

# Spatial and temporal variability in coccolithophore abundance and distribution in the NW Iberian Margin

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For the first time, a systematic investigation of the ecology plus the spatial and temporal variability in coccolithophore abundance and distribution in the water column was performed for the NW Iberian margin. From July 2011 to June 2012, monthly sampling was conducted from several water depths at two stations at latitude 42°N: one offshore (350m water depth) and one nearshore (75m water depth). Total coccolithophore abundances were higher offshore. Seasonal dynamics of the water column strongly influenced coccolithophore productivity at both stations. Coccolithophore abundance was found to increase during the summer at both locations, which coincided with an upwelling regime. However, such coccolithophore blooms are normally associated with the decline of upwelling events, which results in warmer water and poor nutrient conditions. During the winter, coccolithophore abundance decreased drastically offshore with the influence of the saltier and nutrient-poor Iberian Poleward Current. In contrast, nearshore coccolithophore abundance

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was affected by river discharge and surface sediment resuspension, which remobilized deposited coccoliths from surface sediments and masked the species composition and vertical distribution of the autochthonous coccolithophore assemblages in the water column. Coccolithophore assemblages at both locations are dominated by *Emiliania huxleyi*, followed by small *Gephyrocapsa* spp., *G. oceanica*, and *Florisphaera profunda*. Species absolute abundances and their strong seasonal signal lead to the identification of different assemblages offshore: (1) the “summer regime assemblage” that is favored by upwelling conditions and composed of *E. huxleyi* and small *Gephyrocapsa* spp. within the first 100m, and *G. oceanica*, *C. pelagicus* ssp. *braarudii*, and *Oolithotus fragilis* between 150–300m and (2) the “winter regime assemblage”, which is characterized by a lower abundance of *E. huxleyi* and small *Gephyrocapsa* spp., and *R. clavigera* within the first 100m, and *F. profunda*, *G. flabellatus*, and *O. fragilis* between 150–300m.