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Rock magnetic study of widespread Aira Tn (AT) tephra

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AT is one of the most typical widespread tephra in Japan. It erupted from southernmost part of Kyushu island and can be traced more than 1000 km towards northeast. Paleomagnetic study of AT has been carried out intensively by Nakajima and Fujii (1995) to restore distribution of geomagnetic filed at the time of its sedimentation. Here we utilized identical samples used in the paleomagnetic study by them to show rock magnetic characteristics of AT.
Thermomagnetic measurement, thermal demagnetization of low-temperature IRM, unmixing of IRM acquisition curve, low-field susceptibility, ARM susceptibility, and so on were done. Thermomagnetic curves show three possible Curie points; c. 350°C, c. 520°C, and c. 650°C. These temperatures suggest the presence of two different titanomagnetites and titanohematite. Thermal demagnetization of low-temp IRM could not indicate the Verwey transition, which implies inexistence of stoichiometric magnetite. IRM acquisition curve was analyzed with Irmunmix V2.2 (Heslop et al., 2002). Typical coercivity indicated at less than 10 mT, 30-100 mT, and above 1000 mT. These results suggest rather complex nature of the magnetic minerals in a single tephra layer.

Keywords: Aira Tn (AT), widespread tephra, rock magnetism