

フィリピン・ルソン島南西部、マコロド回廊の形成に関する古地磁気学的研究

Paleomagnetic study of the formation mode of the Macolod Corridor in the southwestern Luzon Island, Philippine

石川 尚人 [1], 周藤 正史 [2], Eddie Listanco [3]

Naoto Ishikawa [1], Masafumi Sudo [2], Eddie Listanco [3]

[1] 京大・総人・地球科学, [2] 京大・総合人間, [3] フィリピン大・地質研

[1] School of Earth Sciences, IHS, Kyoto Univ, [2] IHS, Kyoto Univ., [3] Geol. Sci., UP

フィリピン、ルソン島南西部のマコロド回廊の形成形態を明らかにするために、鮮新世から更新世の火山岩類・火山碎屑岩類を対象に古地磁気学的研究を行った。マコロド回廊北縁より北方の地域から得られた古地磁気方位は、この地域が約2Ma以降有意な回転運動をしなかったことを示した。一方、回廊南縁より南の地域の約4-6Maの火山岩類の古地磁気方位と回廊内の約0.8Maより古いと考えられる古地磁気方位からはこれらの地域の反時計まわり回転運動が示唆された。この結果、回廊形成に関わる変動として、回廊内および南側ブロックでの反時計まわり運動の可能性が示された。

The Macolod Corridor in the southwestern Luzon Island (SW Luzon), Philippine, is an approximately 40 km wide zone characterized by intense, still active Quaternary volcanism which perpendicularly crosses the Luzon Island in NE-SW direction. A pull-apart type motion related to the formation of the corridor has been suggested in the SW Luzon. Paleomagnetic study was carried out in order to clarify formation mode of the corridor. Samples were collected at 33 sites of Pliocene to Pleistocene lavas and volcaniclastics in and around the corridor. Progressive thermal and/or AF demagnetization results indicated the presence of stable magnetic components carried by magnetite, which were referred to as characteristic remanent magnetizations (ChRMs), in the samples from 27 sites.

Site-mean directions of ChRMs in the Laguna de Bay area north of the corridor approximately showed an antipodal relationship in north-south trend. Almost all directions had negative inclinations. The magnetic polarity and radiometric age data indicate the main igneous activity during Matuyama reversal magnetic chron in this area. The north-south trending paleomagnetic directions suggest no significant tectonic rotation in this region after about 2 Ma.

Among ChRM directions in the Macolod Corridor, the directions with normal polarity (Brunhes magnetic chron) have north declination, while the directions with reversed polarity (probably Matuyama chron) showed counter-clockwise (CCW) deflection of about 30 degrees from south.

ChRM directions in the Batangas Mountains south of the Macolod Corridor showed CCW deflection of 40 to 90 degrees in declination from north or south. A K-Ar age of 4.4 Ma was obtained from one of the paleomagnetic sites. It is implied that the Batangas Mountains was subjected to a CCW tectonic rotation after about 4 Ma.

Paleomagnetic directions may suggest CCW rotation(s) in the area south of the Macolod Corridor and probably in the inside area of the corridor as a tectonic motion related to the formation of the Macolod Corridor. The rotation(s) may be possibly considered rotations of blocks in a pull-apart zone formed by sinistral motion of a fault system in SW Luzon (the Philippine Fault and the Verde Island Passage Fault).