

(c) Currently, IMD uses a suite of statistical models for prediction of seasonal monsoon rainfall over India. Such a mechanism is continued to be used due to non-availability of a suitable coupled ocean-atmospheric model with a proven performance of capturing the realistic monsoon rainfall variability over India.

It is expected to put in place a most representative dynamical framework for monsoon rainfall prediction in coming years through following initiatives started with the commissioning of the high-performance computing system recently:

i) Evaluating the performance of an adopted coupled ocean-atmospheric model of National Oceanic and Atmospheric Administration (NOAA), USA for monsoon seasons of 2010 and 2011 in terms of capturing locations of excess and deficient rainfall on monthly and seasonal time scales that has established demonstrable skill.

ii) Efforts are being organized under the National Monsoon Mission initiative to develop a most representative and advanced dynamical model framework for India for forecasting monsoon rainfall and its variability in various space and time scales by involving all relevant organizations and research institutes of India and NOAA.

Analysis of seismic data

†679. SHRI BALAVANT ALIASBAL APTE:

SHRI ANIL MADHAV DAVE:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether Government has recently analysed the figures related to low intensity seismic movements recorded during each of the last three years;

(b) if, so the earthquake prone zones identified in the country thereby;

(c) whether Government proposes to ensure that developmental projects including huge dams, nuclear power plants and hydro power projects are not established in the places falling under high intensity earthquake zones; and

(d) if so, the steps proposed to be taken by Government?

THE MINISTER OF STATE IN THE MINISTRY OF EARTH SCIENCES (SHRI ASHWANI KUMAR): (a) Yes Sir. Earthquake activity in and around the county is monitored by the national

†Original notice of the question was received in Hindi.

seismological network. In addition, earthquakes in and around Delhi and in North-East India are monitored by local seismic networks set up exclusively for the purpose. The archived data is analyzed on a regular basis and peculiarities associated with different earthquakes are documented for interpreting the structural characteristics of earthquakes. Research networks are also established in the country for studying specific regional scale seismicity characteristics to evaluate seismic hazard assessment subsequent to the occurrence of significant earthquake events.

(b) Earthquake prone zones have been identified by carrying out seismic zoning of the country, essentially based on seismicity, maximum intensity experienced in the past and the seismotectonics of the various regions. The seismic zoning map is revised, as and when need arises, by the Bureau of Indian Standards. According to the latest version of the classification [IS 1893 (Part I):2002], the country is grouped into four seismic zones viz. Zone-II, III, IV and V. Of these, Zone V is seismically the most vulnerable region, while zone II is the least. It may, however, be noted that seismic activity of low intensity and/or of short duration is of less significance in terms of damage potential.

(c) Comprehensive geo-technical investigations are carried out on the sites identified for major infrastructure projects globally. Accordingly, feasibility studies in respect of structural design and safety planning, EIA and operational sustenance of the proposed infrastructure will be examined thoroughly prior to the siting of major infrastructure projects.

(d) Ministry of Water Resources, Ministry of Power, Ministry of Environment & Forests, Ministry of Finance etc. operate various regulatory responsibilities towards location of various infrastructure projects of national importance.

Earthquakes

680. SHRI PRAKASH JAVADEKAR: Will the Minister of EARTH SCIENCES be pleased to state:

- (a) how many earthquakes have occurred throughout the country since January, 2011;
- (b) the details of the intensity and impact of each earthquake and the affected areas;