Year End Review-2017 Ministry of Earth Science

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The Department of Ocean Development (DOD) was created in July 1981 as a part of the Cabinet Secretariat directly under the charge of the Prime Minister and came into existence as a separate Department in March 1982. The Erstwhile DoD functioned as a nodal Ministry for organizing, coordinating and promoting ocean development activities in the country. In February, 2006, the Government notified the Department as the Ministry of Ocean Development.

The Government of India, further reorganized the Ministry of Ocean Development and the new Ministry of Earth Sciences (MoES) came into being vide Presidential Notification dated the 12th July, 2006 bringing under its administrative control India Meteorological Department (IMD), Indian Institute of Tropical Meteorology (IITM) and National Centre for Medium Range Weather Forecasting (NCMRWF). The Government also approved the setting up of Earth Commission on the pattern of Space Commission and Atomic Energy Commission.

Commissioning of Air Quality & Weather Monitoring Stations at Ahmedabad: An integrated early warning System of Air Quality and Weather Forecasting and Research (SAFAR) was dedicated to the nation by Dr. HarshVardhan,Union Minister for Science& Technology and Earth Sciences on 12th May 2017 in Ahmedabad. With the advent of SAFAR, a new health action plan "Ahmedabad- AIR (Air Information and Response)" was launched with a lead from Ahmedabad Municipal Corporation and other research organizations which will connect SAFAR products with health related mitigation options.

I. **Open sea cage culture**:A Foundation Stone for the Marine Finfish Hatchery and Test Facility for Ballast Water Treatment Technologies was laid on April 8, 2017 by Shri Y.S. Chowdary, Minister for State for Science & Technology and Earth Sciences, at Nellore sea front facility. These facilities will be further developed by National Institute of Ocean Technology, an autonomous institute under the Ministry .

II. Puducherry Beach Restoration

The coastline of Puducherry and the neighboring Tamil Nadu coastline have suffered from severe coastal erosion due to natural and anthropogenic activities. Short term measures like Seawalls and Groin field were attempted by Puducherry government but the erosion problem shifted further north, with increased intensity. Detailed shoreline management plan was prepared using satellite data and process based measurements covering two predominant seasons (SW and NE Monsoons). As part of this plan Puducherry government has implemented the beach nourishment scheme along 500m coast line using 50,000 m^3 of dredged sand from harbor mouth. The nourishment resulted in gaining of beach to an extent of 60m near Puducherry Light House and Puducherry New Pier.

Before Implementation

After Implementation

III. **Monsoon Mission Program**

The Ministry of Earth Sciences (MoES), launched the “National Monsoon Mission” (NMM), a mission mode project with a vision to develop a state of the art dynamical prediction system for monsoon rainfall on all different time scales in 2012. It has successfully completed its first phase by setting up high resolution coupled dynamical prediction system with reasonable prediction skill for seasonal and extended range time scales and very high resolution atmospheric model for weather prediction.

For the first time, India Meteorological Department used the Monsoon Mission dynamical model to prepare operational seasonal forecast of 2017 monsoon rainfall over India.

The Ministry has now launched the Monsoon Mission Phase II program, for next 3 years (2017-2020) with emphasis on predicting extremes and development of applications based on monsoon forecasts.

IV. **ScientificDeep Drilling in the Koyna Intra-Plate Seismic Zone, Maharashtra** Scientific drilling of the Koyna pilot borehole KFD1 to a depth of 3 km and the acquisition of downhole geophysical data were completed. Passing through ~1.25 km - thick succession of Deccan basalt flows and ~1.75 km into the underlying granite-gneiss basement rocks, the borehole is the deepest drilled through crystalline rock formations in the country. Cuttings were collected at 5 m intervals in basalt and 3 m intervals in basement rock. Additionally, limited cores were collected from discrete depths in the 1500-3000 m section. To keep pace with the drilling, three field laboratories were functional on site:

(i) geological lab., (ii) mud-logging lab., (iii) online gas and fluid sampling lab.

V. **Inauguration of the ST Radar at CUSAT and Doppler Weather Radar at Kochi:**

Dr. Harsh Vardhan, dedicated to the nation, the Stratosphere-Troposphere (ST) Radar Facility at the Advanced Centre for Atmospheric Radar Research at the Cochin University of Science and Technology (CUSAT) on 11thJuly 2017. it is the first stratosphere troposphere wind profile radar operating on 205 MHz installed in the world. The facility will aid monitor atmospheric wind conditions across altitudes up to 20 km and beyond. The research has applications in meteorology, cloud physics, thunderstorms, convections, atmospheric electricity and climate change.

A state-of-the-art, indigenous doppler weather radar, capable of predicting with increased accuracy weather events such as cyclone occurring in 500-km radius from Kochi, was inaugurated by Dr. Harsh Vardhan, in Kochi on 12th July 2017. The S-Band Doppler weather radar in Kochi was made with support from ISRO and Bharat Electronics.

VII.De-salination of water:

The Ministry through its constituent unit, the National Institute of Ocean Technology (NIOT) has developed indigenized technologies for producing clean drinking water from the ocean. Currently there are three desalination plants operational at Kavaratti, Agatti and Minicoy islands, which are individually producing 1 lakh liters of drinking water per day. The plants are operated by the local islanders. **NIOT is now installing another six more plants in Lakshadweep islands, each with a capacity to produce 1.5 lakh liters of water every day, with the help of Lakshadweep administration. Two plants will be commissioned by December 2018.**

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