

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION No. 3079
TO BE ANSWERED ON FRIDAY, DECEMBER 06, 2019
DEVELOPMENTS IN THE FIELD OF EARTH SCIENCES**

3079. SHRI P. RAVEENDRANATH KUMAR:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) the developments made in the field of Earth Sciences, especially in Atmospheric Observing Systems, Agrometeorological Advisory Service, etc. during the last six years;**
- (b) whether the Government is satisfied with its achievements and if so, the details thereof;**
- (c) whether the Government has a proposal to establish a dedicated centre for Climate Change Research, within the State of Tamil Nadu to address various earth scientific issues; and**
- (d) if so, the details thereof?**

**ANSWER
MINISTER FOR SCIENCE AND TECHNOLOGY AND
MINISTRY OF EARTH SCIENCES
(DR. HARSH VARDHAN)**

- (a) India Meteorological Department (IMD) continuously expands its infrastructure for meteorological observations, data exchange, monitoring & analysis, forecasting and warning services using latest technologies. IMD uses a suite of quality observations from Satellites, Radars and conventional & automatic weather stations for monitoring of weather development. It includes INSAT 3D, 3DR and SCATSAT satellites, Doppler Weather Radars (DWRs) along the coast and automated weather stations (AWS), automatic rain gauges, meteorological buoys and ships.**

Recent Achievements made in Atmospheric Observing Systems are given below:

- Latest state of Art of sensors are used in the automatic Weather stations for improving accuracy. Data is made real time or near real time using General Packet Radio Services (GPRS) technology.**
- Installation of Ultraviolet Radiation sensors in AWS for computation of UV index.**

- **Installation of Present Weather sensors for Automatic Detection of present weather consisting of fog, snow, dust, smoke, Drizzle, Rain etc. useful for aviation.**
- **In the last six years, one X-Band DWR and eight S-Band DWRs (all together nine) have been inducted into the DWR network.**
- **Augmentation of the Pilot Balloon observations to 62 stations and implementation of indigenous GPS based Pilot Balloon-sonde system.**
- **Augmentation of the Radiosonde stations to 56 enabled with twice a day launching.**
- **Upgradation of airports with state-of-art integrated Automated Weather Observing System (AWOS).**
- **State-of-the art air quality observations for issuing air quality forecasts.**

Agrometeorological Advisory Services: IMD operates dedicated weather and climate monitoring, detection and warning services useful for various sectors including agriculture. For the benefits of farming community in the country, India Meteorological Department (IMD) runs an operational Agrometeorological Advisory Service (AAS) viz., Gramin Krishi Mausam Sewa (GKMS) scheme. Under the scheme, medium range weather forecast (up to 5 days) at district level is generated and issued and based on the forecast, Agromet Advisories are being prepared and communicated by the 130 Agromet Field Units (AMFUs) located at State Agricultural Universities and other academic institutes to the farmers on every Tuesday and Friday to take decision on day-to-day agricultural operations. AAS rendered by IMD is a step towards weather-based crop and livestock management strategies and operations dedicated to enhancing crop production and food security besides reducing crop damage and loss due to unusual weather.

IMD is venturing into implementation of block level AAS in collaboration with Indian Council of Agricultural Research (ICAR) in the country. District Agromet Units (DAMUs) are being established in the Krishi Vikas Kendra (KVKs) under ICAR network. Implementation of block level AAS would address the micro-level variation in weather and climate and hence, more number of farmers will be benefitted.

Agromet Advisories are communicated to the farming community through multichannel dissemination system like print and electronic media, Doordarshan, radio, internet including SMS using mobile phones. The SMS are sent through Kisan Portal by Ministry of Agriculture and Farmers' Welfare and also through private companies under Public Private Partnership (PPP) mode. At present, 42 million farmers in the country receive the IMD's Agromet Advisories through SMS directly.

- (b) Yes Sir. IMD has one of the best forecasting systems for prediction of weather events including prediction of tropical cyclones. MoES has adapted global models from USA and UK under the bilateral cooperation for forecasting of cyclones. Many advanced weather prediction models are used by IMD for generating these forecasts.**

IMD has a very effective Decision Support System for analysing various observations at a single platform and for predicting track and intensity of cyclones as well as adverse weather like heavy rain and wind associated with it. IMD also utilises storm surge and coastal inundation models and wave models output from Indian National Centre for Ocean Information Services (INCOIS), Hyderabad for issuing storm surge warning. IMD has well defined Standard Operating Procedure (SOP) for monitoring & forecasting the cyclones and for dissemination of warnings.

IMD is also leading WMO's Severe Weather Forecasting Demonstration Project (SWFDP)-Bay of Bengal (BOB). Regional Specialised Meteorological Centre (RSMC), New Delhi is the regional centre to provide daily Regional Severe Weather Guidance to the 10 member countries including Bangladesh, India, Bhutan, Nepal, Pakistan, Afghanistan, Sri Lanka, Maldives, Myanmar and Thailand. Under this project 5 days forecast is issued by RSMC, New Delhi daily for heavy rainfall, strong wind, storm surge, high waves in addition to cyclones.

IMD also acts as Tropical Cyclone Advisory Centre for International Civil Aviation and provide cyclone forecast to all the Meteorological Watch Offices in the Asia Pacific Region as well as in the Middle East for issue of significant meteorological information to International Civil Aviation as per the requirement of International Civil Aviation Organisation (ICAO).

National Disaster Management Authority (NDMA) has taken up the National Cyclone Risk Mitigation Project (NCRMP) in collaboration with IMD to enhance cyclone mitigation related work for the coastal areas of the country.

Since 2017, IMD has started to use state-of-the-art dynamical forecasting system to prepare the operational monsoon forecasts.

- (c) No Sir.**

- (d) Doesn't arise.**
