

Change in Resistivity structure related with the decrease of thermal activity around Iwo-Yama, Kirishima Volcanoes

Katsunari Unai[1]; Tsuneomi Kagiyaama[1]; Mitsuru Utsugi[2]; Wataru Kanda[3]; Shogo Komori[4]; Akihiko Terada[5]; Shin Yoshikawa[6]

[1] Graduate School of Science, Kyoto University; [2] Kyoto Univ.; [3] DPRI, Kyoto Univ; [4] Earth and Planetary Sci., Kyoto Univ; [5] AVL, Kyoto Univ.; [6] Aso Volcanological Laboratory, Kyoto Univ.

Geothermal activity of Iwo-Yama, Kirishima Volcanoes has decreased remarkably in recent twenty years (Unai et al., 2007). Significant change in resistivity structure will be expected beneath Iwo-Yama related with this change in geothermal activity. We surveyed the resistivity structure around Iwo-Yama by VLF-MT and AMT in 2007 and 2008, and compared with the past result with VLF-MT and ELF-MT. The past results were obtained when Iwo-yama had high geothermal activity (Kagiyaama et al., 1994).

In the result, we found the following changes.

I) The resistivity in the surface layer in and around Iwo-Yama has increased up to twice.

II) The resistivity of the deeper part was almost 1 ohm-m around the Iwo-yama except 2~3 ohm-m just beneath the summit in the past survey. However, the resistivity changed to be homogeneously 1 ohm-m in this survey.

III) The resistivity of the deeper part in the southern margin of Ebino-Kogen has increased.

In Iwo-Yama, intense steaming ground which located around the summit has disappeared in recent years. This change indicates that the resistivity in the surface layer increased because the moisture content in the surface layer decreased.

High temperature fumarolic area was located within the Iwo-Yama in the past time. This evidence shows that the resistivity in the deeper part just beneath the summit was high, because high temperature volcanic gas occupied these areas. On the other hand, after decreasing the geothermal activity, resistivity will changed to be homogeneously 1 ohm-m, because these areas are occupied by hydrothermal water.

In the past, volcanic gas affected the saturated layers in the southern margin of Ebino-Kogen through the aquifer. At the present day, however, contribution of volcanic gas decreased and so the resistivity of the deeper part has increased.

From these result, we could assess that drastic changes during twenty years in thermal activity had certain change in resistivity structure around Iwo-Yama.