

**GOVERNMENT OF INDIA
EARTH SCIENCES
LOK SABHA**

STARRED QUESTION NO:323
ANSWERED ON:12.08.2015
Weather Forecast Services
Karandlaje Km. Shobha;Simha Shri Prathap

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) the details of weather forecast services/information provided to the farmers, fishermen, tourists and other users by the Indian Meteorological Department (IMD) at district and block levels;
- (b) whether IMD is unable to provide seamless services on account of shortage of staff and obsolete equipment;
- (c) if so, the details thereof and the corrective action taken/being taken by the Government in this regard;
- (d) whether modernisation of IMD is underway and if so, the estimated funds required and provided for the purpose; and
- (e) the other steps taken/proposed to be taken by the Government to augment the efficiency of IMD to enable it to provide advanced weather forecasts to the users ?

Answer

THE MINISTER OF STATE FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND
MINISTRY OF EARTH SCIENCES
(DR. HARSH VARDHAN)

(a) to (e): A Statement is laid on the Table of the House.

STATEMENT LAID ON THE TABLE OF THE LOK SABHA IN REPLY TO PARTS (a) TO (e) TO THE STARRED QUESTION No *323 (1st Position) REGARDING "WEATHER FORECAST SERVICES" TO BE ANSWERED ON WEDNESDAY, AUGUST 12, 2015

(a) The Gramin Krishi Mausam Seva (GKMS) of Earth System Science Organization (ESSO)-India Meteorological Department (IMD) has been successful in providing the crop specific advisories to the farmers at the district level twice weekly through different print/visual/Radio/ IT based wider dissemination media including short message service (SMS) and Integrated Voice Response System (IVRS). At present, the GKMS products are disseminated through SMS and IVRS to 11.46 million farmers in the country.

ESSO-IMD is not providing forecast and advisory services at the Block Level at present. However research efforts are initiated by ESSO -IMD to explore possibility of generating sub district scale Agrometeorological forecast with acceptable level of verification skill in a pilot mode.

For the benefit of fisherman community, a satellite-based application for the fishermen community of the country, called "Potential Fishing Zone (PFZ) Advisories", is being generated and provided on using the satellite data and Geographic Information System (GIS) tools since 1999 useful for location of fish grounds/aggregation. In addition, the Ocean State Forecast (OSF) (wave height and direction, wind speed and direction, ocean currents, sea surface temperature, depth of mixed layer and thermo cline, sea level at major and minor ports, etc. is also being provided to fisherman.

ESSO-IMD, in coordination with State Governments, is generating forecasts for major pilgrimages such as Amarnath Yatra, Manasarovar Yatra, Chardham Yatra, Kumbhmela, etc. and also various mountaineering expeditions launched by the Armed Forces for Mount Everest and several other Himalayan mountains. Continuous efforts are on to generate value added forecast products at different spatial scales (State, District, City etc.) and temporal scales (from few hours to 5 days) for all the regions of the country. The tourist city forecasts and their updates in particular are made available through designated state government level functionaries, electronic & print media and for general public on ESSO-IMD's national as well as regional office websites.

ESSO-IMD has operationalized its location specific nowcasting weather service across the country. This service activity currently covers 155 urban centres under which nowcast of severe weather (Thunderstorms; heavy rainfall from lows/depressions over the land) in 3-6h range is issued. Origin, development/movement of severe weather phenomena are regularly monitored through DWRs and with all available other observing systems (AWSs; ARGs; Automatic Weather Observing Systems-AWOS; satellite derived wind vectors, temperature, moisture fields etc.)

The weather information (Maximum, Minimum temperatures, Rainfall and Sky condition, etc.) and forecast for next 7 days for 310 important cities and towns in all the states and union territories of India issued by the ESSO-IMD and they are available on the National and Regional websites of ESSO-IMD.

ESSO-IMD is responsible for monitoring, detection and forecasting of severe and hazardous weather phenomena like norwesters (severe thunder storms), dust storms, heavy rains and snow, cold and heat waves, cyclones, etc. including Quantitative Precipitation Forecast (QPF) up to 72 h at sub-basin scale through Flood Meteorological Offices (FMOs). FMOs provide meteorological support to the Central Water Commission (CWC) for issuing flood warnings in respect of the 43 rivers of India covering 137 sub-basins. CWC issues flood forecasts 6 h to 30 h in advance for 176 stations using QPF received from FMOs of ESSO-IMD and in-situ hydro-meteorological data.

ESSO- System of Air Quality Forecast and Research (SAFAR) provides site specific information on air quality in near real time and its forecast for the next 24 hours for Delhi , Mumbai and Pune.

ESSO-IMD provides a crucial service to the national and international civil aviation sector in fulfilment of the requirements prescribed by the International Civil Aviation Organisation (ICAO) and the Director General of Civil Aviation of India (DGCA). These services are provided through 18 Aerodrome Meteorological Offices (AMO) and 54 Aeronautical Meteorological Stations (AMS) located at various national and international airports of the country.

(b) No Madam.

(c) Does not arise.

(d) Improvement of weather forecasting services is a continuous process. As part of its XI five year plan, Government has initiated a comprehensive modernization programme covering upgradation of (i) observation systems (ii) advanced data assimilation tools (iii) advanced communication and IT infrastructure (iv) high performance computing systems and (v) intensive/sophisticated training of ESSO personnel to facilitate the implementation of advanced global/regional/ meso-scale prediction models for improving the accuracy of weather forecasts in all temporal and spatial scales and for quick dissemination of weather forecast assessments/warnings to the users.

After the establishment of ESSO - Ministry of Earth Sciences (MoES) structured research and development initiative involving ESSO-MoES institutions and research groups have been launched. Details of major programs of the ESSO-MoES during the XII plan include

No. Name of the Scheme Allocation for XII Plan(2012-17) Rs.in Crore

1 Atmospheric Observation System Network	700
2 Satellite Meteorology	70
3 Integrated Himalayan Meteorology Programme	108
4 Agrometeorology	164
5 Climate Services	55
6 Numerical Modeling of Weather &Climate	90
7 Monsoon Mission Programme	290
8 Physics and Dynamics of Tropical Clouds	120
9 Development of High Impact Severe Weather Warning System of India	89
10 Short Term Climate Prediction and Variability	90
11 Climate Change Research	100
12 High Resolution Operational Ocean Forecast and Reanalysis System	40
13 Centre for Advanced Training in Earth System Sciences and Climate	140
14 Outreach and Awareness Programme	67
15 High Performance Computing	568
Total	2691

(e) Operational implementation of improved forecast suite of models after the commissioning of the High Performance Computing (HPC) systems have enhanced the weather forecasting capacities through assimilating all available global satellite radiance data for the production of forecast products at 22 km grid globally and 9 km/3 km grid over India/regional/mega city domains.

During the XII Plan, under the National Monsoon Mission initiative, other institutions of ESSO, the Indian Institute of Tropical Meteorology (ESSO-IITM), Pune, Indian National Centre for Ocean Information Services (ESSO-INCOIS), Hyderabad and National Centre for Medium Range Weather Forecasting (ESSO-NCMRWF), NOIDA have embarked upon to build a state-of-the-art coupled ocean-atmospheric climate model for a) improved prediction of monsoon rainfall on extended range to seasonal time scale (16 days to one season) and b) improved prediction of temperature, rainfall and extreme weather events on short to medium range time scale (up to 15 days) so that forecast skill gets quantitatively improved further for operational services of ESSO-IMD.