

The structure of Showa-Shinzan Yaneyama Usu by seismic reflection surveys

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Reflection seismic surveys at Usu-Showashinzan-Yaneyama was conducted in order to, estimate the shallow structure of the lava-dome base. Usu-Showashinzan is a young volcano formed in 1943-1945. It is characterized by consisting of a lava dome structure with top elevation of about 406.9m and a bun-shaped plateau called Yaneyama. Various geophysical explorations and geological surveys have been carried out in Showa-Shinzan until now, and the formation process and the supply route of magma have been discussed. However, the details of structure beneath Yaneyama are still unknown.

Total of 4 lines were conducted in 2017 and 2018 with 2 lines each, and seismic data were acquired. Two observation lines (Y17 and Y18) were set in the east-west direction on the east foot of the lava dome and two (G17 and G18) in the Guren-valley on the southwest foot of the lava dome. Both survey lines (Y17, G17) were conducted in 2017 with 24 receivers with using a hammer of 6.3kg as the seismic source. Other survey lines (Y18, G18) conducted in 2018 with 48 receivers with using a tamping rammer (MT-55L by Mikasa Industries) as the seismic source. Split-spread method was applied in all seismic lines. The receiver interval was 4m for Y lines and 3m for G lines. SU (Seismic Un*x) software was used for the seismic reflection analysis of the acquired seismograms. For 2018 lines with using tamping rammer, preprocessing is necessary before analysis of seismic reflection. That is based on the principle "SOSIE" (Yokokawa et.al. 1983).

As the result, the time sections on all the survey lines were obtained. Especially, in the G18 line, reflection profile down to 100m depth, which shows gentle valley structure in the middle of the line down to 80m depth and there is almost horizontal boundary at 100m depth.

The refraction tomography analysis and considering previous researches are going to be conducted.

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