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Reconstruction of sea surface water dynamics in the North Atlantic during the Mid-Pleistocene (∼540-400 ka)

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This study focuses on the reconstruction of global changes in the North Atlantic Current (NAC) and its ramifications, the Irminger Current (IC) and the Portugal Current (PC). For this aim, coccolithophore assemblages have been studied at IODP Site U1314 (57ºN) and integrated with published and unpublished data from MD03-2699 (39ºN) core (Amore et al., 2012; Palumbo et al., 2013). The sampling resolution used in this study is about 1-2 ka and ranging MIS 14 to MIS11 (∼540-400 ka).

At both regions, the coccolithophore assemblage is characterized by high abundance of small *Gephyrocapsa*. Since these species proliferate under eutrophic conditions, their abundance variations have been discussed as indicative of paleoproductivity changes and linked to the IC in IODP Site U1314, whereas in the MD03-2699 is related to the PC.

Statistical analyses have been applied to numerical data concerning abundance of different taxonomic groups of coccolithophores and planktonic foraminifers. Particularly, in order to evaluate phase relationships between time series, cross correlation analysis has been applied. Through the application of REDFIT package implemented in PAST software, the main periodicities of the studied time series have been investigated. In order to better appreciate the contribution of spectral signals, main periodic components have been extrapolated applying filtering functions, implemented in Matlab statistic toolbox, and the sinusoidal regression tool, implemented in PAST software. The main orbital forcing acting on the distribution of small and medium sized *Gephyrocapsa*, *Coccolithus pelagicus* sub. *pelagicus* and *Neogloboquadrina pachyderma* (sin), is related to eccentricity. Overprinted, precession cycles have been observed provoking fluctuations of this time-entity in the IC and PC, demonstrating a close behaviour as result of a general fluctuation of the NAC and thermohaline dynamics (Alonso-García, 2011).

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