

High-resolution aeromagnetic survey over the eastern part of Fuji volcano, central Japan

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A high-resolution aeromagnetic survey was conducted in late November 2007 over the eastern part of Fuji volcano, central Japan to better understand the subsurface structure of the volcano. In 2003, a preceding aeromagnetic survey was conducted over the central part of Fuji volcano including the summit area. The compiled aeromagnetic anomaly map indicated conspicuous magnetic anomalies with a pair of highs and lows elongated in an east-west direction resides over the eastern flank of the volcano at an altitude higher than approximately 1,500 m above sea level, suggesting a buried volcanic structure exists there.

A new bird system was developed for the survey of 2007. A bird with a Cesium magnetometer and a GPS receiver housed inside was suspended 30 m below the survey helicopter (AS350B). Magnetic data were transmitted to an acquisition system (PC) on the helicopter by use of a wireless modem and monitored during the survey. The survey was flown at an altitude of 150 m above terrain along flight lines in a direction of N-S and E-W spaced 250 m and 1,000 m respectively. Total magnetic intensities were observed at a sampling rate of 10 Hz and GPS data were recorded every second.

A preliminary aeromagnetic map was compiled on site. The map indicated no eastern extension of the conspicuous magnetic anomalies in a direction of E-W on the eastern flank. In the northeastern flank of the volcano, magnetic highs are dominant, corresponding to the distribution of Taka-marubi lava flows. In the southeastern flank, several magnetic highs are distributed and trend east or southeast. It is suggested that magnetic highs which trend east correspond to debris avalanche deposits such as Gotemba debris avalanche deposit buried under pyroclastic rocks. Whereas magnetic highs which trend southeast might be associated with buried lava flows from lateral vents.

Lastly, we would like to thank to the Ground Self-Defense Force of Japan to allow us to fly over their premises. We further thank Dr. Nobuo Matsushima at GSJ for providing a Cesium magnetometer to conduct the survey.