

Spectral characteristics of deep low frequency earthquakes at Mount Fuji

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Source processes of deep low frequency (DLF) earthquakes beneath volcanoes have poorly understood, mainly because of the small magnitudes of the earthquakes. In this study, we investigate spectral characteristics of the DLF earthquakes beneath Mount Fuji, focusing 11 events with long durations of 5 to 20 minutes including relatively large maximum earthquakes of M0.9 to M1.8. Spectral characteristics of earthquakes, as well as the amplitudes of seismic waves, provide us constraints for their source models. In the present spectral analysis, wavelet analysis with Morlet analyzing wavelet is applied to the DLF events. The results show following characteristics of the DLF earthquakes. The predominant frequencies of the 11 events range relatively narrow frequency band of 1 to 2 Hz. High frequency components of mainly 5-10 Hz are superposed onto the main low frequency waves in the events with large amplitudes. One event shows gradual change of the predominant frequency from 1.5 Hz to 1.0 Hz during 5 minutes. Source models of DLF earthquakes should explain the above spectral characteristics.

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