

**Ministry of Earth Sciences (MoES)**  
**Summary of Important Developments –July, 2016**

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  <b>PROPOSAL FOR KRILL FISHING</b></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>There is no response from the private industries for a long time. Accordingly, it is proposed to close this item for monthly reporting. As and when the response is received, the same will be reported.</p>

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

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

6. **Status of implementation of e-Governance :** Under process/ being implemented

7. **Status of Public grievances:**

No. Of Public Grievances redressed during the month	No. Of Public Grievances pending at the end of the month
31	24

8. **Information on the specific steps taken by the Ministry/Department for utilization of the 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.

## **Annex-I**

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

- 1) Earth Sciences Foundation Day function of the Ministry of Earth Sciences commemorating 10<sup>th</sup> year of Ministry of Earth Sciences was held on 27<sup>th</sup> July, 2016 at Vigyan Bhawan, New Delhi. Dr. Harsh Vardhan, Honourable Minister of Earth Sciences and Science & Technology was the Chief Guest and Shri Y.S.Chowdry, Honourable Minister of State for Earth Sciences and Science & Technology was the Guest of Honour. Dr. Kiran Kumar, Chairman, Indian Space Research Organisation delivered a foundation day lecture enumerating close linkages of space technology with earth sciences. During the function, The Vision for 2030 and Strategy document of Ministry of Earth Sciences was released. Various National Awards in Earth Sciences were presented to the winners.
- 2) The southwest monsoon covered entire country by 13 July 2016.
- 3) India has been re-elected to the Council of International Seabed Authority (ISA) for a period of 4 years. India's nominees were elected to the Legal and Technical Commission, as well as to the Finance Committee of the ISA for a period of 5 years. International Seabed Authority set up under the United Nations Convention on Law of the Sea is responsible for governance of deep sea mineral regime in the international waters.

### **Minimum Government, Maximum Governance:**

Agromet Advisories are being communicated to 191.2 lakh farmers of the country through mobile SMS.

Adverse weather SMS warning are being sent through mobiles to State Govt. officials / Disaster related officials / Central Govt. Organization / Common men.

Daily forecast along with warning and city forecast for many cities are disseminated through email to all users including state authorities, electronic and print Medias.

### **Atmospheric Processes, Modeling and Services**

A depression formed over northeast Madhya Pradesh & neighbourhood with its centre about 30 km east of Satna on 6 July 2016. It remained over the same area and weakened into a well marked low pressure area on 7 July 2016. Under its influence widespread rainfall with heavy to very heavy falls occurred over Madhya Pradesh, Chhattisgarh and Maharashtra during 5 to 10 July, 2016.

Eight western disturbances affected Western Himalayan region and adjoining plains during the month.

Heavy to very heavy rain occurred at a few places with isolated extremely heavy falls over north-eastern states and central India on few days during the weeks from 7-13 and 21-27 July, 2016.

In the joint project of MoES and Natural Environmental Research Council (NERC), UK under the Monsoon Mission, aircraft observations with sophisticated scientific instruments were carried out in the main field phase of the project during May-July 2016 by operating the Atmospheric Research Aircraft (ARA) over Indo-gangetic plains, Northwestern India, East coast, Bay of Bengal, Arabian Sea and western ghats during this period. The aircraft observations were augmented by special observational programs over the land using boundary layer flux towers, radars, Microwave Radiometers etc. Honourable Minister for Science & Technology and Earth Sciences, Dr. Harsh Vardhan also participated in a research flight of duration 1.20 hrs.

The location specific wind forecasts from NCUM Global and Regional models are provided to Energon Power Resource Pvt. Ltd. operationally for 25 locations starting July 2016. Forecast data up to 72 hours from the operational Global Unified Model are provided daily to National Institute of Wind Energy (NIWE), Ministry of New & Renewable Energy, Government of India.

### **Rainfall in July, 2016**

Rainfall during the month of July, 2016 was excess in 10, normal in 16, and deficient/scanty in 10 of 36 meteorological sub- divisions. The rainfall for the country as a whole for the month of July, 2016 has been recorded as 308.2 mm (+7%) against the normal rainfall for the month as 289.2 mm.

## Monsoon Weather Reports, Maps and Crop Yield Forecast

Crop Yield assessment inputs for Jute for 3 states (Assam, Bihar, West Bengal) and sugarcane at F1 stage for 5 states (Gujarat, Haryana, Maharashtra, Karnataka and Uttar Pradesh) for Kharif 2016 were prepared and sent to Mahalanobis National Crop Forecast Centre (MNCFC) on 13th July 2016.

Two weather advisory base camps were established at Baltal & Pahalgam with effect from 1st July 2016 in connection with Sh. Amaranth Yatra-2016. Climate Diagnostics Bulletin of India for May 2016 and Pre-monsoon season 2016 (March-May) has been brought out.

Daily All India Weather Summary and Weekly Weather Reports are being brought out on routine basis.

Four weekly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the weeks ending 6th, 13th, 20th and 27th July 2016 and supplied for use in Agromet. Advisory Services Bulletin.

Five Aridity Anomaly Outlook Maps for drought monitoring for the week ending 1st, 8th, 15th, 22nd and 29th July were prepared and uploaded on IMD Pune website. Four weekly aridity reports and maps for the week ending 1st, 8th, 15th and 22nd July were prepared.

Two biweekly aridity maps and reports for the period 18th June 2016 – 1st July 2016 and 2nd July -15th July 2016 has been prepared.

Regional Meteorological Centre Guwahati and Meteorological Centre Agartala have been ISO certified.

## Geoscience Research

### Seismological Observational Network

Observation Type	Target for XII Plan	Commissioned so far	Data reporting during the month
Seismic stations	130	99	67
GPS stations	40	28	25

### Earthquake and Tsunami monitoring

Earthquake: 15 earthquakes were monitored in the Indian region out of which 1 event was greater than magnitude (M) of 5.0.

Tsunami: 1 major seabed earthquake (M > 6) with a potential to generate tsunami were monitored. This information was provided within 12 minutes of occurrence of the earthquake.

### Ocean Observation System

Type of Platform	Target	Commissioned till July, 2016	Data received during July, 2016
Argo Floats	200	280	131
Drifters	150	96	15
Moored Buoys	16	19	19
Tide Gauges	36	30	25
High Frequency(HF) Radars	10	10	9
Current Meter Array	10	11	5
Acoustic Doppler Current Profiler(ADCP)	20	21	18
Tsunami Buoys	7	9	6
Wave Rider Buoy	16	15	15

\*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	Ocean State Forecast(OSF)-Wave, Wind, Currents, SST, MLD and D20 forecasts	30
3.	Near Real time global ocean analysis (5-day averaged)	6
4.	Real time global ocean analysis (daily)	30
5.	Coral Bleaching Alert System	10

## **Swath Bathymetric Survey of Exclusive Economic Zone**

An area of 18,828 square km was surveyed with acquisition of bathymetric data.

## **Polar Science and Expedition**

A team of seven scientists left for the MoES Arctic Research Station, Ny-Ålesund on 18<sup>th</sup> July 2016. Scientific projects to be implemented during second the summer batch of Indian Arctic expedition 2016-17 includes polar aerosols, paleoenvironmental, multi proxy paleoclimatic and quaternary climate studies, primary productivity and beryllium concentration measurement in the Kongsfjorden. The IndARC II mooring deployed earlier by scientists of National Institute of Ocean technology(NIOT) and National Centre for Antarctic and Ocean Research(NCAOR) was successfully retrieved and redeployed after collection of data.

Study of diversity and functional capabilities of microorganisms from 3 regions of East Antarctica revealed that they play key roles in the natural ecosystem, including the biogeochemical cycling of Carbon, Nitrogen, Sulfur and Phosphorus.

A team of scientists have continued the field campaign in Himalaya with the following major activities: (a) Installation of new stakes and measured the old ones at Sutri Dhaka, Batal, Gepang and Bara Shigri glaciers; (b)Maintenance and re-installation of Automatic weather Station over Sutri Dhaka glacier; (c) Collection of Water Level data from all four locations along a stretch of 120 km (Sutri Dhaka, Passenger Ropeway site of Chandra River, Koksar and Tandi); (d) Construction of Research Field Station which is under progress at Sutri Dhaka base.

## **Capacity Building and Outreach**

For the first time, Indian Institute of Tropical Meteorology (IITM), Pune and the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy jointly organized an Advanced School on Earth System Modelling (ESM) during 18-27 July 2016, followed by a Workshop on Climate Change & Regional Impacts over South Asia during 28-29 July, at IITM, Pune, India. The summer school aims at providing training to the participants on the different components of Earth System i.e., atmosphere, ocean, land, cryosphere, atmospheric chemistry and aerosols, ocean biogeochemistry etc.

INCOIS, Hyderabad conducted a training course on " Emerging Trends in Ocean Observations and Ocean Data Analysis " during 4-15 July 2016 under ITCOcean. Sixty participants from various institutes in India as well as institutes from Iran, Bangladesh, Vietnam, Morocco, Mozambique, Egypt, and Saudi Arabia participated the course.

## **Promotion of Official Language**

The Second Sub-Committee of Parliamentary Committee on Official Language visited Met Office, Safdarjung, New Delhi during 27.07.2016 for inspection and to assess the status of implementation of official language policy.

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

Vessel	Days at Sea / Utilization	Maintenance/ Inspection /Scientific Logistics / Cruise Préparation	No. of Cruise	No. of Port Calls / Port Stay/ Statutory survey
Sagar Nidhi	4	27(Repair of Azimuth thruster motor)	1	-
Sagar Manjusha	8	11	3	12
Sagar Purvi	0	31(Hull plate repair and cruise preparation)	2	6
Sagar Kanya	9	-	1	22
Sagar Sampada	0	30(Dry dock)	-	-

**Publications in Science Citation Index(SCI) journals and PhDs awarded**

Subject	Publications			Ph.Ds		
	April-June,2016	July, 2016	Total	April-June,2016	July, 2016	Total
Atmospheric Sciences	51	18	69	1	-	1
Ocean Science and Technology	14	6	20	1	-	1
Polar Sciences	14	2	16	-	-	-
Geosciences and resources	6	-	6	-	-	-
Total	85	26	111	2	-	2