

桜島のハーモニック微動の波形の特性について  
WAVE CHARACTERISTICS OF HARMONIC TREMOR OBSERVED  
AT SAKURAJIMA VOLCANO

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**Abstract**

Harmonic tremor originating from Sakurajima, an andesitic volcano was analyzed about wave characteristics. Data of analogue records are digitized, which were obtained at 4 boreholes and 1 ground based three component seismic stations. The seismic data were recorded using short period seismometer with natural period 1 Hz. In the typical case, spectral analysis of 10 minutes of 2 hours quasi-continuous of the occurrence of harmonic tremor in July 1990 showed a regular peaks of fundamental frequency relatively stable in the range of 1.4 – 1.7 Hz and their integer multiples at all stations both in the borehole and ground based stations that suggest the mainly effect of the sources. The polarization and identification of body and Rayleigh waves were approximated using particle motion diagram and applying a polarization filter. Particle motions of P and SV waves are linearized in the directions from the crater that assumed the location of the sources. The Rayleigh waves at 4 stations except for the deepest borehole station (HAR) are predominately polarized in an elliptical orbit and retrograde rotation in vertical cross-section. However, rotation of the Rayleigh wave at HAR station shows dominantly prograde.

The spatial properties of harmonic tremor observed at five different sites according to the position of seismic stations. Due to the complexity of the wave of harmonic tremor, the amplitude distribution at each sites in the vertical, radial, and transverse components approximated by the estimated of amplitude of the first part of a few duration of wave type motion that determined by particle motion diagram of harmonic tremor along 3 minutes at the fundamental frequency 1.6 Hz. At HIK, the nearest station to the crater, the amplitudes of P and Rayleigh waves of the vertical component are a few larger than the horizontal ones. At HAR station, the amplitudes are dominated by the vertical component. However, at KAB and KOM, far stations from the crater, the amplitudes of the horizontal components are dominant.