

Ministry of Earth Sciences(MoES)
Summary of Important Developments –March, 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
38	41

Annex-I

Important policy decision taken and major achievements: Ministry of Earth Sciences has finalized the action plans with timeline for implementation based on the recommendations made by the group of secretaries formed by the Cabinet Secretariat. These action plans are finalized by wide consultations and discussions with the scientists in MoES and with the Hon'ble Minister of Earth Sciences. The action plans identified by MoES and the themes are as follows:

- Farmer Centric Initiatives in Agriculture: Improved Weather and Climate Services for rain-fed agriculture
- Swacch Bharat: Marine Observing System Along the Indian Coast
- Accelerated Growth, Blue Economy: Exploration of Ocean Energy and Resources
- Employment Generation Strategies: Customized weather forecasts for Tourism Industry

India Meteorological Department, Ministry of Earth Sciences for the first time issued a long range seasonal forecast for summer temperatures over India during the hot weather season (April to June) of 2016. This forecast was based on the Coupled Climate Model simulations made at the Indian Institute of Tropical Meteorology, Pune, Ministry of Earth Sciences. As per this forecast, the 2016 season will experience above normal temperatures (both day and night time) over most parts of the country. In addition, there is a high probability of experiencing severe heat wave conditions over central and northwest India during the hot weather season (April to June).

Minimum Government, Maximum Governance:

Agromet Advisories were communicated to 110.5 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.

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.

Updated Gridded data sets of Rainfall (1951-2015 and 1901-2015), Rainfall (1901-2015) and Temperature (1951-2014) are made available to public since 1st March 2016.

Atmospheric Observation Systems Network

Observation Type	Target	Commissioned up to March, 2016	Data reporting
Automatic Weather Station (AWS)	675	679	433
Automatic Rain Gauge(ARG)	1350	1307	457
GPS Sonde	10	40	39
Doppler Weather Radar(DWR)	23	19	16
Ozone	17	15	15
Other Rain Gauges excluding ARG and AWS	-	-	2410
Aviation	--	72	72
Agro-meteorology	267	264	160

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

One hundred Seventy Seven(177) Digital Station Barometers were delivered under different RMCs out of which 138 were installed viz. RMC Chennai-40, RMC Kolkata -20, RMC Guwahati -17, RMC Mumbai-15, RMC Nagpur -13, RMC New Delhi- 32, Bharati Antarctica -1.Three (03) Pyranometer installed for Global Radiation at Jaipur , Port Blair & Jaisalmer.

New Digital Current Weather Instrument System (DCWIS) systems (2 Nos.) were installed at Chennai airport.Two Nos. of Diffuse Shading ring assembly and two Pyranometer installed at Port Blair (RMC Kolkata), Jaisalmer (RMC Delhi).

Atmospheric Processes, Modeling and Services

Five (5) Western Disturbances have caused fairly widespread to widespread rainfall/snowfall with isolated heavy falls over western Himalayan Region. Scattered rainfall activity over plains of northwest and central India with isolated thunderstorm/hailstorm. Scattered to fairly widespread rain with Thunderstorms has occurred at many places over North-Eastern states and West Bengal during 2nd fortnight of March.

Heat wave conditions prevailed at isolated places over Madhya Pradesh and Gujarat for one or two days in the last week of the month.

Rainfall in March, 2016

Rainfall was excess in 13, normal in 5 and deficient/scanty in 18 of 36 meteorological sub- divisions. The rainfall for the country as a whole for the month of March, 2016 has been recorded as 30.6 mm (-1%) against the normal rainfall for the month as 30.9 mm.

Monsoon Weather Reports, Maps and Crop Yield Forecast

Wheat forecast(F3 stage) for the states Bihar, Gujarat, Haryana, Madhya Pradesh, Punjab, Rajasthan and Uttar Pradesh & rice forecast(Rabi) for the states of Andhra Pradesh, Telangana, Karnataka, Odisha and West Bengal developed during the month.

ENSO bulletin and Seasonal Climate Outlook for South Asia for the month of March 2016 were uploaded at IMD Pune web portal.

ISO Certification ISO QMS 9001:8000 Certification for Central Aviation Meteorological Division (CAMD) at HQ has been completed.Renewal of I.S.O. Certificate for MO Safdarjung has been done on 03rd March 2016.

Geoscience Research

Seismological Observational Network

Observation Type	Target for XII Plan	Commissioned so far	Data reporting during the month
Seismic stations	130	95	61
GPS stations	40	27	22

Earthquake and Tsunami monitoring

Earthquake: 19 earthquakes were monitored in the Indian region out of which 4 events were greater than magnitude (M) of 5.0.

Tsunami: 1 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 the event.

A mock tsunami drill was conducted for the Kerala Coast in coordination with MHA and Kerala State Disaster Management Authority on March 11, 2016. The drill was conducted for 4 hours 15 minutes during which 7 test bulletins were issued to the concerned officials. All nine coastal districts of Kerala have participated in the mock tsunami drill.

Ocean Observation System

Type of Platform	Target	Commissioned till March, 2016	Data received during March, 2016
Argo Float	200	280	137
Drifters	150	92	9
Moored Buoys	16	19	19
Tide Gauges	36	30	24
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	6
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)	6
5.	Real time global ocean analysis (daily)	26
6.	Coral Bleaching Alert System	11

Indian National Centre for Ocean Information Services(INCOIS) conducted "Location-specific Ocean Forecast & Information Services and Training Programme for Users and Trainers" on March 18, 2016 at AMET University, Chennai. More than 200 fisher men/women participated in the user interaction meeting. Fifteen trainers were given hands-on training on the dissemination of INCOIS services (PFZ, OSF and tsunami early warnings) to the fishermen and to collect the feedbacks from them.

Polar Science and Expedition

The winter batch of Indian Arctic expedition left for Ny-Ålesund on 28th March 2016.

Southern Ocean Expedition

During the 8th Southern Ocean Expedition (2014-15) vertical distribution of zooplankton and chlorophyll-a biomass was investigated at various frontal regions. The strongest deep chlorophyll maximum (DCM) was found at Sub-Tropical Front (STF) followed by Sub-Antarctic Front (SAF), Polar Front 1 (PF1) and Polar Front (PF2). Picophytoplankton was dominant in STF and PF, whereas microphytoplankton was abundant in SAF at DCM. Changes in DCM and variations of phytoplankton size in different frontal region would have significant impact on zooplankton biomass and distribution of species. Highest zooplankton biomass has been found at PF followed by SAF and STF.

Swath Bathymetric Survey of Exclusive Economic Zone

An area of 39,493 square km was surveyed with Gravity Coring at 4 stations, and grab sampling at 3 station.

Ocean Technology

Technology on Drifting buoy with INSAT communication has been transferred to Indian Industry (M/s. Komoline and M/s Astra Microwave products) for commercialization and subsequently twenty drifter buoys are produced.

Promotion of Official Language

A one day Hindi Workshop was organized on 25th February, 2016 at the Institute on the subject "Paribhashik Shabdavali" with the participation of several scientists and officers.

Swachh Bharat Abhiyan

Indian National Centre for Ocean Information Services(INCOIS) carried out a major cleaning effort with the participation of staff as part of Swachh Bharat Abhiyan during 8-18 March, 2016.

All scrap items including wood, metal pieces, plastic, chemicals and other non-asset items were segregated at National Institute of Ocean Technology(NIOT) by NIOT staff and placed in the identified locations. Following tender procedures as per the GFR guidelines, the scrap was disposed off.

Capacity Building and Outreach

User's meet was jointly organised by IMD and Govt. Of Goa on 1st March 2016 at Goa. Honourable Chief Minister of Goa was the Chief Guest on the occasion and about 15 officers from IMD, 70 delegates from user community and press & electronic media personnel attended the meet.

A capsule course on Numerical Weather Prediction(NWP) was conducted for 12 Indian Air Force officers during 07-11 March, 2016.

World Meteorological Day 2016 was celebrated at Delhi HQ and all sub-offices of IMD and Indian Institute of Tropical Meteorology(IITM) on 23th March 2016. An open house and meteorological exhibition as well as Seminars on the theme were organized at HQ and in different offices in the country for students, teachers and general public. Most of the electronic media broadcasted special messages/ talks/discussions in English, Hindi and regional languages. The theme chosen for this year was "Hotter, Drier, Wetter, Face the Future".

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	31(Repair of Azimuth thruster motor)	-	-
Sagar Manjusha	16	15	3	-
Sagar Purvi	10	16	2	5
Sagar Kanya	26	-	2	5
Sagar Sampada	27	-	1	4

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

Subject	Publications			Ph.Ds		
	April,2015– February, 2016	March, 2016	Total	April,2015– February, 2016	March, 2016	Total
Atmospheric Sciences	58	17	75	8	-	8
Ocean Science and Technology	16	2	18	3	-	3
Polar Sciences	23	-	23	2	-	2

Geosciences and resources	30	=	30	5	-	5
	127	19	146	18	-	18