

## Coccolithophore assemblage variation and its relation to palaeoproductivity changes in the western South Atlantic during the last 14 kyr

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This study aims to use coccolithophores to estimate the palaeoproductivity in the western South Atlantic during the last 14 kyr, and to combine this information with previous geochemical and foraminiferal data (Pivel et al., 2011) in order to explore the factors controlling local productivity changes. The study was conducted on core KF-02 (continental slope on the southeast Brazilian margin). We estimated the nutricline index using coccolithophores (N-ratio; Flores et al., 2000), and the data suggest that there was stable surface-water productivity from 14.4 kyr to 5.8 kyr, at which point the N-ratio began to decrease, indicating reduced primary productivity. However, high productivity indicators exhibited individually-distinct patterns, suggesting that different mechanisms may have favoured fertilisation of the surface waters. *Gephyrocapsa oceanica* productivity was influenced by shelf water during the end of the deglacial and Early Holocene. In addition, the positive correlations between *G. oceanica* and the productivity proxies of Pivel et al. (2011) suggest that this species indicates a higher surface-water productivity interval. When relative sea level was lower, the narrowing of the shelf and the displacement offshore of the main flow of the Brazil Current promoted nutrient increase and enhanced productivity (e.g. Mahiques et al., 2007). With the last marine transgression, the increased distance from the coast and displacement of the Brazil Current towards the continent reduced the shelfal influence, and the thermocline/nutricline depth variations seem to be the most important factor influencing productivity. During the mid-Holocene, a shallower nutricline (compared to the Late Holocene) must have sustained a photic zone relatively enriched in nutrients, and this interval contains abundant *Emiliania huxleyi* and small *Gephyrocapsa*. The Late Holocene was characterised by a marked reduction of N-ratio, and a *Florisphaera profunda* increase suggests deepening of the thermocline/nutricline during this interval.

### References

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