

Evolution of coccolithophore communities in the Atlantic Iberian margin during the Common Era

Andrés S. Rigual Hernández

Universidad de Salamanca, Área de Paleontología, Departamento de Geología, 37008 Salamanca, Spain; arigual@usal.es

José Abel Flores

Universidad de Salamanca, Área de Paleontología, Departamento de Geología, 37008 Salamanca, Spain; flores@usal.es

Áurea Narciso

Instituto Português do Mar e da Atmosfera, Divisão de Geologia e Georrecursos Marinhos, 1495 Algés, Portugal; acmnarciso@gmail.com

Lívia Gebara M.S. Cordeiro, Emília Salgueiro, Fátima Abrantes

Instituto Português do Mar e da Atmosfera, Divisão de Geologia e Georrecursos Marinhos, 1495 Algés, Portugal; Universidade do Algarve, CC-MAR, Centro de Ciências do Mar, Campus de Gambelas, 8005-139 Faro, Portugal; livia.gebara@ipma.pt; emilia.salgueiro@ipma.pt; fatima.abrantes@ipma.pt

<https://doi.org/10.58998/jnr3271>

The Iberian margin, a climate-sensitive region that is susceptible to global warming effects and alterations in water supply, experiences seasonal wind-driven upwelling and belongs to the productive Canary Current Upwelling System. These systems hold significant importance for climate regulation and fishing but may face varying regional impacts due to climate change as predicted by the Intergovernmental Panel on Climate Change (IPCC). Efforts have been made to comprehend the variability of climate and marine ecosystem response to environmental changes in the Iberian margin during Late Pleistocene, specifically using microfossil assemblages that are preserved within the sediments. However, uncertainties persist regarding the potential influence of ongoing warming on primary production along the Portuguese continental margin.

To shed light on this issue and enhance predictions of future responses to environmental change, we reconstructed the variability in primary production over the past millennium through a detailed analysis of nannofossil assemblages that are preserved across different settings on the Portuguese continental shelf. Another objective was to distinguish between increased primary production caused by upwelling or river-derived nutrients. To create the coccolithophore time series, we employed sediment cores from offshore the Douro and Tagus Rivers and off Faro in the Algarve (Portugal). Preliminary findings reveal relatively similar coccolith assemblages at the Douro and Tagus sites that are predominantly composed of *Emiliana huxleyi*, *Gephyrocapsa muelleriae*, *Gephyrocapsa oceanica*, and small *Gephyrocapsa* spp. The Faro site, outside of the upwelling influence, displayed a warmer assemblage with a greater number of reworked coccoliths. Moreover, our data unveiled significant fluctuations in abundance and composition of coccolith assemblages that can be linked to environmental changes at the study sites over time. The reconstruction of the response of key phytoplankton assemblages that are documented herein is anticipated to enhance projections of the eastern boundary upwelling system's response to environmental variability for upcoming decades.