Evolution of the coccolithophore assemblages during the Last Deglaciation in ODP Site 1233 (southeastern Pacific Ocean)

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ODP Site 1233 is located 40 km offshore southern Chile (41˚0.01'S, 74˚26.99'W at 838 m water depth) in a small fore-arc basin on the upper continental slope isolated from turbidity currents. At this location, the mean sedimentation rates were extremely high (*ca*. 100cm/kyr) during the Holocene, and the records show a pronounced variability (in compositional changes, and in marine and oceanic paleoenvironments; Lamy *et al*., 2004) on multi-centennial to millennial timescales (Mix *et al*., 2003). Given these characteristics, this ODP site is very sensitive to even small past oceanographic changes.

The lack of high resolution paleoceanographic records from the South Pacific during the last glacial period and the following deglaciation, led us to study the biological responses to climatic events in this region over the last 70kyr using coccolithophores.

The coccolith record has been shown to be responsive to millenial-scale oscillations and variations in the position of current systems. Smear slides were prepared to assess the relative abundance of coccolithophore taxa and coccolith fluxes using the Flores & Sierro technique (1997), using a petrographic microscope (1000X). Additional studies were performed under scanning electron microscope, using a combined technique of filtration and dilution (Andruleit, 1996).

One of the objectives of this work was the study of the Last Deglaciation and Termination I. Given this objective, the resolution was increased during the time interval from ~24kyr to ~10kyr. High productivity was recorded during the Last Glacial Maximum (23 to 19 kyr), while a marked decrease occurred during the deglaciation, based on coccolith fluxes (NAR, Nannofossil Acumulation Rate). Variations in the coccolithophore assemblage point out cold and warm consecutive episodes.

References

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