

Earthquake prone zones

1311. DR. BANDA PRAKASH: Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether India Meteorological Department has identified and mapped the earthquake prone zones in the country including Jharkhand, if so, the details thereof;

(b) the details of seismic tremors reported along with their intensity during the last three years and the current year; and

(c) whether adequate steps have been taken to deal with earthquakes, including creating awareness amongst masses, if so, the details thereof?

THE MINISTER OF EARTH SCIENCES (DR. HARSH VARDHAN): (a) The Bureau of Indian Standards (BIS):- Publishes the seismic zoning map of India. According to this map, the country has been grouped into four seismic zones *i.e.* Zone-II, III, IV and V. Zone V is considered to be the most seismically active, while zone II is the least. The Jharkhand State comes under Zone II, III and IV; with majority of land area falling under Zone II and III.

(b) A Total of 768 earthquakes of magnitude 3.0 and above, were located by the National Seismological Network during 01-01-2017 to 31-01-2020, details of which are given below:

Year/Magnitude Range	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	TOTAL
2017	140	77	8	1	226
2018	125	63	14	1	203
2019	149	121	38	1	309
1st Jan, 2020 to 31st Jan, 2020	23	5	2	0	30
TOTAL	437	266	62	3	768

Out of above, following two earthquakes occurred in Jharkhand State during 2017 to January 2020:

Sl. No.	Date	Origin Time (IST) Hh:mm:sec	Latitude (deg. N)	Longitude	Dept h (km)	Magnitude	Region
1.	05-12-2017	20:28:37.7	22.73	86.05	20	3.4	Seraikela-Kharsawan district.
2.	20-04-2019	06:20:10.0	22.80	86.10	18	4.4	Saraikela-Kharsawan district.

(c) National Centre for Seismology through its country wide Seismological Network, monitors the earthquake activity in and around the country on 24x7 basis and disseminates the earthquake information to all relevant State and Central government's agencies to help initiating rescue and emergency operations in the event of large earthquake. Also, detailed earthquake hazard assessment in the form of Microzonation maps for Delhi, Kolkata, Sikkim, Guwahati, Bengaluru, Jabalpur etc., has been taken up. These maps are useful in designing earthquake resistant structure, land use and urban planning. Various outreach activities for creating awareness among public about the earthquakes have also been taken up from time to time. Also, National Disaster Management Authority (NDMA) and State Government have taken up specific programmes to create awareness among the general-public through mock drill etc.

Development of weather prediction infrastructure

1312. DR. VIKAS MAHATME: Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether Government is aware of the extensive damage of crops due to heavy, unpredictable rains in States like Karnataka and Madhya Pradesh;

(b) whether any studies have been conducted to assess the damage of crops by these unseasonal rains, if so, the details thereof;

(c) whether the Ministry has any plans to improve the weather prediction infrastructure in order to predict such unseasonal weather changes more accurately; and