

Role of the *Gephyrocapsa* complex in the reconstruction of atmospherically-driven water-column variability in the western Mediterranean (ODP Site 977) during Marine Isotope Stage 11

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A high-resolution coccolithophore analysis, along with oxygen and carbonate isotopes and UK'37 alkenone-derived sea-surface temperatures (SSTs), was carried out on western Mediterranean ODP Site 977 (Alborán Sea) sediments, with the aim of reconstructing changes in palaeoproductivity and surface dynamics at the millennial scale during Marine Isotope Stage 11.

Coccoliths of the genus *Gephyrocapsa* were the most abundant taxa in the interval. The dominance of small *Gephyrocapsa* spp. (<3 µm) and *Gephyrocapsa caribbeanica* revealed high primary productivity variability, related to the weakening and strengthening of upwelling conditions, as well as changes in Mediterranean/Atlantic-water exchange. The atmosphere to ocean-surface connection in the Alborán Sea during MIS 11 was reconstructed using the *Gephyrocapsa* complex. Short-term oscillations in wind and precipitation tracks, which were controlled by the North Atlantic Oscillation during MIS 11, are proposed as being responsible for this variability.

The identification of several morphotypes/species within the *Gephyrocapsa* complex (*G. caribbeanica*, *G. oceanica* and *G. muelleriae*) allowed us to present a hypothesis about the relationship between their changes in connection to oceanic processes operating at the regional and global scales during MIS 11 and the Mid-Brunhes interval. In addition, we provide new information about the behaviour of Mediterranean taxa, such as *Syracosphaera* spp. and *Helicosphaera carteri*, and others of Atlantic origin, such as *Calcidiscus leptoporus* and *Coccolithus pelagicus* subspecies (*pelagicus*, *braarudii* and *azorinus*), and introduce a discussion about their palaeoecological responses in the Alborán Sea.