

Iceland Basin 地磁気エクスカージョンは双極子的か？ - 雲仙火山岩から得られた古地磁気強度測定結果からの検討

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Dipolar nature of the Iceland Basin geomagnetic excursion? - Examination from absolute paleointensities from the Unzen Volcano

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The Iceland Basin excursion (Channell 1999; Laj et al., 2006) is a well-known geomagnetic excursion in Brunhes Chron and has been observed globally in marine and lake sediments particularly as prominent relative paleointensity minima. VGP paths for the excursion are fairly consistent among records, implying a dipolar nature of the excursion (see thorough review by Laj and Channell (2007)).

We have conducted paleointensity measurements of lavas and pyroclastic flows from Unzen Volcano. They have been shown in a previous study (Shibuya et al., 2007) to contain a record of Brunhes secular variation, with one flow recording a transitional direction (Senbongi geomagnetic excursion; 191 +/-17 ka; Matsumoto et al., in prep.) which is claimed to correlate with the Iceland Basin excursion. The LTD-DHT Shaw method yielded 209 successful results from 56 sites, giving 27 acceptable site-mean paleointensities for the past 5-300 kyr (Yamamoto et al., submitted). They include one VDM of the Senbongi excursion (2.19×10^{22} Am²), and five VDMs with non-excursion paleomagnetic directions from the pre- and post- Iceland Basin excursion period ($6.83-10.5 \times 10^{22}$ Am²).

When calibrating sedimentary records capturing the Iceland Basin excursion (ODP site 983 (Channell et al., 1997; Channell, 1999) and Lake Baikal (Oda et al., 2002)) by the averages of the LTD-DHT Shaw VDMs obtained from the pre- and post-excursion period, the calibrated records give consistent VDM values with the senbongi VDM at the timing of the excursion. This suggests that the Iceland Basin excursion has a dipolar nature and supports the view of Laj et al. (2006) who conclude the simple dipolar VGP path for the excursion.