

Magnetic Subsurface Structure on Unzen Volcano Determined from Aeromagnetic Data

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We conducted the magnetization intensity mapping on Unzen Volcano using the low-altitude aeromagnetic data on September 18, 2002. The resultant magnetization intensity map showed a good correlation with the results of past aeromagnetic analyses and the surface geology and topography, generally. Lavas on Unzen volcano possess different magnetization values for each eruption event. In addition, magnetization lows correspond to areas such as, hydrothermal alteration zones, suggesting a loss of magnetic minerals due to hot spring activity. Also, the regions of collapsed walls, valley deposits and fan deposits show magnetization lows that are associated with deposits of randomly oriented magnetizations. Magnetization low locally distributed on Heisei-Shinzan suggests that the Heisei lava produced by the 1991-1995 eruption has not yet cooled.

In addition, we will conduct 3-D inversion using the high-altitude aeromagnetic data (Nakatsuka(1994)), in order to discuss geology and geothermal structures related to volcanic activity with the obtained magnetization intensity mapping. Following to Li and Oldenburg(1996) and Pilkington(1997)), we will also use a weighting of the form $1/z^{**3}$.