

Paleomagnetic direction of a Miocene parallel dike swarm in the Hida district, Gifu Prefecture, and rotation of southwest Japan

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To place constraints on the timing of differential rotation in SW Japan inferred to have occurred in the Miocene Japan Sea opening stage, we have measured paleomagnetic directions of a dated (ca. 16 Ma) parallel dike swarm in the Hida district in Gifu Prefecture, eastern part of SW Japan. Oriented core samples were collected from nine dike sites, and site-mean directions of high temperature/high coercivity magnetization components were determined for six sites. The resultant overall mean direction ($D = 38.1$, $I = 41.0$, $a95 = 14.4$) is considered to be a time-averaged primary paleomagnetic record, on the basis of a positive baked contact test and an antipodal distribution of dual polarity site-mean vectors. An easterly deflection characterizes the overall mean direction, indicating clockwise rotation since dike emplacement. The amount of clockwise rotation in the study area relative to the Asian continent (North China block) is 32.4 ± 13.1 deg, coincident with that in the San'in district located in the middle of the length of SW Japan (32.9 ± 13.6 deg). Thus we conclude that the eastern half of SW Japan rotated approximately 30 deg clockwise as a rigid lithospheric sliver. Differential rotation in the eastern half of SW Japan has been suggested from previous paleomagnetic results, and it is probable that such movement had ended by 16 Ma.