

# High-resolution Aeromagnetic Survey over Fuji Volcano, Japan

# Shigeo Okuma[1]; Tadashi Nakatsuka[2]; Hideyuki Satoh[2]

[1] GSJ, AIST; [2] GSJ/AIST

<http://staff.aist.go.jp/s.okuma/>

The Geological Survey of Japan (GSJ), AIST has conducted a high-resolution aeromagnetic survey over Fuji volcano, Japan in 2003 to better understand the subsurface structure of the volcano. The survey was flown using a stinger-mounted helicopter at an altitude of 150 m above terrain along north-south survey lines and east-west traverse lines, spaced 200 m and 1,000 m apart, respectively. Total magnetic intensity was observed in every 0.1 second by a Cesium magnetometer with GPS positioning and anomaly was calculated by a subtraction of the IGRF from the observed values. Aeromagnetic anomalies were reduced onto a smoothed observed surface with a method in space domain and some filtered maps such as reduction to the pole were created. The compiled high-resolution aeromagnetic map is totally different from a regional map and contains more detailed information.

The characteristics of the distribution of reduction to the pole anomalies are summarized as follows:

- 1) A regional magnetic high zone runs from NW to SE across the edifice of the volcano, showing the distribution of flank openings and parasitic cones which produced volcanic rocks. However the intensity of anomalies seems to be stronger in the northwestern part than in the southeastern part. This implies more magnetic material such as basaltic lavas are dominant in the northwest, whereas less magnetic geology such as pyroclastic products like scoria are dominant in the southeast.
- 2) A regional magnetic high ranges from the east-south-east of the summit crater to the east along the Subashiri climbing path, implying the existence of a subsurface structure such as a remain of Older Fuji volcano.
- 3) Local magnetic highs lie over flank openings, suggesting the existence of intrusions beneath.
- 4) Local magnetic highs live over parasitic cones, whereas local magnetic lows are also distributed over some parasitic cones. The reason which explains the latter relation remains unknown. Further investigations such as rock magnetic study are necessary.

These characteristic especially about a relation between local magnetic highs and flank openings are emphasized by an apparent magnetization mapping. As apparent magnetization highs correspond well to flank openings, it can be concluded that magnetic survey is useful to investigate unrevealed flank openings.