

Winter-spring living coccolithophores from Thermaikos Gulf, NW Aegean Sea

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The Thermaikos Gulf is a semi-enclosed, shallow basin in the northwestern part of the Aegean Sea. The environmental setting of the area is defined by the three major rivers (Axios, Aliakmon, and Pinios) that flow into the basin. During the wet period (winter and spring), the freshwater intrusion can extend southwards enough to seal a major part of the gulf's surface waters (salinities <25psu). On the other hand, more saline waters from the northern Aegean Sea flow towards the northeast, entering the inner Thermaikos Gulf. The aim of this study was to explore changes in the coccolithophore abundance and composition, as compared to a multi-parameter environmental dataset (temperature, salinity, pH, turbidity, nutrients, and chlorophyll-*a*), during the winter-spring period. Sampling of the top 20m of the water column was carried out on a monthly basis (January-June 2016) at a station located in Thessaloniki Bay (inner part of the Thermaikos Gulf). Coccolithophore assemblages are dominated mostly by *Emiliania huxleyi*, and other species present include *Gephyrocapsa oceanica*, *Helicosphaera carteri*, and various species of *Syracosphaera*, such as *S. molischii*, *S. histrica*, and *S. anthos*. During winter-early spring (January to March), *E. huxleyi* displayed concentrations of up to 24×10^3 cells/l, similar to the typical *E. huxleyi* Aegean values. Extremely high cell densities of *E. huxleyi* (419×10^3 cells/l) were observed in April, following chlorophyll-*a* maxima. Biometric analyses were performed on

E. huxleyi coccoliths, and they showed that the assemblage was dominated by over-calcified morphotypes during the winter/early spring months (e.g., Triantaphyllou *et al.*, 2010). Lightly calcified morphotypes (relative tube width values < 0.1) dramatically increased (95%) in April and had morphological features similar to those of *E. huxleyi* coccoliths that were found in Black Sea waters flowing into the North Aegean (Karatsolis *et al.*, in press). The observed "bloom" of *E. huxleyi* lightly calcified morphotypes reflects the exceptional environmental conditions that prevailed in the semi-closed inner Thermaikos Gulf with respect to the open Aegean Sea, thus providing further evidence of the species' biogeography.

References

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