Mapping of a Magmatic Reflector Beneath Unzen Volcanic Area as Inferred from PxP Reflections in the 1995 Explosion Experiment

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An explosion seismic experiment was conducted at Unzen volcano on November 30, 1995. We found reflection phases (PxP) at 25 sites along west edge of Chijiwa Bay for two shots fired at western flank of Unzen Volcano. In this study, we analysed these reflection phases to map the reflector. We first grouped 25 sites into 4 arrays, and applied the semblance analysis for each combination of array and shot to estimate the ray parameter and back-azimuth of the reflection phase. Then, assuming velocity model, we found that a reflector exists at a depth of about 15km below Chijiwa Bay. Further the first motion of the reflection phase at all arrays are all down. This suggests that the estimated reflector is the top surface of a magma body.