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Title: Scaling of displacement spectra of Bhuj aftershocks

Abstract:

The frequency dependence of scaling law of the band-pass filtered (0.5 to 10 Hz) displacement spectra are studied for the seismograms of 2001 Bhuj earthquake in Western India, and is found of the form, $P(w) \sim w^{-b}$, where $P(w)$ is the displacement spectra, w is the angular frequency, and b is the scaling exponent. The values of corner frequency, f_c , for the seismograms are found less than 5 Hz. The pattern of the displacement spectrum is similar to the one observed by Aki (1967) assuming the Brune's w -square model. For frequency less than 5 Hz, the spectral amplitude remains a constant, and when $f > 5$ Hz, the spectral amplitude decays at a high decreasing rate. For frequencies, $0.5 \text{ Hz} < f < 10 \text{ Hz}$, a power law scaling relation exists between $P(w)$ and w . The estimated values of the scaling exponent, b , for the study region vary from 1.4 to 3.0. This variation of scaling exponent, b , is mainly due to the source effect rather than path effects.

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Co-Authors

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