The temporal changes of the shallower resistivity structure associated with the eruption on 2011 at Aso volcano, Japan.

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On Aso volcano, central Kyushu, Japan, a small eruption was occurred on May 2011. Before and after this eruption, we carried out the electromagnetic survey around Nakadake crater of Aso volcano. From these observations, we obtained the data which suggest a decrease of the subsurface resistivity in the deeper part beneath Nakadake crater just after the eruption. In our presentation, we will show the observation data and the resistivity structure obtained by the 1-D analysis of our data.

On Aso volcano, many observations and researches have been made to detect the subsurface structure and detailed information about the distribution of the subsurface hydrothermal system have been obtained from previous studies. From the high-density AMT survey, Kanda et al. (2008) found a low resistivity area is localized just beneath the Nakadake first crater. This area is considered as a chamber of the hydrothermal fluid which is formed by a part of the hydrothermal fluid which is supplied from the deeper magma. In recently, the activities of the Nakadake crater were often temporarily increased. Associated with these activities, it is expected that the distribution of the subsurface hydrothermal fluid is changed and subsurface resistivity structure is temporally changed. In order to detect such a temporal change of shallow resistivity structure according to these activities, we carried out the repeated control sourced electromagnetic survey around the Nakadake crater using ACTIVE observation system (Utada et al., 2007). In these observations, we installed electric current transmitter on 1 km NNE from the crater, and magnetic receiver was also installed on the 4 points around crater. We have performed a totally five repeated electromagnetic observation from April 2011 to April 2012 across the small eruption of May 2011.

From these observations, we obtained the data which suggest a temporal change of the subsurface resistivity structure. The result of the 1-D analysis of the resistivity structure shows that, the resistivity was changed beneath the crater During the period of May to July including the eruption. This resistivity change was occurred on 200 to 300 m depth and this is corresponding to the depth of the upper end of the localized low resistivity area beneath the crater which was found by Kanda et al. (2008). In our presentation, we will show the observation data and the detail of the resistivity structure obtained by the 1-D analysis of our data.