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Perspective

The Overview of Deccan Plateau and the Effects Due to Earthquake

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DESCRIPTION

The Deccan Plateau is located in South India, it is in triangular shape. Deccan Plateau is surrounded by three mountain ranges, and extends over eight Indian states, main states are Andhra Pradesh, Maharashtra, Telangana, Karnataka, Kerala and Tamil Nadu. Deccan Plateau is located in between of the Western Ghats and the Eastern Ghats, and north boundary of Deccan Plateau is Satpura Range and Vindhya Range. One of the largest continental flood basalt provinces of the world is the Deccan Volcanic Province (DVP). The area of this province is about 0.5 million km^2. The thickness of this basalt cover under Western Ghats is estimated that about 1650 m, and thickness is varies from place to place. The area is an India's northward drift from Gondwanaland. Lava eruption over a million km^3 area and this eruption lead to mass extinction of global properties. These consequences made Deccan basement with varying depths, and a single tectonic unit, but the level and degree of heterogeneity varies over the entire area.

There are few earthquakes which happened in the history of Deccan Plateau. In the year 1967, on 11th December an earthquake is occurred at Koynanagar in the state of Maharashtra. This is a severe earthquake near Koyna Dam with magnitude of 6.6 Mw, depth of intensity is about 15 km, nearly 180 people died and 2272 people were injured. This earthquake is a foreshock type, and after the first incident there are few more earthquakes are occurred with magnitudes of 5.5 Mw and 6.3 Mw in the subsequent years 1967, 1973, 1980, 1993, and 2005. The reason for these earthquakes is high water level in the Koyna reservoir, when the water level reached maximum it lead to seismic bursts in the Koyna-Warna region. When the water level in the reservoir is decreased then there are no more earthquakes in that region.

On 30th September 1993 at Lathur and Osmanabad, cities in the Maharashtra occurred an earthquake with a magnitude of 6.2 Mw and focal depth of 4 km and area of intensity is about 10 km radius and this earthquake is felt up to 750 km. The behavior of this earthquake states that, there is no foreshock activity is recorded but 130 aftershocks with Moment magnitude less than 2 is recorded. The study of Magneto Telluric (MT) indicates that stress developed in the uppermost brittle crust due to low velocity and high conductive fluid-filled layer movement.

The Palghar region in Maharashtra is come to under Deccan Volcanic Province (DVP). This tectonic unit area consists a thick pile of food basalts with the varying thickness of 1.4 to 1.7 km in the form basalt column, and the pile is resting over the Archean and Proterozoic rocks. This area reported with more than 4000 earthquakes with the magnitude range of 0.1 to 4.1 Mw, and recorded focal depths are 4 km to 15 km. The tight clustering earthquake region dimensions are 10 km × 6 km with the focal depths extending to 6.8 km. There are various reasons for earthquakes in this area, the monsoon rainfall lead to collapse of subsurface cavity and aseismic slip at shallow depth it produces swarm activity. And some of statements say that the Palghar region is highly stressed and may be in the future this region can host moderate earthquakes.

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