

on Source Parameters of Local Earthquakes in Tehri Dam Site and Hinterlands in the Himalayas

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Tehri dam is an earth and rock filled dam situated in the 700 km long earthquake gap in between the 1905 Kangra earthquake in the west and the 1934 Bihar-Nepal earthquake in the east region of Himalaya and built across the Bhagirathi River. The purpose of the dam is to provide irrigation and generate hydroelectricity for nearby areas. It is operated and maintained by Tehri Hydro Power Corporation and monitored by the Department of Earthquake Engineering, IIT Roorkee. The hypocentre parameters of three local events ($1.3 \leq M_w \leq 3.2$) that occurred around the Tehri dam region are estimated using the HYPOCENTER program given in SEISAN software and the code EQK_SRC_PARA was used for earthquake source parameters estimation in which source model fitted in displacement spectra and acceleration spectra. The seismic moments (M_0), Brune stress drop and source radii ranges from 2.2×10^{18} to 6.6×10^{20} , 1 to 63 bars and 65.1 m to 667.4 m, respectively. The maximum stress drop of 63 bars is observed at a source radius of 146.7 m. The radiated seismic energy varies from 1.1×10^{14} to 3.9×10^{16} . The radiated seismic energy follows the relationship with seismic moment as $E_s = 3 \times 10^{-5} M_0^{1.013}$. Study advocates that the seismic moment has an increasing trend with increase in source radius.

Promotional text

The source depth, time function, fault orientation, and seismic moment are known as seismic source parameters which help to understand the source properties and characteristics of an earthquake. Based on that, one can evaluate expected damage scenario at a place.

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Oral preference format

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