



Seasonal and interannual dynamics in diatom production in the Cariaco Basin, Venezuela

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We examine the diatom flux collected between November 1996 and April 1998, and between January and October 1999 at the time series study site in the Cariaco Basin, off Venezuela. The temporal dynamics of the total diatom flux mainly reflect seasonal, trade wind-driven changes in surface hydrographic conditions, including changes associated with the El Niño/Southern Oscillation (ENSO). Highest diatom fluxes ($>1.8 * 10^7$ valves $m^{-2} d^{-1}$) coincided with the upwelling season in boreal winters 1997 and 1999. Changes in the composition of the diverse diatom community reflect variations in hydrographic and atmospheric conditions, as well as nutrient availability. *Cyclotella litoralis*, a neritic diatom typical of nutrient-rich waters, along with resting spores of several *Chaetoceros* spp., dominate during periods of high diatom flux, following trade wind-driven upwelling. During the boreal summers of 1997 and 1999, nutrient-depleted surface waters resulted in low diatom fluxes ($<5.2 * 10^6$ valves $m^{-2} d^{-1}$). The seasonal pattern of high diatom production was altered from July 1997 through April 1998, when the ENSO affected the Caribbean Sea. The occurrence of ENSO during boreal winter 1997-98 caused a major change in the qualitative composition of the diatom assemblage: the highly diverse diatom assemblage was composed of a mixture of pelagic (*Nitzschia bicapitata*, *Thalassionema nitzschioides* var. *inflata*, *T. nitzschioides* var. *parva*, *Azpeitia tabularis*) and coastal species (*C. litoralis*, resting spores of *Chaetoceros*, *T. nitzschioides* var. *nitzschioides*). The simultaneous occurrence of neritic and open-ocean diatoms during boreal summers reflects the fact that the Cariaco Basin is influenced by both offshore and coastal waters, with considerable short term variability in hydrographic conditions and nutrient availability.