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Miocene to Pleistocene distribution of Calcareous Nannofossils and their paleoceanographic significance in the Equatorial Pacific, western Pacific and Atlantic Oceans

Pratiwi, S.D.[1], Sato, T.[2], and Farida, M.[3]

[1]Department of Geosciences, Geotechnology and Materials Engineering for Resources, Akita University, Teagata-Gakuencho 1-1, Akita 010-0862, Japan (rhabdosphaera@gmail.com)

[2] Faculty of International Resource Sciences, Akita University, Japan

[3]Geological Department, Hasanuddin University, Indonesia

Abstract

We discuss in detail the Miocene to Pleistocene paleoceanography of the western Pacific, Equatorial Pacific Ocean, and Bahama Bank of the Caribbean Sea based on calcareous nannofossil assemblages from the Ocean Drilling Program Sites 782A, 805B, and 1007. At each site we focused on the relationship between coccolith number (N/g) and size variation of *Reticulofenestra*, and correlation with the global tectonic events. The number of coccolith productivity does not significantly change from NN6 Zone through the upper part of NN8-NN10 Zone at the Equatorial Pacific and western Pacific Ocean. However, at 9Ma the fluctuated number drastically decreased from the upper part of NN11 and increased again to the highest peak at NN19 boundary in Sites 782 and 805. Different with Sites 1007, productivity of coccolith decreased at 9.8 Ma and increased with highest peak in NN14-15 zone. The occurrences of large size *Reticulofenestra* indicate that the oligotrophic is absolutely change to small size at 9Ma in the Caribbean Sea, Equatorial Pacific and western Pacific Oceans. The mode size of the *Reticulofenestra* size is characterized by positive correlation with the maximum size, and the variability of the maximum size of *Reticulofenetsra* recorded in the Sites 782 and 805 is positive correlation with those in Site 1007. As the occurrence of large size *Reticulofenestra* indicate the oligotrophic and stable sea surface condition, decreased at 15.3 Ma, 13 Ma, 9Ma, 5.4Ma, 3.6Ma and at 2.75Ma. This spontaneous event can be explained by the collapse of the stability of sea surface stratification in the Equatorial Pacific, western Pacific and Atlantic Ocean has been changed gradually from oligotrophic to eutrophic conditions during the Miocene to Quaternary, and is clearly correlated with the end of Mid-Miocene climate optimum, the closure of Indonesian Seaway, the timing of the Asian monsoon intensification, Messinian Salinity crisis, and the Closure of Central American Seaway.