

Source mechanism of volcanic explosion earthquakes during the 1988-1989 Mt.Tokachi eruptions

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On December 16, 1988, after 26 years of dormancy since the last eruption in 1962, Mt. Tokachi began to erupt. The eruptions were accompanied by explosion earthquakes. The explosion earthquakes were recorded by the strong motion seismometers. The first motions of P-wave produced by the explosion are directed outward away from the crater, and SH-waves are also observed. By a detailed examination of wave motion and a comparison between theoretical seismograms and observed records, we show that the explosion earthquakes are excited by an obliquely downward single force. We confirm that the peak amplitudes of the single force are proportional to the squares of the pulse width of source time function and that the computed vent radii are proportional to the seismic magnitudes.