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Late Pleistocene paleoproductivity patterns during the last climatic cycle in the Guyana Basin as revealed by calcareous nannoplankton

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Abstract. Variations in the assemblages and abundances of calcareous nannoplankton have allowed us to interpret changes in oceanic and atmospheric dynamics in the Guyana Basin, mainly linked to the southeast trades over the last climatic cycle.

Records of the paleoproductivity index of coccolithophores (*N* ratio) allowed us to monitor the nutri-thermocline fluctuations. Additionally, nannofossil accumulation rates vary closely with the *N* ratio, indicating a strong correlation between these two paleoproductivity proxies. The dominance of upper (small Noelaerhabdaceae, *Emiliania huxleyi* and *Gephyrocapsa oceanica*), over lower photic zone dwellers (*Florisphaera profunda*) during Termination II and interglacial substages 5.1 and 5.3 is related to eutrophic conditions due to a shoaling of the nutri-thermocline as a consequence of enhanced southeast Trade Winds. This activated an upwelling at the continental margin of the Guyana Basin. Low *N* ratio values and the dominance of *F. profunda* over the glacial substages of MIS 5 and glacial MIS 2-4 are linked to a deep nutri-thermocline (deep stratification of the mixed layer), at times of low influence of the southeast Trade Winds, and a weak upwelling. However, the *N* ratio during MIS 2-4 was slightly higher than those seen for the MIS 4/5 boundary and glacial substages 5.2 and 5.4. These micropaleontological proxies follow the insolation at high northern latitude (65° N): the high *N* ratio and NAR data from the Guyana Basin during Termination II and interglacials 5.1. and 5.3 are correlated with high insolation values, and low values of the *N* ratio and NAR during the MIS 4/5 boundary, glacials 5.2, 5.4 and MIS 2-4 are correlated with low insolation at the same latitudes. This situation suggests a link between the ITCZ, the southeast Trade Wind dynamics and the Northern Hemisphere climate changes during the last climatic cycle.

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