

Airborne magnetic surveys and their significances for the monitoring of volcanic activities.

Yoshio Yoshio[1]; Koichi Kumagawa[2]; Kaoru Koyama[2]

[1] JHA; [2] Coast Guard, Hydrographic

Airborne magnetic surveys of active volcanoes have been recognized to be useful measures to detect an inner magnetic structure of the active volcanoes. Referring to the recent studies on the airborne magnetic anomalies of active volcanoes, the conspicuous magnetic 3D structures have been made apparent. For the case of Miyakejima volcano, repeated airborne magnetic surveys made apparent the demagnetized zone in the south of the crater, where the land magnetic stations were not placed. In the case of Izu-Oshima volcano, 3D magnetic structure after the eruption in 1986, suggests the recovery process of magnetizations in the C-crater zone, erupted in 1986. This result also made apparent demagnetization zone beneath Mt. Futago, which is located in the south of Mt. Mihara. These volcanoes consist of basaltic lavas and pyroclastic materials. As to the volcanoes made of andesitic materials, such as Suwanosejima and Nakanoshima in Tokara Islands, the demagnetization zones were also detected by 3D magnetic modelings. These features suggest that the repeated airborne magnetic surveys are useful method when analyzed by 3D magnetization modelings for the detection of the thermal active zones of active volcanoes. If the land magnetic stations are placed in the demagnetized zones detected by the airborne magnetic surveys, the steady observation scheme may become more effective for monitoring of volcanic activities. The 3D magnetization structures of other volcanoes of Sakurajima, Mt. Fuji are also to be introduced in the lecture.