

**Ministry of Earth Sciences (MoES)
Summary of Important Developments –October,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 & 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 |
|-----------------------------------------------------|----------------------------------------------------------|
| 19 | 10 |

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

Annex-I

Important policy decision taken and major achievements:

1. The Memorandum of Understanding for Technical Cooperation in Earth Observations and Earth Sciences between the National Oceanic and Atmospheric Administration (NOAA) of the United States of America and the Ministry of Earth Sciences (MoES), Government of India was renewed for a period of 10 years at the Embassy of India, Washington DC on 23rd October, 2020.
2. Flash Flood Guidance Service for South Asian countries namely India, Bangladesh, Bhutan, Nepal and Sri Lanka on 23 October 2020 was dedicated to the nation. The system was launched virtually in the presence of distinguished representatives of all member countries, and dignitaries from National & International institutions.
3. India participated in a major Indian Ocean Tsunami Exercise IOWave20 during October 2020 conducted by the Indian Ocean Tsunami Warning and Mitigation System (IOTWMS) of Intergovernmental Oceanographic Commission (IOC), United Nations Educational, Scientific and Cultural Organization (UNESCO).
4. An expedition to Chandra basin at Himalayas was completed during Sep-Oct 2020 and various field activities have been carried out including the observations of four glaciers (Sutri Dhaka, Batal, Samudra Tapu and Gepang). Two Automatic Weather Stations (AWS) have been installed at the elevations of 4500 m (Samudra Tapu) and 5000 m (Head part of the Chandra basin).
5. The southwest monsoon has withdrawn from the entire country on 28th October 2020 against normal date of 15th October 2020.
6. With the setting in of north-easterly winds in the lower troposphere levels, the Northeast Monsoon rains have commenced over extreme south peninsular India on 28th October 2020 against normal date of 20th October 2020.
7. A new research A species of deep sea lithodid crab, *Paralomistsuchidai* collected by Fishery Oceanographic Research Vessel (FORV) Sagar Sampada from South-Eastern Arabian Sea (315–610 m water depth) and Western Bay of Bengal (633–655 m water depth) has been described as new to science.

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, 36.61 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* | - | 298 |
| Automatic Rain Gauge (ARG) | 356** | -- | 328 |
| GPS Sonde based RS/RW (Radio Sonde/Radio Wind) Stations | 56 | -- | 56 |
| Doppler Weather Radar (DWR) | 25*** | -- | 25 |
| Ozone (Ozone Sonde + Total Ozone) | 04 | -- | 04 |
| Surface Ozone (Electrochemical Concentration Cell method) | 07 | -- | 07 |
| Nephelometer | 12 | -- | 12 |
| Sky Radiometer | 20 | -- | 17 |
| Black Carbon Monitoring Systems (Aethalometer) | 25 | -- | 22 |
| 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 | --- | -- | 3174 |
| 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.

High Wind Speed Recording Systems (HWSR) installed at Digha, Kavali, Haldia, Pamban, Gopalpur, Kanyakumari, Veraval and Bhuj during the month.

Modelling

Every week on all Thursdays during October 2020, National Centre for Medium Range Weather Forecasting (NCMRWF) coupled model based Extended Range Prediction (ERP) up to next four weeks for rainfall, surface temperature, and winds were provided in real-time to Space Applications Centre (SAC) / Indian Space Research Organisation (ISRO), Snow and Avalanche Study Establishment (SASE) / Defence Research and Development Organisation (DRDO), Indian Air Force (IAF), Navy, Geological Survey of India (GSI) and Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) countries.

Monthly Weather Summary (October 2020)

a) Important Weather Events during the month

Low Pressure Systems: During the month, two low pressure systems have been formed during 1-6 October 2020 & 31 October – 2 November 2020 including one over west central & adjoining Northwest Bay of Bengal off north Andhra Pradesh-south Odisha coasts and another one over East Central Bay of Bengal off Myanmar Coast. These systems have caused widespread rainfall/thunderstorms along with intense to very intense rainfall activity over East, adjoining areas of central and Peninsular India including Andaman-Nicobar Islands & north eastern states.

Depressions: During the month, three depressions have been formed during 11-14, 17-19 & 22-24 October 2020. The first one originated from north Andaman Sea & neighbourhood and it had impacts over Odisha, Andhra Pradesh, Telangana, Karnataka and Maharashtra in terms of heavy to extremely heavy rainfall and squally wind. The second one is the remnant of Deep Depression over west central Bay of Bengal (BoB) emerged into east-central Arabian Sea as a

well marked low pressure area and it had no impact along the Indian coast. The last one is the influence of a cyclonic circulation over central parts of Bay of Bengal (BoB). The system caused heavy rainfall at isolated places over Telangana, Rayalaseema & Odisha and heavy to very rainfall at few places with extremely heavy falls at isolated places over the north-eastern states of India including Assam, Meghalaya, Manipur, Nagaland, Mizoram & Tripura.

b) Rainfall Scenario: The rainfall for the country as a whole for the month of October 2020 has recorded as 78.1mm which is 3% higher than its Long Period Average (LPA) of 76.0mm.

c) Heavy Rainfall Events:

| | |
|--------------------|---------------------------------------------------------|
| Warning issued for | No. of Heavy/Very Heavy Rainfall Events (>64.4 mm): 186 |
| | Percentage correct (in %) for Rainfall >64.4mm |
| Day1 / 24 Hours | 85% |
| Day2 / 48 Hours | 85% |
| Day3 / 72 Hours | 84% |

d) Temperature Scenario: The Mean Temp for the month for the country as a whole was 26.96°C; which was above normal by +0.94°C. The highest Maximum temperature of 40.9°C had been recorded at Churu (West Rajasthan) on 3rd October 2020 and the lowest minimum temperature of 9.5°C had been recorded over Una (Himachal Pradesh) on 27th October 2020 in 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 | TS Days | Date of Maximum TS Activity | Hail Events | Squall Events |
|--------|------------------------|---------|-----------------------------|-------------------------------|--------------------------------------------------------------|
| 1. | South Peninsular India | 29 | 09-10-20 & 10-10-20 | Nil | Nil |
| 2. | Northwest India | 07 | 31-10-20 | 01 (Bhaderwah on 31-10-20) | Nil |
| 3. | Northeast India | 24 | 04-10-20 | Nil | Nil |
| 4. | East India | 21 | 03-10-20 | Nil | 04 (Port Blair on 03/10/20, 12/10/20, 14/10/20 and 18/10/20) |
| 5. | Central India | 18 | 07-10-20 | Nil | Nil |
| 6. | West India | 04 | - | Nil | Nil |

Bulletins/Warnings/Press Releases Issued:

All India Weather Bulletins –124 (issued four times daily), All India weather inference and severe weather warnings – 124 (issued four times daily), All India Weekly Weather Reports – 5 (issued every Thursday), Mountain weather bulletins including severe weather warnings for Western and Central Himalayan region – 62, Marine Weather forecast Bulletins-62, Tropical Weather Outlook for the north Indian Ocean – 31, Bulletins of the Severe Weather Forecast Programme -31, Now cast Guidance Bulletins for severe weather - 31, related to salient features of SW Monsoon 2020 - 2 (both in English & Hindi), related to withdrawal of SW Monsoon 2020 from entire country – 1, related to Low Pressure Area/Well marked Low/Depression over Arabian Sea/Andaman Sea/Bay of Bengal – 17, related to launch of Flash Flood guidance Services for South Asia – 1, related to Advanced high-resolution Air Quality Early Warning System for Delhi and India - 1.

Publications & Operational Reports:

- i) Daily All India Weather Summary and Weekly Weather Reports are being brought out on routine basis.
- ii) Four (4) weekly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the weeks ending 07, 14, 21 & 28 October 2020 prepared and uploaded at IMD Pune website.

- iii) Gridded Standardized Precipitation Index (SPI) & Standardized Precipitation Evapo transpiration 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.
- iv) ENSO bulletin for October 2020 and Seasonal Climate Outlook for South Asia for the months of October to January 2020 were issued. (Quick Link: www.imdpune.gov.in/Clim_Pred_LRF_New/Products.html).
- v) A report entitled Climate of Goa and Mausam Journal Year 71, Part IV (October 2020) have been published.

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: 128 earthquakes were monitored in the Indian region out of which 6 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 all the events.

Ocean Observation System

| Type of Platform | Target | Commissioned till October, 2020 | Data received during October, 2020 |
|------------------------------------------|--------|---------------------------------|------------------------------------|
| Argo Floats * | 200 | 374 | 132 |
| Moored Buoys | 16 | 18 | 11 |
| Tide Gauges | 36 | 36 | 26 |
| High Frequency (HF) Radars | 10 | 12 | 6 |
| Acoustic Doppler Current Profiler (ADCP) | 20 | 20 | 18 |
| Tsunami Buoys | 7 | 4 | 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) | 24 |
| 2 | Tuna Fishing Advisories | 19 |
| 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

All the MoES institutes observed Vigilance Awareness Week during October 2020. E-Pledge was taken as part of "Prime Minister's Jan Andolan Campaign" on COVID-19 and "Zero Tolerance Against Corruption" during October 2020. Various competitions were held online and prizes were announced.

Under the Vaishwik Bharatiya Vaigyanik (VAIBHAV) Summit organized by Government of India, various thematic sessions were conducted via online by the MoES institutes.

A meeting was conducted on 09th October 2020 by Head, NCMRWF with officers from Indian Army and discussed about the use of NCMRWF model data in Artillery Fire Control System.

Tropical Cyclones Forecasters Training conducted during 7-17th October through online mode. Total 54 participants including 19 from World Meteorological Organization (WMO) / Economic and Social Commission for Asia and the Pacific (ESCAP) Panel Member Countries participated in the training.

A three days (12 - 14 October, 2020) online training course on "Understanding Sea Level: Data analysis and Applications" has been conducted under the banner of International Training Centre for Operational Oceanography (ITCO ocean), INCOIS, Hyderabad. Professionals, Scientists, Students and Researchers from 20 foreign countries along with India participated in this course.

International Virtual Conference on "Earth's Changing Climate: Past, Present & Future", was organized by The Society of Earth Scientists during 15-17 October 2020 at IITM, Pune.

As an initiative by the MoES, (IITM) organized "Earth Sciences Popular Lectures" webinar series in coordination with MoES& its Institutions. One talk was delivered in the month of October, 2020.

A webinar series titled 'जन-जन के लिए विज्ञान' has been launched by the Ministry to popularize the working of the ministry among the general masses.

Ministry of Earth Sciences launched a webinar series on Gandhian philosophy in the MoES to commemorate the 150th Birth Anniversary of Mahatma Gandhi and also organized two Maga-competitive events on 26-27 September 2020 which evoked a tremendous response from all the cadres of the MoES staff across India and recorded a historic' participation of 100 plus participants.

Publications

| Subject | Publications | | | Ph.Ds | | |
|------------------------------|----------------------|---------------|-------|----------------------|---------------|-------|
| | April-September 2020 | October, 2020 | Total | April-September 2020 | October, 2020 | Total |
| Atmospheric Sciences | 123 | 14 | 137 | 4 | - | 4 |
| Ocean Science and Technology | 76 | 6 | 82 | - | 1 | 1 |
| Polar Sciences | 31 | 1 | 32 | 1 | - | 1 |
| Geosciences and resources | 17 | 1 | 18 | - | - | - |
| Total | 247 | 22 | 269 | 5 | 1 | 6 |

Utilization of Ocean Research Vessels during the month

| Vessel | Days at Sea / Utilization | Maintenance/ Inspection /Scientific Logistics / Cruise Preparation | No. of Cruise |
|-----------------|---------------------------|--------------------------------------------------------------------|---------------|
| Sagar Nidhi | 22 | 09 | 2 |
| Sagar Manjusha | 08 | 23 | 1 |
| Sagar Tara | 08 | 23 | 1 |
| Sagar Anveshika | 0 | 31 | 0 |
| Sagar Kanya | 19 | 12 | 1 |
| Sagar Sampada | 09 | 22 | 1 |

Annex II

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

Prithvi Bhavan, Lodhi Road
New Delhi-110 003

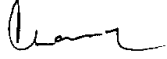
Dated, the 02nd November, 2020

CERTIFICATE

(FOR THE MONTH OF OCTOBER, 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 October, 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 | - 11 |
| (c) | Number of posts totally vacant as on date | - 01 |
| (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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