再解析 Network-MT データによる別府-島原地溝の3次元比抵抗分布モデル

畑 真紀 [1]; 上嶋 誠 [2]; 田中 良和 [3]; 橋本 武志 [4]; 吉村 令慧 [5]; 大志万 直人 [5]
[1] 東大・地震研; [2] 東大・震研; [3] 京大; [4] 北大・理・地震火山セ; [5] 京大・防災研

3-D electrical resistivity distribution beneath the Beppu-Shimabara graben by reanalysis Network-MT data

Maki HATA[1]; Makoto Uyeshima[2]; Yoshikazu Tanaka[3]; Takeshi Hashimoto[4]; Ryokei Yoshimura[5]; Naoto Oshiman[5]
[1] ERI, the University of Tokyo; [2] ERI, Univ. Tokyo; [3] Kyoto Univ.; [4] ISV, Hokkaido Univ.; [5] DPRI, Kyoto Univ.

We performed a three-dimensional (3-D) inversion analysis by using a data set of network-magnetotelluric (network-MT) data in a period range from 640 to 10,240 s to obtain a subsurface electrical resistivity distribution around the Beppu-Shimabara graben in Kyushu. Active Quaternary volcanoes, such as Aso with a caldera, Kuju, and Yufu, exist with an interval of ~20 km in the graben. Among the three volcanoes, Aso has been the most active volcano in recorded history. Aso caldera had been formed by a series of huge eruptions during 270-90 ka and post-caldera cones were formed in the caldera. A post-caldera cone of Naka-dake has repeatedly erupted since the 6th century. Thus, we especially focused on the resistivity distribution beneath Aso caldera. Network-MT surveys for the electric field (the electric potential difference) were performed around the graben from 1993 to 1998 by using long metallic wires/dipoles of the commercial telephone company′s networks [e.g., *Tanaka et al.*, 1998; *Hashimoto et al.*, 1999; *Uyeshima et al.*, 2002; *Hata et al.*, 2015]. We determined two components of network-MT response functions between the potential differences and the two horizontal components of the magnetic field, which were recorded at the long dipoles and at the Kanoya Geomagnetic Observatory respectively. Fifty dipoles, which were densely distributed in Aso caldera, were selected around the graben of 110 by 150 km in the north and east directions to obtain a 3-D resistivity model by using a data space Occam's inversion code modified for the network-MT data [e.g., *Siripunvaraporn et al.*, 2004]. The obtained 3-D resistivity model had significant conductive anomalies, which appeared at depths of less than ~10 km in Aso caldera and extended to a deep part of the crust beneath Kuju volcano. In this presentation, we will show in detail on the 3-D resistivity model.