R004-17
Zoom meeting A ：11/4 PM2 (15:45-17:30)
16:00-16:15

Preliminary report on the U-Pb geochronology and paleomagnetism of Miocene sediments from the Tanabe Group, Southwest Japan

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There are two end-member hypotheses for the mode of migration of Southwest Japan (the southwestern half of the Japanese island arc in front of the Japan Sea) during Miocene major back-arc opening of the Japan Sea. One is that Southwest Japan split and then migrated southward from the eastern margin of the Asian continent with clockwise rotation around a pivot located near its western end. In this hypothesis, Miocene and older remanent magnetization directions clockwise deflected from an expected direction, which were reported from the inner zone (the area to the north of an E-W-trending fault called the Median Tectonic Line; MTL), are interpreted to be the unequivocal evidence of the clockwise rotation of Southwest Japan. This has been incorporated into the famous double-door opening model of the Japan Sea. On the other hand, another hypothesis is that Southwest Japan split and then migrated southward from the continental margin without pivotal rotation; the clockwise deflection of remanent magnetization directions are interpreted to be due to block rotations in the inner zone. This has been accepted by the pull-apart opening model of the Japan Sea. To determine which of the two hypotheses is correct, an effective approach is to obtain paleomagnetic data from the outer zone (the area to the south of the MTL) because regional geologic structures suggest that the outer zone has not suffered block rotation. Here we will present preliminary geochronological and paleomagnetic results from Miocene sediments of the Tanabe Group on the outer zone. Our new U-Pb zircon dates indicate that the lower part of the group is of late early Miocene age. Samples for paleomagnetic study were collected at eight sites in the lower part, and site-mean directions of characteristic remanent magnetization (ChRM) were determined for five sites through detailed stepwise demagnetization experiments. Thermal or 'hybrid' demagnetization methods were effective to isolate ChRM. A positive tilting test demonstrates ChRM acquisition before tilting. Importantly, tilt-corrected directions are almost parallel to the directions of the same age reported from the inner zone, indicating no relative rotation between the inner and outer zones. Comparison of the tilt-corrected directions with an early Miocene reference direction suggests clockwise rotation in the study area with respect to the Asian continent. Therefore, our preliminary results are more compatible with the hypothesis of clockwise rotation of Southwest Japan and cast serious doubt on the drift migration hypothesis.