

Stratigraphic variation in abundance, species composition, and morphology of the genus *Umbilicosphaera* (Calcidiscaceae) in the Pliocene–Pleistocene of ODP Site 709C core (western equatorial Indian Ocean)

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In order to reveal the evolutionary history of the genus *Umbilicosphaera*, we examined calcareous nannofossil biostratigraphy and the interspecific morphological variation of members of *Umbilicosphaera* through the Pliocene to the Pleistocene in the ODP Site 709C core that was recovered from the western equatorial Indian Ocean. A general biostratigraphic zonation of this core has already been established (e.g., Rio *et al.*, 1990). The relative abundance of *Umbilicosphaera* spp. within the total calcareous nannofossil assemblages, except for *Florisphaera* spp., was generally low (<1%) during Subzone NN16/CN12a and upper Subzone NN16/CN12b (Martini, 1971; Okada & Bukry, 1980), but it increased to 7–20% during uppermost Subzone NN16/CN12b, then decreased in Subzone NN17/CN12c. This acme zone was also reported from ODP Site 994 in the western Atlantic (Okada, 2000). We have classified coccoliths of *Umbilicosphaera* into five groups based on morphologic characters: size of central opening, numbers of radial elements on the shield, whether bicyclic or monocyclic, and suture patterns. The stratigraphic

and morphologic implications for this lineage will be discussed.

References

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