

Paleomagnetic evidence for regional extent and timing of Post Pliocene CCW rotation of south Kyushu, southwest Japan

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The purpose of this study is to reveal the rotation tectonics of South Kyushu on the basis of detailed paleomagnetic study in the five areas, including the Hikosan , Usa , Inukai, Hokusatsu and Hitoyoshi at southern Kyushu. The overall mean paleomagnetic direction from Inukai, Hokusatsu, Hitoyoshi areas shows approximately 20 deg. westward declination, as well as previous results from South Kyushu. In contrast to this, the paleomagnetic data from Hikosan and Usa areas in the northern Kyushu, show no declination deflection. This result exhibits that the south of Oita-Kumamoto Tectonic Line has rotated about 25 deg. counterclockwise with respect north Kyushu and Eurasia during the past 2 m.y.

The purpose of this study is to reveal the rotation tectonics of South Kyushu on the basis of detailed paleomagnetic study in the five areas, including the Hikosan and Usa-Ajimu areas at northern Kyushu, the Inukai area at middle Kyushu and the Hokusatsu and Hitoyoshi areas at southern Kyushu. The paleomagnetic data from latest Miocene to Pleistocene volcanic rocks and sedimentary rocks in the south Kyushu indicate that the Kagoshima graben is characterized by 15-30 deg. westward declination deflection. This result leads to the conclusion that the large part of South Kyushu has been rotated about 15-30 deg. counterclockwise since Pleistocene, although the boundary and the starting time of the rotated block is uncertain.

The mean direction of Ono volcanic rocks (13-15Ma) at Inukai area is $D=164.8$ deg., $I=-37.6$ deg., $a95=8.1$ deg. The overall mean direction of volcanic rocks (1-5Ma) at Hokusatsu area is $D=-20.1$ deg., $I=46.8$ deg., $a95=7.6$ deg.. The mean direction of Hitoyoshi Formation and Hisatsu volcanic rocks (1-3Ma) at Hitoyoshi area is $D=-15.6$ deg., $I=39.1$ deg., $a95=7.2$ deg.. The overall mean paleomagnetic direction for this volcanic rocks shows approximately 20 deg. westward declination, as well as previous results from South Kyushu. In contrast to this, the paleomagnetic data from Hikosan and Usa-Ajimu areas in the northern Kyushu, show no declination deflection. That is, the mean direction of Yamakuni Group and Kitasakamoto Group (4-6Ma) at Hikosan area is $D=6.5$ deg., $I=56.4$ deg., $a95=8.9$ deg. The mean direction of Usa Group and Tsubusagawa Formation (2-5Ma) at Usa-Ajimu area is $D=5.5$ deg., $I=45.3$ deg., $a95=6.8$ deg. This result exhibits that the south of Oita-Kumamoto Tectonic Line has rotated about 25 deg. counterclockwise with respect north Kyushu and Eurasia during the past 2 m.y.