

Self-potential anomalies around Ontake volcano and the earthquake swarm area in its southeastern foot

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Earthquake swarm activity has been continuously observed around the southeastern flank of Mt. Ontake since 1976. A phreatic explosion occurred in 1979 at a fissure on the southwestern slope of the Kengamine, the main peak of Mt. Ontake. And a large earthquake with the depth about 2 km and a magnitude of 6.8 occurred in 1984 in the southeastern flank of the volcano. Recently, Kimata et al. (2004) revealed uplift ground deformation above the earthquake swarm area by using repeated leveling. Furthermore, Magnetotelluric soundings estimated a low resistivity region with the depth about 2km beneath the uplift area [Kasaya et al., 2002].

In order to investigate a relationship between tectonic movements and subsurface low resistivity zone, we carried out self-potential(SP) measurements from 2003 and 2006 around the focal region of the 1984 western Nagano Earthquake and the summit area of Mt. Ontake.

A torus-shape positive SP anomaly have been detected at the southeastern part of survey profile. This anomaly is located between recent active clusters of earthquakes and near the ground uplift detected by Kimata et al. [2004]. The comprehensive positive sense anomaly supports potential shallow hydrothermal activity

We also found the positive sense anomaly of about 2V around the northern part of summit area. This large anomaly may be not irrelevant to recent eruption vents. Younger vents are located near the positive anomaly.