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# Resistivity structure around the Kutcharo caldera

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Kutcharo caldera hoards potentials of disaster eruptions. From disaster prevention point of view, it is surely important to comprehend the mechanisms of eruptions of this volcano. This volcano belongs to Akan-Shiretoko volcanic line, the western end of Kurile volcanic line, which shows offset collocation. The offset is also clear around Kutcharo caldera, from topography and the gravity anomaly map. From this standpoint, the Kutcharo caldera locates on the offset point of the volcanic line. Several geophysical approaches for this area exist, however the precise structural model had never been proposed around this region. For instance, Satoh et al. (2001) installed three observation lines of MT survey over the Eastern Hokkaido region, while Nakanishi et al. (2009) executed seismic exploration over this area. Still, there are no arguments for the magma provision.

We executed MT survey around the Kutcharo region, during 2009 to 2010, and examined 2-D inversion analyses (Ogawa and Uchida, 1996), for five profiles. The observed data shows acceptably good quality. The strike angle of this region is assumed to the direction of the volcanic line. So the observation point is allocated for direction across the volcanic line. The principal axes of impedance phase tensor, for the southern part of the region, align across the volcanic line as expected. But it mostly deviates in the northern part. Therefore, we chose the TM mode analyses. The strike direction is decided by the rose histogram of the principal axis of impedance phase tensor.

The consequent resistivity structure shows aspects as follows. For all profiles, surface layer shows high resistivity, due to tephra. Then, the Tertiary stratum shows low resistivity. Then again, middle crust shows high resistivity. And the extraordinary low resistivity body penetrates the high resistivity crust. The resistive body rises to the Atosanupuri volcano. The top of this body rises to 6 km under the Atosanupuri volcano. The depth coincides to the source depth of the diastrophism, which reported from InSAR analyses during 1994 to 1995, accompanied an earthquake swarm.

Nakanishi et al., 2009. Tectonophysics, 472, 105-123.
Ogawa, Y. and Uchida, T., 1996. Geophys. J. Int., 126, 69-76.
Satoh et al., 2001. EPS, 53, 829?842.

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