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MIS34-P20 Room:Convention Hall Time:May 27 18:15-19:30

A chronostratigraphic study of the upper Anno Formation, Awa Group, distributed in the middle part of the Boso Peninsula

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Since the Awa Group, distributed in the central Boso Peninsula, has a good continuous exposure, abundant microfossils and many intercalated treiceable tephra beds, a lot of stratigraphic studies have been conducted so far. Okada et al (2013) reported magnetostratigraphy of the upper Anno Formation exposed along the Minato and Shikoma rivers, which concluded that the Mammoth reversed subchronozone (3.207-3.330Ma) and the Gilbert-Gauss boundary (3.596Ma) were recognized at the horizon of between the An155 and An157 tephra beds and at the horizon near the An127 tephra bed, respectively. However, sampling resolution, which is about 10m in the stratigraphic interval at the Shikoma river route, is not sufficient to deny a possibility that the subchronozone is recognized as the Kaena reversed subchronozone (3.116-3.032Ma). We therefore conducted resampling with a higher resolution in order to refine the magnetostratigraphy with a better temporal resolution.

For paleomagnetic, rockmagnetic and oxygen isotopic measurements, we sampled 1-5 mini-cores and sedimentary rocks with about 300g by dry-weight at 117 sites, respectively. The samples were taken downward from the horizon just below the Kurotaki unconformity in Shikoma river route.

We performed alternating-field demagnetization (AFD) and thermal demagnetization (ThD) in order to extract primary components from the specimens. Additionally, we carried out a magnetic hysteresis parameter analysis and a thermomagnetic analysis to detect rockmagnetic parameters. The results exhibit that most specimens consist pseudo-single domain magnetites as the magnetic carrier of natural remanent magnetizations. Characteristic remanent magnetizations (ChRMs) calculated from both of AFD and ThD results did not pass the reversal test, indicating that secondary magnetization components are not able to be removed completely with the both demagnetization technics. However, we judged that the ChRMs from ThD would be reliable to evaluate the polarities, since the secondary components are quite small. Accordingly, we confirmed polarity boundaries at depths of 96-98.4m, 22.5-26.6m and 11.4-14.7m. Because the polarity boundary at the deepest site is near the An127 tephra bed as well as the previous study, it is compared to the Gilbert-Gauss boundary. The polarity boundaries at depths 22.5-26.6m and 11.4-14.7m correspond to the upper and lower boundaries of the Mammoth reversed subchronozone, respectively, since there is no other polarity reverse from the deepest polarity boundary to the middle polarity boundary. Sedimentation rate between the Gilbert-Gauss boundary and the lower boundary of the Mammoth reversed subchronozone, and between the lower and the upper boundaries of the Mammoth are evaluated as about 27cm and about 9cm, respectively. The significantly decreased sedimentation rate observed during the Mammoth subchron corresponds to the horizon between the An155 and An157 tephra beds. Nakajima and Watanabe (2005) reported that the horizon between the An155-2 and An156-4 tephra beds was eroded by a slump at the Shikoma river route. We consider that the significantly decreased sedimentation rate attributes a hiatus due to erosion by slump.

We, hence, plan to extract foraminifers from sedimentary rock samples from the same sites of paleomagnetic mini-cores, and measure oxygen isotopes. After that, we are going to discuss chronostratigraphy using oxygen isotope stratigraphy and magnetostratigraphy.

Reference

Okada M, Umihoko T, and Yoshioka T, 2013, Magnetostratigraphy of upper part of the Anno Formation, the Awa Group, in the Boso Peninsula, Japan. Abstr. 120th Ann. Meet. Geol. Soc. Japan.

Nakajima T, and Watanabe M, 2005, Geology of Futtsu District. Quadrangle Ser. Scale 1 : 50000, Tokyo (8), 85, Geol. Surv. Japan, AIST, 102p.

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