	0	30(Corona Lockdown)	0

## Annex II

**File No.MoES/20/01/2017-Estt.**

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

Prithvi Bhavan, Lodhi Road  
New Delhi-110 003

Dated, the August, 2020

### **CERTIFICATE**

(FOR THE MONTH OF JULY, 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 July, 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 |

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नई दिल्ली / New Delhi