

Variability of the coccolith-derived carbonate at ODP Site 1242 in the eastern tropical Pacific during the middle and late Pleistocene

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This study is focused on the sedimentary sequence recovered during Ocean Drilling Program Leg 202 at Site 1242 on board the R/V *Joides Resolution*. Site 1242 is located in the Panama Basin (7°51.352'N, 83°36.418'W at 1364 m water depth) under the relatively low-salinity waters of the warm pool in the eastern tropical Pacific. Sediments mostly consist of hemipelagic clay. Calcareous nannofossils are the primary biogenic component, exceeding up to 70% (Mix *et al.*, 2003).

Calcareous nannofossils take part in the biogeochemical cycles of the Earth since they play an important role in the carbon cycle through photosynthesis and calcification processes (Young, 1994; Baumann *et al.*, 2004). Based upon quantitative estimations of the absolute abundances and the species-specific mean coccolith mass, we assess the paleoproductivity pattern and the temporal distribution of accumulation rates of coccolith-derived carbonate at ODP Site 1242 in the upper 108.01 mcd (meter composite depth) which extend back over the past 925 kyr (MIS 22 to 1).

The $\delta^{18}\text{O}$ data on planktonic foraminifera sustain the chronostratigraphic framework (Mix *et al.*, in prep.) through the past 925 kyr. The overall pattern of paleoproductivity increases downhole, reflecting the gradual rise in coccolith-derived carbonate, especially significant during the Mid-Brunhes Event (MIS 8 to 15). Paleoproductivity and accumulation rates of coccolith-derived carbonate also follow a glacial/interglacial variability, showing maxima during glacial events. This variability is in agreement with the typical glacial/interglacial pattern of carbonate production in the Pacific Ocean, previously observed by several authors (Arrhenius, 1952; Archer, 1991a, b, among others). Although few intervals of poor preservation obscure the paleoecological significance of the coccolith carbonate profile, the overall preservation pattern of calcareous nannofossils is good to moderate and supports high paleoproductivity and accumulation rates of coccolith carbonate during glacials.

References

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