

Seismic velocity structures of Suwanosejima Volcano using the data of seismic exploration by using active sources

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A seismic exploration by using active sources was performed at Suwanosejima volcano in order to clarify the seismic velocity structure beneath the volcano during the period from October through November, 2005. By operating the 80 temporary seismic stations and 9 continuous ones, we recorded the seismic waves excited in the explosion of the 9 dynamites (S1-S9) of the 21-24kg dosage. We calculated the travel times by deducing the shot-time of the dynamites from the observed arrival time of the wave.

On the E-W observation line, the observed apparent velocity of the seismic wave was about 2.5km/s where the distance from S7, western end of the line, is 0.5km or less. The velocity was about 3.5km/s at the distance from 0.5km to 2.5km. And, the wave propagates at the apparent velocity 6km/s in the position where the distance is farther than 2.5km.

On the other hand, the observed apparent velocity of the seismic wave along the N-S observation line was about 2.5km/s where the distance from S5, southern end of the line, is 1.5km or less. The velocity was about 3.5km/s at the distance from 1.5km to 4km. And, the wave propagates at the apparent velocity 6km/s in the position where the distance is farther than 4km.

The individual travel time shifts from the time estimated from apparent velocity within under 0.1 second. It suggests the presence of relative small scale heterogeneity in the volcano edifice. In this presentation, we will show the three-dimensional seismic velocity structure derived from the observed travel times by means of seismic tomography.