

## Size variation of a calcareous nannofossil genus *Coccolithus* Schwartz during the Miocene

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A calcareous nannofossil genus *Coccolithus*, one of the main taxa in calcareous nannoplankton, appeared in the early Paleocene and is found in recent oceans. *Coccolithus pelagicus* (Wallich) Shiller, a most common *Coccolithus* species, is regarded as a long-ranging species and as a cold water proxy based on main distribution areas of living specimens (McIntyre and Bé, 1967). However, recent study indicated that there are some morphotypes of living species under different environmental conditions (Parente et al., 2004). Considering the difference in shape between fossil and living species (Nishida, 1982) and the presence of fossil species both in equatorial and middle latitudes, it is unlikely that all the fossil species can be regarded as a living *C. pelagicus*. This study aims at clarifying variations in shape and size of a genus *Coccolithus* during the Miocene. The ODP cores from the Caribbean Sea and the Pacific Ocean were used in this study and chronological intervals investigated corresponds to 13.5–8 Ma. Polarizing microscope was used for the observation and measurement of specimens of *C. pelagicus* and the lengths of major and minor axes of both the outline and the central opening of a single specimen were measured to clarify the morphological features of Miocene *Coccolithus*.

A similar trend of the size variation of *Coccolithus* specimens was observed in the Caribbean and Pacific cores. It is characterized by increasing of larger specimens upward and sudden replacing with smaller specimens at certain boundaries. Large specimens disappeared about 10.3 Ma and 9 Ma. *Coccolithus* specimens over 12  $\mu\text{m}$  in diameters are only recognized below 10.3 Ma and their morphologic features are clearly different from smaller specimens. They must be involved in *Coccolithus miopelagicus* Bukry and the age of their disappearance is considered to about 10.7 Ma. On the other hand, there are no morphologic differences between other larger and smaller common specimens. Abundant occurrences of smaller *Coccolithus* specimens during 9–8 Ma mostly correspond to the interval of smaller *Reticulofenestra* specimens (e.g., Young, 1990). Thus, downsizing of coccolith specimens may be possibly common phenomenon in Miocene calcareous nannoplankton.

### References

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