

Effect of dense shelf water cascading over planktic fluxes in the Gulf of Lions (NW Mediterranean)

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Cascading was defined by Canals *et al.* (2006) in the Gulf of Lions as a dense current that results from the formation of dense water due to cooling or evaporation. Sediment gravity flows can be triggered by dense shelf water cascading (DSWC) and transporting large amounts of sediment and organic matter to the deep ocean.

Particle flux was recorded in two sediment traps located over the center of Creus Cap Canyon (42°20'40.43"N, 3°35'56.99"E) and over the end of the Canyon (42°8'57.44"N, 4°10'39.45"E) from November 2005 to October 2006.

Results from coccoliths, diatoms, and silicoflagellates revealed that coccoliths were the dominant group throughout the period of study. Winter was the season with highest fluxes in every group due to the mixed water column that was the result of local wind dynamics (the Mistral and Tramontana).

Between January and March of 2006 with a duration of 80 days, a cascading event was reported by Pasqual *et al.* (2010). During the cascading, there was a sharp decrease in fluxes in most species that was related to intense mixing and low light intensity in the water column. Subsequent to the event, fluxes increased again, but not to the original magnitude. In summer, water stratification is the main characteristic of the water column, and generally low

fluxes were recorded. The only calcareous nannoplankton species to show positive peaks were *Helicosphaera carteri* and *Calcidiscus leptoporus leptoporus*, although the planktonic group of diatoms also had a peak. These species reveal that there were mesotrophic conditions and an increase in water temperatures at this time. *Dictyocha fibula* and *Distephanus speculum* also showed positive peaks in summer, but they are typical of lower photic zone habitats.

In addition, spatial variability was considered in the study area because the sediment trap at the end of the canyon recorded higher fluxes than the one at the center of the canyon during the entire study period and for every studied group.

References

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