

## Coccolithophore diversity and seasonal distribution in a coastal site of the Gulf of Trieste [POSTER]

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Recent studies on ocean acidification due to the increase of carbon dioxide in the atmosphere have provided evidence on a possible impact on coccolithophore calcification. In the framework of the MedSeA (Mediterranean Sea Acidification in a changing climate, EU-FP7) project, we collected data from May 2011 to February 2013 to deepen knowledge on coccolithophore associations at a coastal site in the Gulf of Trieste, for which a long-term time series of plankton data is available (C1-LTER 1986-present).

The main aims of this study were to assess the contribution of coccolithophores to the phytoplankton community, also in relation with the available time series for the site, to identify the seasonal distribution of different species, to evaluate the relationships with high quality measurements of the carbonate system and other environmental parameters, and to compare the results of the coccolithophore analyses obtained by different methods (phase contrast versus polarized light microscopy and scanning electron microscopy).

Coccolithophores showed a high interannual variability and a typical seasonal pattern, with maxima in the autumn-winter and minima in summer. The seasonal pattern was mainly linked to  $[\text{HCO}_3^-]$ , which is the preferential form used by coccolithophores for calcification.

During the analysed period, the coccolithophore community was characterized by species adapted to a variety of environmental conditions: in autumn-winter, *Emiliana huxleyi* dominated, followed by *Acanthoica quattrosolina*, *Syracosphaera pulchra* and some minor species (only present in autumn, e.g. *Ophiaster hydroideus*, *Calcio-pappus rigidus*, *Michaelsarsia adriaticus*); in spring, the association was dominated by holococcolithophores and minor *E. huxleyi*; in summer, low overall abundances coincide with low *E. huxleyi* concentration and the dominance of small *Syracosphaera* species, *Rhabdosphaera clavigera* and holococcolithophores. The comparison between the total coccolithophore abundances obtained by phase contrast microscope with the Utermöhl method and those obtained by polarized light microscope revealed good correspondence in winter and autumn, and less in spring. In fact, the polarized light microscope counting, coupled with scanning electron microscope observations on selected samples, allowed us to recognize species with very small and/or less calcified coccoliths, that would be probably lumped with other flagellates with the Utermöhl method, improving the assessment of coccolithophore species diversity and their contribution to the total phytoplankton.