Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

SVC48-P26 Room:Convention Hall Time:May 19 18:15-19:30

Three-dimensional electrical resistivity structure around Hakone volcano, Japan

Ryokei Yoshimura[1*], Yasuo Ogawa[2], Yohei Yukutake[3], Wataru Kanda[2], Shogo Komori[4], Tada-nori Goto[5], Ryou Honda[3], Masatake Harada[3], Tomoya YAMAZAKI[1], Masato KAMO[1], Yojiro YASUDA[6], Masanori Tani[5]

[1]DPRI, Kyoto University, [2]Volcanic Fluid Research Center, Tokyo Institute of Technology, [3]Hot Springs Research Institute, Kanagawa, [4]Academia Sinica, Taiwan, [5]Graduate School of Engineering, Kyoto University, [6]Graduate School of Engineering, Tottori University

Seismicity around the Hakone volcano was activated just after the arrival of surface waves caused by the 2011 off the Pacific coast of Tohoku Earthquake. Most of these triggered earthquakes had similar distribution to prior occasional swarm activities. In order to image electrical properties around such seismic events, we carried out audio-frequency magnetotelluric (AMT) measurements at 39 sites in December 2011 (Yoshimura et al., 2012). The spatial distribution of the induction vectors and the phase tensor ellipses suggests that conductive bodies may lie beneath the remarkable regions around which the seismicity increased abruptly just after the occurrence of the Tohoku Earthquake.

In this study, we conducted 3D modeling of dense AMT/MT data (Yoshimura et al., 2012; Ogawa et al., 2012), to figure out electrical characteristics around the triggered seismicity. The full components the impedance tensors at 51 sites in total were inverted using the code developed by Siripunvaraporn et al. [2005]. Significant characteristics of the obtained three-dimensional resistivity model are: (1) the most of the triggered earthquakes, which occurred shallower than a depth of 4km, seem to align along resistivity structural boundaries; (2) surface conductive blocks, in which there were very few earthquakes, were observed beneath not only fumarolic areas but geothermal non-active regions.

Keywords: magnetotellurics, three-dimensional inversion, resistivity structure, Hakone volcano, triggered earthquake, earthquake swarm