

History of the Otari-Nakayama fault deduced from the paleomagnetism of Taro-yama Andesite and Ichiuda Welded Tuff Bed

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This study aims to determine the formation timing of nearby-fault small-scale folding structure from paleomagnetic viewpoint to reconstruct fault history.

The Omine zone longitudinally extends along the western flank of Northern Fossa Magna region, central Japan, bounded by the Otari-Nakayama fault on the east and the active fault system of Itoigawa-Shizuoka Tectonic Line on the west. NE-SW trending folding structure accompanies the Otari-Nakayama fault at Aogu of the Miasa area. The Ichiuda Welded Tuff Bed is subjected to this folding and intruded by the Taro-yama Andesite with K-Ar age 2.1 Ma (Kato et al., 1989).

Paleomagnetic samples were taken from the Taro-yama Andesite at 3 sites and the Ichiuda Welded Tuff Bed at 4 sites on both wings of the Marukiri-zawa Syncline. All andesitic samples yielded ChRM on the orthogonal plot diagrams by PThD and PAFD. Fold test on the reverse tilt-corrected site-mean directions indicates that the intrusion of the Taro-yama Andesite was prior to the folding. Reversed and normal polarity of the Ichiuda Welded Tuff Bed after tilt correction was obtained at 1 and 3 sites, respectively. Magnetization intensity of normal samples increased from 350 to 530 C by PThD and sustained 20 to 50 % of NRM intensity at 620 C. This anomalous variation in magnetization intensity probably resulted from that normal secondary magnetization ascribed to hematite, overprinted reverse primary one. Fold test on the apparent normal tilt-corrected site-mean directions indicates that the Ichiuda Welded Tuff Bed was folded after the acquisition of secondary normal magnetization.

Reversed and normal polarity of the Taro-yama Andesite and the Ichiuda Welded Tuff Bed can be correlated to the Matsuyama Chron and Olduvai Subchron, respectively. The Otari-Nakayama fault must have been active until early Early Pleistocene at the latest.