relief and rescue operations in hour of need. The network also includes a 17-station real time seismic monitoring system to monitor and report large magnitude under sea earthquakes capable of generating tsunamis on the Indian coastal regions. A tsunami early warning system is also in place at Indian National Centre for Ocean Information Services (INCOIS), Hyderabad to provide early warning on tsunamis likely to be generated on the Indian Coastal areas by large magnitude under sea earthquakes. A state-of-art Data Centre has been created in NCS for archival of ground motion data generated by the NSN for further use in seismological research and earthquake hazard mitigation related programs.

(b) The NSN is under up-gradation by putting 38 more state-of-art seismograph stations and strengthening the real time monitoring of earthquake activities in the country.

Seismic hazard microzonation is very useful in planning hazard reduction due to earthquakes. It will provide earthquake hazard and risk related products of specific regions required by various agencies as mitigative measures for design and construction of earthquake resistant structures, land use planning and for enacting building bye-laws towards minimizing damage to property and loss of lives due to earthquake.

Seismic microzonation of NCT Delhi has been completed on 1:10000 scale and report has been released in February for stake holders including Governments. Seismic microzonation of Jabalpur, Guwahati, Bangalore, Sikkim, Ahmedabad, Gandhidham-Kandla, Kolkata and Mumbai has been completed. The seismic microzonation of thirty more cities lying in seismic zone III, IV and V and having population more than half a million is under consideration.

Upgradation of forecast system of IMD

1769. SHRI T. RATHINAVEL: Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether it is a fact that the Indian Meteorological Department (IMD) is planning to shift next year to forecast system that relied on a supercomputer led dynamical weather modeling;

(b) whether it is also a fact that IMD's weather forecast has been proving wrong constantly in recent times;

(c) whether it is also a fact that even the IMD's forecast for August, 2016 went wrong; and

(d) if so, the steps taken by Government in this regard?

THE MINISTER OF STATE IN THE MINISTRY OF EARTH SCIENCES (SHRI Y. S. CHOWDARY): (a) Yes, Sir. From next year (2017), India Meteorological Department (IMD) is planning to implement a seasonal forecasting system that relies on a supercomputer based dynamical modeling system in addition to the existing statistical model based seasonal forecasting system. Both the forecasting systems will be used to prepare the operational seasonal forecasts. It may also be added that IMD is already using dynamical forecasting system for short range and medium range forecasts.

(b) No, Sir. It is not a fact that IMD's weather forecasts have been proving wrong constantly in recent times. IMD has been able to correctly predict several extreme weather and climate events like cyclones, deficient and excess monsoon rainfall, heat waves, heavy rainfall etc. in recent years. For example, IMD has been very successful in predicting the deficient Southwest monsoon season rainfall over the country during the recent two years (2014 and 2015) and cyclone PHAILIN and HUDHUD during 2013 and 2014 respectively.

(c) Yes, Sir. IMD's monthly forecast issued for rainfall of August was overestimated than the observed rainfall in 2016.

(d) The present long range forecast system based on the statistical models has shown some useful skill in predicting all India seasonal rainfall including the deficient monsoon season rainfall during 2015. However, in order to overcome the limitations of the statistical models used so far, dynamical coupled ocean-atmospheric model framework has been implemented under the National Monsoon Mission. IMD is planning to use dynamical forecasting system also to prepare the monthly and seasonal forecasts.

Prediction of severe cold during current winter season

1770. SHRI KIRANMAY NANDA: Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether it is a fact that Scientists have predicted severe cold during current winter season, if so, the details thereof; and

(b) the details of Government's preparations to protect our citizens, army personnel on the border and agricultural crops?

THE MINISTER OF STATE IN THE MINISTRY OF EARTH SCIENCES (SHRI Y. S. CHOWDARY): (a) No, Sir. India Meteorological Department (IMD) has not yet issued the temperature forecast for current winter season. IMD will be issuing a temperature forecast outlook for the forthcoming winter season on 1st December, 2016.