

Composition, abundance and distribution of coccolithophores in the Gulf of California (Mexican Pacific) during the summer and their relation to oceanographic conditions

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Recent studies on the Gulf of California, an inlet sea within the Mexican Pacific, have revealed conditions such as the presence of oceanographic eddies. The influence of these processes has only recently been revealed and is as yet poorly defined. The basic structure (composition, abundance and distribution) of the coccolithophore community was studied from samples collected along a transect parallel to the main axis of the Gulf of California during the summer of 2011 (July–August), where two oceanographic eddies were detected. Physicochemical variables (temperature, salinity and dissolved oxygen) were measured in situ with a conductivity, temperature, depth (CTD) device, and fluorescence was also determined using a fluorimeter at 23 fixed stations. Additionally, bottle samples were taken from four to five different depths at seven stations in order to analyse nutrients and phytoplankton. For this study, only those samples that were filtered to analyse the coccolithophores were included. Thirty-one coccolithophore species were identified, using both the LM and SEM, and counts of each species and the total communities were made. *Emiliana huxleyi* and *Gephyrocapsa oceanica* were the most frequent and abundant species, with total maximum densities reaching 6.7×10^4 cells L^{-1} . This coccolithophore flora is fairly common in subtropical areas. The spatial distribution of the coccolithophores was heterogeneous, but, amazingly, the latitudinal distribution followed the patterns of properties such as temperature and fluorescence, which in turn were affected by the two eddies. The vertical distribution usually showed maximum species densities in the subsurface between 18 and 35 m, which usually coincided with chlorophyll maximum layers. This demonstrates the enormous influence of oceanographic processes on environmental variables and phytoplankton, as represented by the coccolithophores.