

Ministry of Earth Sciences(MoES)
Summary of Important Developments –January, 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 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 & 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>	--

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
7. **Status of Public grievances:**

No. Of Public Grievances redressed during the month	No. Of Public Grievances pending at the end of the month
47	59

Annex-I

Important policy decision taken and major achievements:

The Union Cabinet in its meeting held on 13th January 2016 approved India becoming a member country of the International Energy Agency- Ocean Energy Systems (IEA-OES) by signing of the Implementing Agreement.

Dr Harsh Vardhan, Hon'ble Minister of Science & Technology and Earth Sciences inaugurated new website of IMD, System of Aerosol Monitoring and Research (SAMAR), released research publications and awarded certificate to best offices, employees and school students on the occasion of 141st Foundation Day of IMD on 15th January, 2016.

Dr. Harsh Vardhan, Hon'ble Minister of Science & Technology and Earth Sciences addressed the Press Conference pertaining to socio-economic benefits of agro-meteorological advisory services and potential fishing zone advisory services offered by Ministry to farmers and fishermen on 28.01.2016 and requested the media to provide wide coverage towards societal benefit. Shri Y.S.Chowdary, Hon'ble Minister of State for Ministry of Science & Technology and Ministry of Earth Sciences was also present.

The second National Workshop on "Western Ghats: Evolution & Environmental issues" was inaugurated on Jan 1-2, 2016 by Shri Y.S.Chowdary, Hon'ble Minister of State for Ministry of Science & Technology and Ministry of Earth Sciences. The workshop deliberated upon 21 major topics linked to the geo-scientific aspects of Western Ghats viz. geological significance, climate aspects, ecosystem resources management, environmental issues and societal applications.

The verification of 2015 NE monsoon (Oct-Dec 2015) forecast for south peninsula and Tamil Nadu: The realized North East monsoon rainfall (Oct-Dec) over South Peninsula (Tamil Nadu, Coastal Andhra Pradesh, Rayalaseema, Kerala and south interior Karnataka) was 132% of its long period average (LPA) as against the IMD forecast of above normal (>111% of LPA) whereas realised NE monsoon for Tamil Nadu was 152% of its LPA as against the IMD forecast of above normal (>112% of LPA).

Minimum Government, Maximum Governance:

Agromet Advisories were communicated to 102 lakhs farmers of the country through mobile SMS including Kisan Portal and Public Private Partnership (PPP) mode.

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

All scientists are being encouraged to correspond with peer scientists of government organizations so as to develop self-expertise and fast implementation.

Atmospheric Observation Systems Network

Observation Type	Target	Commissioned up to January, 2016	Existing	Total	Data reporting
Automatic Weather Station (AWS)	550	555	125	680	428
Automatic Rain Gauge(ARG)	1350	1307	--	1307	494
GPS Sonde	10	38	1	39	39
Doppler Weather Radar(DWR)	23	17	5	22	15

Ozone	17	15	--	15	16
Other Rain Gauges excluding ARG and AWS	-	-	--	-	2378@
Aviation	--	72	--	72	72
Agro-meteorology	267	264	--	264	160

@ Data received from various agencies viz. Air Force, Railways, Central Water Commission, State Agriculture, State Irrigation and ESSO-India Meteorological Department (IMD)

Nine Global Navigation Satellite Systems (GNSS) equipments were installed for Integrated Precipitable Water Vapor (IPWV) measurements. One Hundred Four Digital Station Barometers were installed at different stations including Bharti, Antarctica. One Drishti Transmissometer installed at Varanasi airport. One Distance Indicating Wind Equipment (DIWE) installed at Tirupati.

Atmospheric Processes, Modeling and Services

Dense fog events (Visibility < 200m) during January 2016 accounted for total duration of 79-hours and 15 days. The accuracy (percentage correct) of daily forecast of occurrences and non-occurrences of dense fog, have been verified to be 87% which include 13 hits, 14 correct rejections with 3 False Alarm and 1 missed.

Rainfall in January, 2016

Rainfall was excess in 6, normal in 3, deficient/scanty in 24 and Nil in 5 of 36 meteorological sub- divisions. The actual rainfall for the month was 7.8 mm against the normal rainfall of 19.2 mm.

Modelling

Modules have been implemented for generation of special forecast products for Indian Navy for the International Fleet Review 2016 to be held at Visakhapatnam during February 2016.

Modules for special forecast products have been implemented for WMO's Severe Weather Forecast Demonstration Project (SWFDP). The products which are generated operationally basing upon NCMRWF Unified Model (NCUM) include spatial maps of vorticity, divergence, vertical shear, wind at 10metre, rainfall and vertical velocity etc. and EPSgrams for over 100 stations over South Asia.

Monsoon Weather Reports, Maps and Crop Yield Forecast

Crop Yield Forecast for Sorghum for the states Maharashtra and Karnataka; Rapeseed & Mustard for Gujarat, Madhya Pradesh, Uttar Pradesh, Haryana, and Rajasthan; Wheat for Bihar, Gujarat, Haryana, Madhya Pradesh, Punjab, Rajasthan & Uttar Pradesh and Potato for Gujarat, Punjab, Uttar Pradesh and West Bengal developed and communicated to the Ministry of Agriculture, New Delhi.

Geoscience Research

Seismological Observational Network

Observation Type	Target for XII Plan	Commissioned so far	Data reporting during the month
Seismic stations	130	89	61
GPS stations	40	27	22

Earthquake and Tsunami monitoring

Earthquake: 11 earthquakes were monitored in the Indian region out of which 3 events were greater than magnitude (M) of 5.0.

Tsunami: 3 major seabed earthquakes (M> 6) with a potential to generate tsunami were monitored. This information was provided within 12 minutes of occurrence of the earthquake for all the events.

Ocean Observation System

Type of Platform	Target	Commissioned till January, 2016	Data received during January, 2016
Argo Float	200	272	124*
Drifters	150	144	6*
Moored Buoys	16	19	17
Tide Gauges	36	25	18
High Frequency(HF) Radars	10	12	7
Current Meter Array	10	11	5
Acoustic Doppler Current Profiler(ADCP)	20	23	18
Tsunami Buoys	7	7	7
Wave Rider Buoy	16	11	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)	31
2.	Ocean State Forecast(OSF)-Wave, Wind, Currents, SST, MLD and D20 forecasts	31
4.	Near Real time global ocean analysis (5-day averaged)	6
5.	Real time global ocean analysis (daily)	30
6.	Coral Bleaching Alert System	11

Polar Science and Expedition

The 35th Indian Scientific Expedition team is carrying out scientific in Antarctica in the fields of Atmospheric Sciences, Earth Sciences and Environmental around the research bases Maitri in Schirmacher Oasis and Bharati in the Larsemann Hills.

Marine Living Resources (MLR)

An unusual swarming of Polychaetes belonging to the families *Amphinomidae*, *Aphroditidae* and *Sabellariidae* were observed off Vizag (17°07.3870 N, 83°21.7320 E) at a depth of 500m during the recent cruise (no:346) to Bay of Bengal.

Two new records of crustaceans were reported from Agatti Islands, Lakshadweep (10.853 N, 72.193 E): decapod crab, *Ashtoret picta* (Hess, 1865) and coral shrimp *Coralliocaris superba* (Dana, 1852) as part of regular biodiversity survey. In Indian waters they are reported only from Andaman Sea.

Swath Bathymetric Survey of Exclusive Economic Zone

An area of 15,664 square km was surveyed with Gravity Coring at 3 stations, and grab sampling at 1 station.

Capacity Building and Outreach

Parliamentary Standing Committee Members on Science & Technology and Environment and Forests visited CMLRE hatchery at Agatti during 21st Jan 2016.

Hon. Parliamentary Committee of Rajbhasha Carried out inspection of M.O Okha at Dwarka on 18/01/2016.

National Workshop on 'Atmospheric Instrumentation and Meteorological Sciences: Theory & Challenges', was jointly organized by IMD and Vishwakarma Institute of Technology, Pune during 19-21, January 2016.

Training Course on "Marine GIS for Operational Oceanography" -was conducted during January 18-22, 2016 at ESSO-INCOIS under ITCOcean training program. Twenty (20) participants including 13 international participants from eight countries (Bangladesh, Indonesia, Iran, Kenya, Maldives, South Africa, Sri Lanka and Tanzania) attended the course. Ocean Teacher Global Academy (OTGA) of International Oceanographic Data and Information Exchange (IODE) of IOC/UNESCO funded the travel and accommodation of all participants.

Utilization of Ocean Research Vessels during the month

Vessel	Days at Sea / Utilization	Maintenance/ Inspection /Scientific Logistics/ Cruise Preparation	No. of Cruise	No. of Port Calls / Port Stay/ Statutory survey
Sagar Nidhi	4	26(Repair of Azimuth thruster motor)	1	1
Sagar Manjusha	15	16	1	0
Sagar Purvi	15	7	1	9
Sagar Kanya	9	22	1	0
Sagar Sampada	18	13	1	0

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

Subject	Publications			Ph.Ds		
	April–December 2015	January, 2016	Total	April–December 2015	January, 2016	Total
Atmospheric Sciences	28	11	39	2	3	5
Ocean Science and Technology	14	1	15	2	0	2
Polar Sciences	10	2	12	-	-	-

Geosciences and resources	24	1	25	-	-	-
	76	15	91	4	3	7