

The Neogene records of the fossil diatoms from the core ODP Leg 145 Site 887, North-eastern Pacific

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Gulf of Alaska located in high latitude region of Subpolar Gyre in the northeastern Pacific. In this region, Alaskan Gyre is formed in eastern part of Subpolar Gyre as the subarctic current goes north and flows as Alaskan stream. Additionally, ice sheet expansion in Pleistocene contributed the drop of the global mean surface temperature with the large-scale cooling in the Northern Hemisphere (Broccoli, 2000). However, detail process of the cooling from the middle Miocene to present has been under discussion.

Moreover, the North Pacific Diatom (NPD) Zones established by Yanagisawa & Akiba (1998) have been used to define the geological/sedimentary ages in this region. However, there have been little discussions on the age gaps of diatom bioevents, including the first/last appearances of each taxon which define the NPD zones, between northwestern and northeastern Pacific because of little analyses using the same core to compare the diatom biostratigraphy with paleomagnetism around these regions.

There is two previous works for establish of northeastern Pacific diatom biostratigraphy with paleomagnetism data acquired from single core such as Barron & Gladenkov (1995) and Watanabe & Yanagisawa (2005). The former showed important result for the establishment of the Neogene diatom biostratigraphy in northeastern Pacific using with several Ocean Drilling Program (ODP) cores including Site 887, however the sampling intervals were lower to decide the detail ages of diatom bioevents because they mostly used only core catcher samples. Moreover, the ages of each diatom event used diatom biostratigraphy have been settled based on the magnetostratigraphic ages, but the paleomagnetic time scale has renewed by Gradstein et al. (2012). Therefore, each paleomagnetic event corresponding to biostratigraphy must be needed to recalculate. On the other hand, Watanabe & Akiba (2005) achieved higher-resolution analysis, but they focused on short interval from the early to middle Miocene.

Accordingly, to establish the detail northwestern diatom biostratigraphy with recalculate ages with Gradstein et al. (2012), this study used the core samples of ODP Leg 145 Site 887 drilled in Patton-Murray Seamounts, southern Gulf of Alaska, as well as Integrated Ocean Drilling Program (IODP) Expedition 341 planned to drill on May to July, 2013 in northern part of Gulf of Alaska. The objectives of this study are 1) to establish high-resolution diatom biostratigraphy from the Miocene to Present in Northeastern Pacific with comparing to paleomagnetism of Gradstein et al. (2012) and 2) to reveal paleoenvironmental changes in this region.

Reference: Barron, J.A. & Gladenkov, A.Y. 1995. Proc. ODP. Sci. Rslt , 145 , 3-19; Broccoli, A.J. 2000. Journal of Climate , 13 , 951-976; Gradstein, F.M., et al. 2012. A Geologic Time Scale 2012. Cambridge (Cambridge Univ. Press); Yanagisawa, Y. & Akiba, F. 1998. Jour. Geol. Soc. Japan. 104(6). 395-414; Watanabe, M. & Yanagisawa, Y. 2005. The Island Arc , 14, 91-101.

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