

Geomagnetic field intensity variation during the last 250 kyr from the Japan region

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In collaboration with other Japanese researchers, paleointensity measurements from both marine sediments and volcanic rocks from the Japan region have been obtained. I present a review of our last five years work, and concentrate on magnetic field intensity variation during the last 250 kyr.

Ten marine sediment cores recovered from the northwest Pacific were used to obtain relative paleointensity. These results were merged into a stacked paleointensity record called NOPAPIS-250, which covers the last 10-250 kyr (Yamamoto et al., 2007). In the NOPAPIS-250 curve, at least nine paleointensity lows are recognized, six of which can be correlated with reported geomagnetic excursions in the literature. A distribution of the relative paleointensity yields a standard deviation corresponding to 33 percent of the average, assuming a normal distribution.

For volcanic rocks, the LTD-DHT Shaw method was applied to samples collected from the Ontake and Unzen Volcanoes (10-250 ka). 43 reliable site-mean paleointensities from individual cooling units were obtained. Paleointensities range between 5.75 and 66.3 micro-T, giving an average field of 32.3 micro-T with a standard deviation of 15.7 micro-T. The present field in Japan is about 45 micro-T, which is higher than the 10-250 ka average, however, this is still within the range of the standard deviation. The standard deviation of the volcanic data is 49 percent of the average, which is higher than that calculated from the marine sediments (33 percent). Possible reasons for this difference are (1) short frequency changes of the geomagnetic field were averaged out in the marine sediments and that (2) numbers of the volcanic paleointensity data are not sufficient.