Coccolithophore export fluxes in the NE Mediterranean as revealed from different sediment trap records

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Coccolithophore export was investigated in three eastern Mediterranean sediment trap sites: the mesotrophic northern Aegean Sea (500m; October 2014–November 2015), the ultra-oligotrophic southern Aegean/Cretan Sea (1,500m; December 2014–December 2015), and the oligotrophic SE Ionian Sea (2,000m; October 2014–September 2015).

Coccolithophore fluxes (coccospheres m^{-2} day^{-1}) revealed a highly seasonal pattern with a peak during February to March (northern Aegean: max. 8.56×10^6, Ionian Sea: max. 0.81×10^6, Cretan Sea: max. 3.37×10^6). The flux maxima occurred during water column mixing and coincided with an interval of decreased sea surface temperatures (SST). Coccosphere fluxes were dominated (on average) by *Emiliania huxleyi* (75% in the northern Aegean, ~50% in Cretan and Ionian Seas), followed by *Syracosphaera* spp. (14% in the northern Aegean, ~10% in Cretan and Ionian Seas), and *Algirosphaera robusta* (>45% during February in the Ionian Sea). *Umbilicosphaera sibogae* was the most important of the minor species, particularly in the Cretan Sea (13% in average, max. flux 1.01×10^6 coccospheres m^{-2} day^{-1} in March). Northern Aegean total coccosphere flux was considerably higher due to the prominent seasonal peak of *E. huxleyi* (>95% in January).

A comparable seasonal signal in coccosphere fluxes occurred within a previously sampled time series at the same locations. However, a trend towards increasing fluxes (coccospheres m^{-2} day^{-1}) was observed (northern Aegean Sea in 2011: max. 0.29×10^6, Cretan Sea in 2001: max. 0.4×10^6). Overall, the fluxes were strongly dependent on the regeneration of nutrients by winter vertical mixing in the northern Aegean and/or the fertilizing influence of episodic dust input events in the southern Aegean and Ionian Seas (e.g., Triantaphyllou *et al*., 2004; Stavrakakis *et al*., 2013; Dimiza *et al*., 2015).

Using the SEM, a comparative study of trap samples from the SE Ionian and Cretan Seas was made of *E. huxleyi* calcification and the effect on its morphology. Higher relative tube width values (~0.3 in the Cretan Sea, >0.35 in the Ionian) occurred when increased coccolithophore productivity time intervals coincided with SST minima, which matches the seasonal calcification pattern found in the NE Mediterranean (Triantaphyllou *et al*., 2010).

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