Glacial/interglacial CO_2 changes on coccolithophore physiology in the tropical Atlantic ODP 925 and 929 (Leg 154) across the MIS 12 to MIS 10

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Reconstruction of past stages based on multi-proxy analysis is a key to improve the understanding of paleoenvironment and the biogeochemical evolution of the ocean. Coccolithophores are important pelagic calcifying organisms, influencing pCO_2 through the biological and carbonate pumps (Rickaby et al., 2007); a large array of carbon and oxygen stable isotope fractionation (vital effects) have been shown by coccoliths, allowing hypotheses about the varying active carbon acquisition strategies in correlation to cell size, and suggesting a link to changing paleoenvironment (Bolton et al., 2012).

The Pleistocene MIS 12 to MIS 10 interval stands out as a crucial climatic period of changing glacial-interglacial cyclicity (Candy et al., 2014), accompanied by changing paleoenvironmental and physicochemical-oceanographic conditions. Different paleorecords indicate that coccoliths were an important component of the carbonate fraction during this interval, with the worldwide dominance of the highly calcified coccolithophore *Gephyrocapsa caribbeanica* (Bordiga et al., 2014)

Collecting this background, this work aims to elucidate the interplay of CO_2 and productivity effects on coccolith size and stable isotopes across the MIS 12 - MIS 11 - MIS 10 cycle in the tropical Atlantic (Sites ODP 925 and 929). For this purpose, this methodological procedure is currently being developed:

- Geochemical analyses over size-separated coccolith fractions dominated by *Gephyrocapsa* genus, including the *G. caribbeanica* domain (stable isotopes, Sr/Ca and trace elements measurements) and over planktic foraminifera species (stable isotopes).
- Measurement of carbon isotopic ratio of alkenones.
- Coccolith counting for estimation of % *F. profunda* vs small placoliths.
- Assessment of coccolith size and calcification features by using image analysis techniques (C-calcita).

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