

## Aeromagnetic anomaly change detected from the Asama Volcano 2005 and 1992 data

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Aeromagnetic survey is expected to contribute to the elucidation of the volcanic structure and the change of its activity. However, the track lines of repeated surveys cannot be the same, and the inspection to the repeatability and the spatial alias effect of magnetic anomaly pattern is quite important to acquire valid information of the activity. To overcome this difficulty, we investigated the method of retrieving the magnetic anomaly change. We applied a technique of generalized mis-tie control (Nakatsuka and Okuma, 2006) to the actual data of Asama Volcano 2005 survey.

Asama Volcano 2005 aeromagnetic survey was conducted by the Asama Volcano EM Field Experiment Group, in October, 2005 (Utsugi et al., 2006). The existing reference data is the survey by the Geological Survey of Japan in 1992 (Okuma et al., 2005). The year 1992 is situated in the midway of Asama activities in 1982-83 and 2004, and the 2005 survey was soon after the 2004 activity. In the 1992 survey, survey lines of 150m spacing with terrain clearance of 200m were flown, while the observation surface of 2005 survey is selected to be of calm slope at the elevation of 2000-2500m, much higher in mountain foot areas. Although the track lines were fixed by GPS system in both surveys, the position fix in 1992 survey was not accurate enough because the number of satellites was insufficient, the differential technique had not been developed, and the radio signal was contaminated with military selective availability scheme. This situation brings an error in estimating the magnetic anomaly change by the method of generalized mis-tie control. After taking account of this error effect in the analysis, we detected two characteristic features below as a considerable change exceeding the expected error level.

1) Magnetic anomaly decrease near the summit Kamayama crater, which can be expected from thermal demagnetization or random replacement of remanent magnetization by the eruption.

2) Magnetic anomaly increase at the Northeast side, area of 1783 activity, which might be a manifestation of very slow acquisition of new magnetization accompanying the gradual cooling.