

An integrated chronostratigraphy of Pliocene the Anno Formation, the Awa group, central Boso Peninsula, central Japan.

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Since the Awa Group, distributed in the central Boso Peninsula, has a good continuous exposure, abundant microfossils and many intercalated traceable tephra beds, a lot of stratigraphic studies have been conducted so far. Therefore the Awa Group is recognized as a stratotype of a period between mid-Miocene and Pliocene, which can reveal paleoceanographic conditions at the Kuroshio-Oyashio mixing area during that period, in Japan. Because most of these studies, however, published before key tephra beds were coordinated, strata at which data were obtained are hard to identify. Thus, we propose a refined chronostratigraphy based on magnetostratigraphy and oxygen isotopic stratigraphy with defining correspondence relation of horizon of key tuff beds and strata at which data are obtained, and show new data continuously from last year.

For paleomagnetic, rockmagnetic and oxygen isotopic measurements, we newly sampled 1-4 mini-cores at 86 sites and sedimentary rocks with about 300g by dry-weight at 83 sites, respectively. The samples were taken downward between key tuff An123 to base of the Anno Formation along the Shikoma River route.

We performed progressive alternating-field demagnetization (pAFD), progressive thermal demagnetization (pThD) and various rockmagnetic analysis in order to extract primary components from the specimens and verify them stability. The results exhibit that most specimens consist pseudo-single domain magnetites as the magnetic carrier of natural remanent magnetizations.

We confirmed polarity boundaries at thicknesses, base of the Anno Formation is 0 m, of 9.1-10.9 m (nearly a key tuff bed An4), 52.5-55.3 m (between key tuff beds An22 and An30) and 64.15-70.05 m (below 2 m from a key tuff bed An51 correlated with the Trb-Ya4 tephra). They are corresponded to the upper boundary of the Nunivak normal subchronozone, the lower and the upper boundaries of the Cochiti normal subchronozone, respectively.

At the uppermost section of the Anno Formation, between the Kurotaki Unconformity and a key tuff bed An127 (thicknesses between 213.1 m and 315.4 m), we carried out benthic foraminifers oxygen isotopic analysis. Accordingly, we obtained an oxygen isotopic curve from the results of analysis, corresponding to a period between MIS KM5 and MG12 based on correlation with the LR04 stack curve. Our of age model oxygen isotopic stratigraphy constrain key tuff beds An129 and An130 (corresponded wide-spread tephra the Hgs-An129 and the Sr-Ity, respectively), these age are 3.598 ± 0.0006 Ma and 3.586 ± 0.0023 Ma, respectively. These tephra, interleaving the Gilbert-Gauss polarity boundary, are possible to be very usable markers at other area.

Keywords: the Anno Formation, Pliocene, chronostratigraphy