has enhanced the weather forecasting capability through assimilation of all available global data for the generation of forecast products at 12 km grid globally and 3 km grid over India/regional/mega city domains.

Cyclone Warning Centres in the country

190. SHRI RAJEEV SATAV: Will the Minister of EARTH SCIENCES be pleased to state:

(a)   the details of Cyclone Warning Centres (CWCs) functioning in the country, State-wise, location-wise;

(b)   whether Government proposes to establish more CWCs in view of increasing number of cyclones in the country, if so, the details thereof, State-wise;

(c)   whether Government has been successful in developing technology for safety from cyclonic storms, if so, the details thereof; and

(d)   whether our technology is not proving as effective as it should have been in comparison to other developing countries, if so, the steps taken to improve the said technology?

THE MINISTER OF EARTH SCIENCES (DR. HARSH VARDHAN): (a) In order to cater to the needs of Cyclone Warning Services and Marine weather services, there are seven Warning Centers covering the east & west coasts of our country. Among these, three are Area Cyclone Warning Centres (ACWCs) located at Chennai, Mumbai and Kolkata and remaining four are Cyclone Warning Centres (CWCs) located at Ahmedabad, Thiruvananthapuram, Visakhapatnam and Bhubaneswar. Area of responsibility of ACWCs and CWCs is shown in the Table below:-

Centre	Coastal area*	Maritime State/UT
ACWC Kolkata	State: West Bengal UT: Andaman and Nicobar Islands	State: West Bengal UT: Andaman and Nicobar Islands
ACWC Chennai	State: Tamil Nadu UT: Puducherry	State: Tamil Nadu UT: Puducherry
ACWC Mumbai	State: Maharashtra & Goa	State: Maharashtra & Goa

Centre	Coastal area*	Maritime State/UT
CWC Thiruvananthapuram	State: Kerala & Karnataka UT: Lakshadweep	State: Kerala & Karnataka UT: Lakshadweep
CWC Ahmedabad	State: Gujarat UT: Dadra-Nagar Haveli-Daman-Diu	State: Gujarat UT: Dadra-Nagar Haveli-Daman-Diu
CWC Visakhapatnam	State: Andhra Pradesh	State: Andhra Pradesh
CWC Bhubaneshwar	State: Odisha	State: Odisha

*Coastal strip of responsibility extends up to 75 km from the coast line.

Forecast and warning for the high sea areas of Arabian Sea and that for Bay of Bengal are the responsibilities of ACWC Mumbai and ACWC Kolkata respectively.

(b)   No, Sir. There is no plan for establishing more number of CWCs as the requirements of the entire coastal belt of the country is covered by the existing centres as mentioned above.

(c)   Yes, Sir. India Meteorological Department has demonstrated its capability to provide early warning for Cyclones with high precision and has earned accolades globally and nationally for very effective, state of art early warning system for monitoring and prediction of cyclones. The cyclone forecast accuracy has significantly improved in recent years as has been demonstrated during cyclones Phailin (2013), Hudhud (2014), Vardah (2016), Titli (2018), Fani& Bulbul (2019) and Amphan & Nisarga (2020). Due to this, in recent years, the loss of life has been drastically reduced, being limited to double digit figures only.

Further improvements in the observational network and numerical modeling capability are also expected to increase the accuracy of weather forecasts.

Further, the Government of India has initiated the National Cyclone Risk Mitigation Project (NCRMP) with a view to address cyclone risks in the country. The overall objective of the Project is to undertake suitable structural and non-structural measures to mitigate the effects of cyclones in the coastal states and Union Territories of India. National Disaster Management Authority (NDMA) under the aegis of Ministry of Home Affairs (MHA) will be implementing this Project in coordination with participating State

Governments and the Ministry of Earth Sciences (MoES). The Project has identified 13 cyclone prone States and Union Territories (UTs), with varying levels of vulnerability for implementation purpose.

The main objective of the NCRMP is to reduce vulnerability of coastal communities to cyclone and other hydro meteorological hazards through:-

(i)   improved early warning dissemination systems.

(ii)   enhanced capacity of local communities to respond to disasters.

(iii)   improved access to emergency shelter, evacuation, and protection against wind storms, flooding and storm surge in high areas.

(iv)   strengthening DRM capacity at central, state and local levels in order to enable mainstreaming of risk mitigation measures into the overall development agenda.

(d)   Does not arise.

Prediction system for earthquakes

191. SHRI JYOTIRADITYA M. SCINDIA: Will the Minister of EARTH SCIENCES be pleased to state:

(a)   whether Government is aware of the fact that several earthquakes of medium intensity have been reported in the country during the last few months, if so, the details thereof; and

(b)   whether the National Centre for Seismology or other concerned agencies have not yet been able to create any prediction system for earthquakes, if so, the reasons thereof?

THE MINISTER OF EARTH SCIENCES (DR. HARSH VARDHAN): (a) Yes Sir, National Centre for Seismology (NCS) maintains a National Seismological Network (NSN) to detect and locate earthquakes in and around the country. A total of 413 earthquakes have been recorded by NSN during 01st March, 2020 to 08th September, 2020. The magnitude-wise distribution of earthquakes along with the possible effects is provided in the table.