Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

SVC050-P15 Room:Convention Hall Time:May 23 16:15-18:45

Magnetotelluric surveys in and around the Aira caldera (3)

Wataru Kanda[1*], Takafumi Kasaya[2], Hiroshi Yakiwara[3], Hiroshi Ichihara[2], Takeshi Hashimoto[4], Takao Koyama[5], Mitsuru Utsugi[6], Hiroyuki Inoue[6], Tadaomi Sonoda[7], Yasuo Ogawa[1], S. Bulent Tank[8], Tulay Kaya[9], Songkhun Boonchaisuk[9], Oliver Hartkorn[9]

[1]VFRC, Tokyo Institute of Technology, [2]JAMSTEC, [3]Grad.Sch.Sci.-Eng., Kagoshima University, [4]Grad.Sch.Sci., Hokkaido University, [5]ERI, University of Tokyo, [6]Grad.Sch.Sci., Kyoto University, [7]DPRI, Kyoto University, [8]Kandilli Obs. ERI., Bogazici University, [9]Grad.Sch.Sci.-Eng., Tokyo Tech.

1. Introduction

In the present study, we conducted the electromagnetic investigation including the sea bottom in the area centered on the Kagoshima Bay (Aira caldera) in the north of Sakurajima, southern Kyushu, Japan. A magma reservoir of Sakurajima volcano is considered to exist at about 10km depth beneath the Aira caldera, which was inferred from the geodetic and the seismological observations over many years (Ishihara, 1990; Hidayati et al., 2007). It is presumed that accumulation of the magma to the reservoir is lasting because an upheaval of the ground around the Sakurajima has been observed since the first half of the 1990's. The objective of this study is to clarify the corresponding electrical resistivity structure to the assumed magma reservoir and to the supply routes to the Sakurajima volcano and to a submarine volcano called Wakamiko. Based on the results, we also aimed to verify the conventional image of the magma supply system inferred from the geodetic and seismic observations.

2. MT surveys

The surveys are planned for three years from 2009 to 2011 within a framework of Grants-in-Aid for Scientific Research (KAKENHI). We set three traverse lines in the direction of WNW-ESE crossing the Aira caldera and electrical resistivity structures are inferred from the magnetotelluric (MT) measurements on land and on the seafloor along the traverse lines. In fiscal year 2009, we carried out the MT survey at the 10 land sites and the 5 seafloor sites mainly along the middle of three traverse line. A similar survey was conducted along the northern traverse line in fiscal year 2010. The MT data at 30 sites in total were obtained for the last two years. In this presentation, we will report some results of a 2-dimensional inversion, in which the strike direction of the underground resistivity structure is assumed as the north-south against each traverse line.

Keywords: magma reservoir, Sakurajima volcano, resistivity structure, Aira caldera, OBEM