1	2	3	4	5
239	Uttarkashi	Dunda	Matli	2011
240	Uttarkashi	Mori	Makuri	2011
241	Uttarkashi	Mori	Motar	2011
242	Uttarkashi	Naugaon	Kandaun	2011
243	Uttarkashi	Naugaon	Nisni	2011

Weather forecasts by IMD

3617. SHRI PARSHOTTAM KHODABHAI RUPALA:
SHRI MANSUKH L. MANDAVIYA:
SHRI BHARATSINH PRABHATSINH PARMAR:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) the action taken by the Central Government to enhance the efficiency of functioning of Indian Meteorological Department (IMD), as on date, as many times it has been observed that the prediction, particularly about monsoon, is not proper enough and due to this the farming community is facing greater difficulties and bearing heavy economic losses; and

(b) the action taken by the Central Government for better coordination with State Governments in this regard, as many times most of the farmers are not aware about probable weather predictions?

THE MINISTER OF EARTH SCIENCES (SHRI S. JAIPAL REDDY): (a) Continuous efforts are made by the Earth System Science Organization (ESSO) - IMD to optimize the level of efficiency of the forecasting systems. Government has already implemented Phase-I of the Modernization during 2007-12.

Under the Phase-I of the modernization of ESSO - IMD, the following state-of-the-art systems were commissioned:

- Observing systems such as Automatic Weather Stations (AWS), Automatic Rain Gauges (ARG), Doppler Weather Radars (DWR) etc.
- Monitoring, Analysis, visualization and product dissemination systems.
- Global/Regional/Meso-scale forecast models with Real-time data assimilation through high performance computing (HPC) systems.

In order to capture the characteristics of the severe weather in real time, 24×7 monitoring system comprising 675 Nos. of AWSs; 1024 Nos. of ARGs; 17 S and C-Band DWRs have been commissioned at Chennai, Sriharikota, Machilipatnam, Visakhapatnam, Kolkata, Mumbai, Bhuj, Hyderabad, Nagpur, Patiala, Delhi Palam, Lucknow, Patna, Mohanbari, Agartala, Delhi Lodi Road and Jaipur. Only DWR at Bhopal is under commissioning.

High Performance Computing (HPC) systems have been successfully used to enhance the weather forecasting capacities by assimilating all available global satellite data for forecast generation. The global model that was earlier run at 50Km grid scale are now run at 22Km grid. The regional scale model run earlier at 27Km grid is replaced by 9Km and 3Km grid scale models. The accuracy of short range (up to 3-days in advance) monsoon forecasts has improved from 50-60% to 70-95%. The skill of district level medium range rainfall forecast (up to 5-7days in advance) has improved from 60-70% to 75-85% in monsoon season and from 70-75% to 85% in non-monsoon seasons. Quantitatively, skill of medium range wind forecasts over the monsoon region is found to be closely comparable to that of USA and UK and slightly behind that of the Europe.

As far as the track and landfall forecasts of the tropical cyclones are concerned, the performance evaluation of the updated forecast systems for the past 5-years, have demonstrated enhanced forecast skill by about 18%., ESSO-IMD currently operates 5-Doppler Weather Radars (DWR) at Chennai, Machilipatnam, Visakhapatnam, Kolkata, Sriharikota on the east coast along with a network of Automatic Weather Stations (AWS) and Automatic Rain Gauges (ARG) for continuous weather surveillance over the Bay of Bengal.

ESSO-IMD has operationalized its location specific nowcasting (near real-time) weather service for severe weather (Thunderstorms; heavy rainfall from lows/ depressions over the land) across the country. This service activity currently covers 117 urban centres on experimental basis under which nowcast of 3-6 hour range is issued. Origin, development/movement of severe weather phenomena are regularly monitored through DWRs and with all other available observing systems.

Further, several manual operations have been fully automated. All the scientific staff engaged earlier in manual operations have been provided due training to develop appropriate skills for customization of sector specific (like agriculture, aviation etc.) warning and forecasting services.

(b) Integrated Agro-meteorological Advisory Service (IAAS) is rendered now on twice-weekly basis in collaboration with State Agricultural Universities (SAUs), institutions of Indian Council of Agricultural Research (ICAR), etc. District level weather forecast for next 5-days in respect of:

- Rainfall,
- maximum temperature, minimum temperature,
- wind speed, wind direction,
- relative humidity and clouds,
- weekly cumulative rainfall forecast.

are provided. Further, crop specific advisories to help the farmers are issued and widely disseminated. The AAS of ESSO-IMD has been successful in providing the crop specific advisories to the farmers through different print/visual/Radio/IT based media including short message service (SMS) and Interactive Voice Response Service (IVRS) facilitating for appropriate field level actions. Currently, over 3-million farmers are subscribed to receive the SMS based advisories. In an independent survey conducted by National Council of Applied Economic Research (NCAER), New Delhi in 2010 about the utilization, it was concluded that 24% of the farming community has been benefiting from the IAAS service.

Further, Ministry of Agriculture/Commissionarates of Agriculture in various states carry out weekly review of the current rainfall scenario and outlook for the coming week generated by IMD to assess the ground scenario in support of various crop specific agricultural operations (from sowing to harvest) under the umbrella of Crop Weather Watch Group (CWWG). The CWWG also assesses the likely yields based on the above of various commodities in each of the crop season that would have bearing on the economy of the farming community ultimately.

Rains and floods due to global warming

3618. SHRI TARUN VIJAY: Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether unprecedented rains and floods in various parts of the country are due to global warming;