

Paleomagnetic secular variation record for the last 7000 years observed in piston cores from the Ichinomegata Maar

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The Ichinomegata is a maar lake located in Oga peninsula, Akita Prefecture. Thin-wall core samples (IMG06) obtained in 2006 provided a Holocene paleomagnetic secular variation (PSV) record through measurements of natural remanent magnetization (NRM) of u-channel samples. In this study, we collected the piston-core samples (IMG13P-1 and IMG13P-2) from the center of the lake, and measured magnetic susceptibility, anisotropy of magnetic susceptibility (AMS) and natural remanent magnetization (NRM) of 7cc cubic samples. According to correlation between IMG06 and the piston cores based on lithological and magnetic susceptibility data, both IMG13P-1 and IMG13P-2 cover the last 7000 years. Stepwise AF demagnetization of the NRM showed that high intensity NRM decayed toward the origin linearly in most samples, so we determined the directions by applying the principal component analysis. We excluded some by evaluating inclinations of minimum axis and shape parameters q of AMS ellipsoids. Excepting some intervals that probably disturbed in coring, inclination and relative declination are showed consistent variations between IMG13P-1, IMG13P-2 and IMG06 cores. Therefore, we argue that the sediments of the Ichinomegata Maar are suitable for PSV studies. The paleomagnetic record from the Ichinomegata Maar shows a good similarity with the archeomagnetic secular variation from southwest Japan (Shibuya, 1980) and the PSV record from Lake Biwa (Ali et al., 1999), implying a great importance in regional reconstruction of the PSV record in Japan.

Keywords: Paleomagnetic secular variation, remanent magnetization, magnetic susceptibility, Ichinomegata Maar