

## Paleomagnetic study of Unzen volcano

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A paleomagnetic study of Unzen volcano was carried out in order to unravel the characteristics of geomagnetic secular variation in the area. Lava flows and pyroclastic flows over the last 500ka (except for 1 site of about 1 Ma) in this area were sampled in 69 sites (50 lava flows and 19 pyroclastic flows). Spinner magnetometer, AF demagnetizer and thermal demagnetizer were used in the paleomagnetic measurements. For most of the lava samples, we were able to get stable primary magnetizations by progressive AF demagnetizations. Some sites, however, were too stable to examine all the components by AF. Thermal treatments were applied for those samples. One of the lava flows of older Unzen (UZ09; ca.200ka) was magnetized in intermediate direction. Some of the samples of the pyroclastic flow site UZ22, which was thought to be coeval with UZ09, showed similar directions. These flows can be correlated to the 'Pringle Falls' excursion found in Oregon, U.S.A. Significant site mean directions were obtained from 54 sites (48 lava flows and 6 pyroclastic flows) among 69 sites. The mean direction of these 54 site means was consistent with the direction expected from geocentric axial dipole. The difference of the mean directions between younger ( $\sim 120$ ka) and older (170-500ka) Unzen was insignificant. The mean virtual geomagnetic pole (VGP) position included the geographic north pole, indicating that no anomaly in the mean geomagnetic direction was observed in Unzen area. The resultant angular standard deviation (ASD) was calculated to be  $16.3^\circ$  ( $+2.4^\circ$ ,  $-2.0^\circ$ ), which was a little but significantly larger than the latitude dependent PSV model G (McElhinny and McFadden, 1997). The difference of the ASD values was also insignificant between younger and older Unzen.