

APE031-P06

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Oxygen isotope stratigraphy of upper part of the Mera Formation, Chikura Group in the southern Boso peninsula

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It is thought that the Mera Formation of Chikura Group which distributed in the southern Boso peninsula deposited at about 3Ma. Mera Formation is the stratification recorded the detailed change of paleoceanographic events, because it occurred that the glacier at high latitude of northern hemisphere formed for the first time and the climatic change cycle changed at this age (Tiedemann et al., 1994, etc.). So we reconstruct chronostratigraphy of the Mera Formation, based on oxygen isotopic stratigraphy using foraminifers and on magnetostratigraphy, in order to derive paleoceanographical data.

We collect rock sample from the stratification along the Chikura way and the stream in Chiba prefecture Minamiboso city Chikura-cho. We pick up foraminifers from 112 stratigraphic horizon and measure those isotope ration with Iso Prime Multi Prep in Center for Advanced Marine Core Research, Koch University.

1. Oxygen isotope stratigraphy

We reconstruct chronostratigraphy of Mera Formtion using the LR04 standard curve (Lisieski and Raymo, 2005) and the age of the Matuyama/Gauss Boundary and that of the top and bottom Kaena subchron. As a result, the age of this studies' field is 2.30-3.14 Ma. The oxygen isotope curve from Mera Formation to Hata Formation shows that deep water temperature of such area tends to have shifted higher relatively as compared with the LR04 standard curve. In this tendency, two possibilities are thought. One is that temperature of deep water rose locally. The other is that depositing depth became shallow modestly. It is hard to think that the former is possible, because it is thought that such area was faced the open sea. Judging from this, it is possible that depositing depth became shallow at such area.

2. Estimate about the difference of temperature between surface water and deep water and paleodepth

We estimate the difference of temperature between surface water and deep water from the difference of $\delta^{18}O$ between planktonic foraminifera and benthic foraminifera using the formula proposed by Oba(1971). As a result, its temperature is about 19.5 degrees. In order to estimate paleodepth of such area, we use the water temperature and depth data of Station224 (Broecker et al, 1982). When its water temperature and depth data is same as the present one, the depth which the difference of temperature between surface water and deep water is 19.5 degrees is about 1000m. So, when this study area deposited, the depth was about 1000m there.

3. Sedimentation rate

The average of sedimentation rate from this study area is 62.7cm/kyr. The maximum rate is 93.1cm/kyr (stratigraphic horizon 313.3-345.7m), the minimum rate is 31.6cm/kyr (stratigraphic horizon 76.5-100.8m). Generally, the supply of clast increases in glacial epoch compared with interglacial, so it is thought that sedimentation rate also increases in glacial epoch. Such tendency is showed during about 2.4-2.6Ma. It is thought that the variation of sedimentation rate is affected by glacial- interglacial cycle.