

Reconstructing palaeoproductivity in the western South Atlantic since the Last Glacial Maximum: An integrated study with coccoliths and benthic foraminifera

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The main objective of this study was to assess upper slope palaeoproductivity in the western South Atlantic (core GeoB2107-3, 27°18'S, 46°45'W) during the last deglacial period (23–10 kyrs BP) by combining coccolithophore assemblages, benthic foraminiferal faunas and geochemistry (Molfinio & McIntyre 1990; Wefer et al. 1999; Su et al. 2015). To our knowledge, this is the first study on the southwestern Atlantic to combine all these proxies for the last deglacial period. Benthic foraminiferal-based tracers indicate clear changes between the Last Glacial Maximum (LGM) and the deglacial, including: 1) an increase in $\delta^{13}\text{C}$ in the benthic foraminifer *Uvigerina peregrina* (Pereira et al., 2018); 2) a decrease in the percentage of infaunal taxa; and 3) changes in faunal assemblages, such as the shift of dominance between *U. peregrina* and *Bulimina aculeata*. These changes indicate that conditions of higher productivity during the LGM gave way to lower productivity at the beginning of the Holocene. The coccolith analysis, which is not yet complete, is being performed at CEREGE (Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement) using an automated method that allows the identification of Noelaerhabdaceae coccoliths through an artificial neural network (Système de Reconnaissance Automatique de Coccolithes – SYRACO; Dollfus & Beaufort, 1999; Beaufort & Dollfus, 2004; Beaufort et al., 2014). This method enables rapid data acquisition, which will be compared to foraminiferal faunal and stable isotope data. The data acquisition will target indicators such as %*Florisphaera profunda*, the weight of small coccoliths, and the *Emiliania/Gephyrocapsa* ratio. These data will complement the foraminiferal proxies, and will contribute to the comprehension of western South Atlantic palaeoproductivity conditions and the relationship between the proxies during the last deglacial.

References

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