

# Seasonal succession of coccolithophores during a long-term monitoring in the Kiel Fjord (SW Baltic Sea)

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Coccolithophores were long thought to play a minor role in the phytoplankton community in the Baltic Sea (Tyrrell *et al.*, 2008). However, their first observations date as far back as 1905–1906, when large populations of *Emiliana huxleyi* were recorded as a major component of the phytoplankton succession in the Kieler Förde off Laboe (Lohmann, 1908). Subsequent studies failed to report any coccolithophores, despite intensive monitoring by various projects (e.g., Smetacek *et al.*, 1985). This may have three reasons: (1) the fixation of samples with Lugol's solution dissolved the coccoliths, (2) monthly sampling intervals may not have been suitable to discover the sometimes very short-lived appearances of specific species, or (3) the primarily lightly calcifying coccolithophores have been overlooked and actually are present in the Baltic Sea (Thomsen, 2016).

Since 2009, we conducted weekly to monthly phytoplankton monitoring in the inner Kiel Fjord and since July 2014, in the western Kiel Bight (Meier *et al.*, 2014a). Coccolithophores were a consistent member of the phytoplankton community, with their earliest occurrence in June, usually peaking in late summer/autumn, and declining over winter until they disappeared in March. Their occurrence and timing was similar to that found 100 years ago. The assemblage was dominated by *E. huxleyi*, which forms blooms of up to  $3 \times 10^6$  cells/l. There was a repeated seasonal succession of *E. huxleyi* Type A during summer/autumn and an overcalcified Type A during the winter. The gradual increase in calcification was demonstrated by a continuous decrease in the ratio between inner tube area and distal shield area, which correlated best with temperature. Similar seasonal successions are known from the Bay of Biscay (Daniels *et al.*, 2012), the

Gulf of Lions (Meier *et al.*, 2014b), and the Aegean Sea (Triantaphyllou *et al.*, 2010), and may be useful for seasonality reconstructions or even for temperature estimates in paleoclimate studies.

## References

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