

Ministry of Earth Sciences(MoES)
Summary of Important Developments –February, 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/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
72	49

Annex-I

Important policy decision taken and major achievements:

Dr. Harsh Vardhan, Hon'ble Union Minister for Science & Technology and Earth Sciences released the "Seismic Microzonation Report of NCT Delhi and Kolkata Megacity on 1:10,000 scale Map" of an area 1483 km² and 435km² respectively on 22/02/2016 in Ministry of Earth Sciences, New Delhi. This will help to minimize the impact of earthquakes. Sh. Y.S. Chowdary, Hon'ble Minister of State for Science & Technology and Earth Sciences, was present during the occasion.

The Bhumi-Pujan for the construction of Borehole Geophysical Research Laboratory(BGRL) building complex was held on Feb 1, 2016 at the MoES site located in Hazarmachi, Karad. Hon'ble Union Minister of Science & Technology and Earth Sciences, Govt. of India graced the occasion along with several dignitaries. The construction activity is progressing as per schedule, with significant progress made in priority areas such as Core Repository and Laboratory buildings.

Special forecast products over Visakhapatnam were provided to Indian Navy during the International Fleet Review 2016, hosted by Indian Navy during 4-8th Feb 2016.

Minimum Government, Maximum Governance:

Agromet Advisories were communicated to 100.7 lakhs farmers of the country through mobile SMS including Kisan Portal and Public Private Partnership (PPP) mode.

Atmospheric Observation Systems Network

Observation Type	Target	Commissioned up to February, 2016	Existing	Total	Data reporting
Automatic Weather Station (AWS)	665	669	-	669	434
Automatic Rain Gauge(ARG)	1350	1307	--	1307	469
GPS Sonde	10	39	1	40	38
Doppler Weather Radar(DWR)	23	18	-	18	14
Ozone	17	15	--	15	15
Other Rain Gauges excluding ARG and AWS	-	-	--	-	2397
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)

Atmospheric Processes, Modeling and Services

Western Himalayan region and adjoining plains were affected by Six (06) Western Disturbances (W.D.) out of these two(2)W. D. caused widespread and four (4) scattered precipitation over Western Himalayan Region. Plains of North-west India also experienced isolated rainfall activity.

Rainfall in February, 2016

The rainfall for the country as a whole for the month of February, 2016 has been recorded as 10.2 mm (-54%) against the normal rainfall for the month as 22.2 mm. Subdivision-wise distribution of rainfall is as under:

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 10 metre, rainfall and vertical velocity etc. and EPSgrams for over 100 stations over South Asia.

Monsoon Weather Reports, Maps and Crop Yield Forecast

Total fog hours of visibility (V) < 1000m at IGIA for Feb. 2016 were 109 hours spread over 16 days out of which, there were 4 days (21 hours) of dense fog events which affected flight operation. The fog season was ended on 22nd Feb 2016 for Delhi.

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 on February 3,10,17 & 24.

Disastrous Weather Events for 2013 & 2014 have been published.

Climate Diagnostics Bulletin of India for December 2015 and Post Monsoon Season (Oct-Dec) 2015 have been published.

Annual Climate Summary of India 2015 has been brought out.

Potato yield forecast (F2 stage) for the states of Gujarat, Punjab, Uttar Pradesh and West Bengal ; Wheat (F2 stage) for the states Bihar, Gujarat, Haryana, Madhya Pradesh, Punjab, Rajasthan and Uttar Pradesh and Rapeseed & Mustard (F3 stage) for the states of Gujarat, Madhya Pradesh, Uttar Pradesh, Haryana, Rajasthan and West Bengal were developed during the month for communication to Mahalanobis National Crop Forecast Centre (MNCFC), Department of Agriculture & Cooperation (DAC), 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	95	65
GPS stations	40	27	22

Earthquake and Tsunami monitoring

Earthquake: 21 earthquakes were monitored in the Indian region out of which 5 events were greater than magnitude (M) of 5.0.

Tsunami: 2 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 both the events.

Ocean Observation System

Type of Platform	Target	Commissioned till February, 2016	Data received during February, 2016
Argo Float	200	272	128

Drifters	150	88	5
Moored Buoys	16	19	19
Tide Gauges	36	25	19
High Frequency(HF) Radars	10	10	10
Current Meter Array	10	11	5
Acoustic Doppler Current Profiler(ADCP)	20	21	18
Tsunami Buoys	7	7	7
Wave Rider Buoy	16	10	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)	29
2.	Ocean State Forecast(OSF)-Wave, Wind, Currents, SST, MLD and D20 forecasts	29
4.	Near Real time global ocean analysis (5-day averaged)	5
5.	Real time global ocean analysis (daily)	20
6.	Coral Bleaching Alert System	9

Location-specific Ocean State Forecast system for Digha, West Bengal has been inaugurated on 2 February, 2016. An user interaction meeting was also conducted after the inaugural function.

Polar Science and Expedition

Bharati Gateway for IP-EPABX has been installed successfully and tested. It will provide seamless phone connectivity between NCAOR, Maitri and Bharati.

After delivering all the cargo and fuel at Bharati, expedition vessel MV Ivan Papanin sailed for Maitri on 12 February 2016 with 28 Indian Expedition members and 09 helicopter-crew on board. Expedition vessel reached India Bay on 18 February 2016 at 13:30 hrs local time.

Polar Remote Sensing: Geospatial mapping of vegetation in the Antarctic environment : This study is the first to use high-resolution WorldView-2 (WV-2) imagery to classify vegetation communities on Antarctic oases and to provide semi-automated means to map vegetation as an imperative indicator for environmental change. Multispectral imagery (MSI) and panchromatic imagery (PAN) from very high resolution WV-2 have been used for mapping of vegetation in different forms in Antarctic environment.

Marine Living Resources (MLR)

A multidisciplinary cruise was conducted to address the role of multi-scale ocean processes and the Myctophid associated mesopelagic system in the northern and central Arabian Sea. The voyage was for 40 days (10th Jan to 22nd Feb 2016) in the Kochi-India-Muscat-Oman-Kochi route. A total of 72 stations for environmental and productivity studies was covered. 20 species of DSL fishes including 6 species of Myctophids were recorded. Catch per Unit Effort(CPUE) recorded was 16.81 kg/h.

Swath Bathymetric Survey of Exclusive Economic Zone

An area of 23,072 square km was surveyed with Gravity Coring at 3 stations, and grab sampling at 1 station.

Capacity Building and Outreach

To mark the 25 years of the Coastal Regulation Zone Notification 1991, one day workshop on 'Coastal Environment Day' was organized in NCESS campus jointly by NCESS, KSCSTE, SISEM and St. Xavier's College on 19th February 2016.

Indian National Centre for Ocean Information Services (INCOIS) celebrated its 17th Foundation Day on 3rd February 2016. Dr. George Joseph, former Director, SAC, Ahmedabad & Chief Editor of ISRS Journal Photonirvachak, delivered the Foundation Day lecture.

INCOIS was awarded the special jury award for the ESSO-INCOIS website and 3rd Prize for the Annual Report (2014-15) by Public Relations Society of India from Shri. T. Harish Rao, Hon'ble Minister for Irrigation & Legislative Affairs, Govt. of Telangana during the 1st Telangana State Public Relations Conference held at Hyderabad on 21st February, 2016.

Second National training on sensors and Ocean data collection was organized at NIOT from 9th – 11th February 2016 in which M/s Sea-Bird scientific imparted training to more than 60 participants from 18 institutions/ organizations.

George N. Sibley, Minister Counselor Economic, Environmental, Science and Technology Affairs accompanied by six other US Consular officials visited INCOIS and discussed about the Ocean Dialogue initiated by the governments of USA and India. An Android based App for Ocean Information Services developed at INCOIS has been placed in Google Play Store on 15 Feb 2016.

Wind Chill Temperature Application was developed and implemented w.e.f 15th February 2016.

A team of scientists from Indian National Centre for Ocean Information Services(INCOIS) comprising of Dr. T M Balakrishnan Nair, Dr. R. Hari Kumar, Dr. Francis P A, and Ms. Sandhya K G is selected for the National Geo-science Award, 2014 by Government of India for developing Ocean Forecast and Information System for India for maritime safety and boosting the blue economy. Another team of scientists comprising of Dr.R.Venkatesan, Scientist-G, National Institute of Ocean Technology (NIOT), Mr.M.Arul Muthiah, Scientist-D, NIOT, Dr.K.P.Krishnan, Scientist-D, National Centre for Antarctic and Ocean Research(NCAOR) and Mr.B.Kesavakumar Scientist-C, NIOT is also selected for the NATIONAL GEOSCIENCE AWARD - 2014 in recognition of significant work/contribution in the field of Glaciology and Arctic & Antarctic Research.

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	0	29(Repair of Azimuth thruster motor)	1	1
Sagar Manjusha	16	7	3	6
SagarPurvi	10	15	2	4
SagarKanya	21	8	2	0
SagarSampada	20	-		9

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

Subject	Publications			Ph.Ds		
	April,2015– January, 2016	February, 2016	Total	April,2015– January, 2016	February, 2016	Total
Atmospheric Sciences	39	19	58	5	3	8
Ocean Science and Technology	15	1	16	2	1	3
Polar Sciences	21	2	23	1	1	2
Geosciences and resources	25	5	30	4	1	5
	100	27	127	12	6	18