Silicon and nitrogen isotopes in the Oxygen Minimum Zone of the Eastern Tropical Pacific

Project A5 (SFB 754, Phase I)
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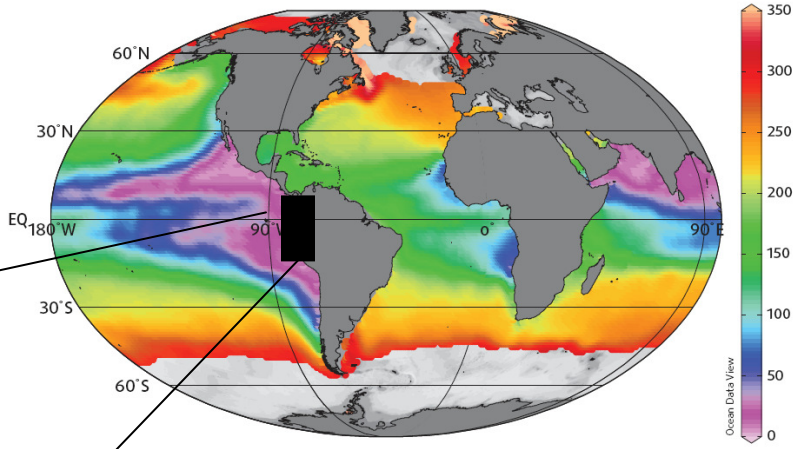
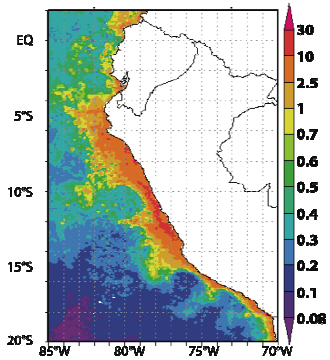
Upwelling areas are regions with high primary productivity. Besides nitrate, silicic acid is a key nutrient for diatoms which dominate the phytoplankton assemblages the Eastern Equatorial Pacific. Stable silicon (Si) and nitrogen (N) isotopes help to better understand the biogeochmical cycling of these nutrient, which are highly dependent on upwelling intensity and extent of the OMZ

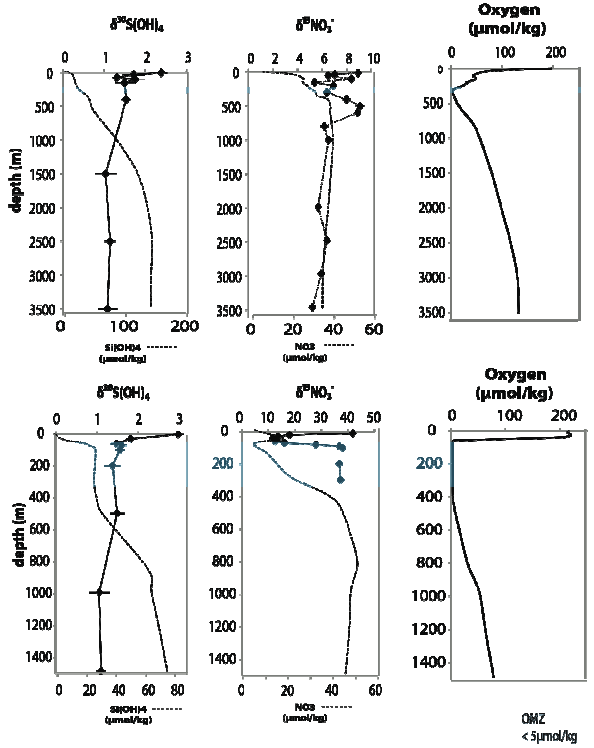


Oxygen concentration (μ mol/kg) at 200m depth

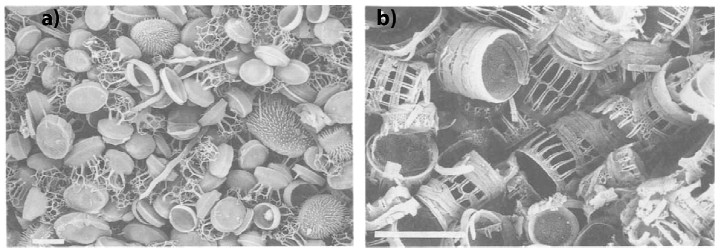


Chlorophyll concentration (mg/m3) in January/February 2009

Paleo application:
Silicon and nitrogen isotopes, extracted from sediment cores can be used to reconstruct nutrient utilization and nitrogen loss processes in the past.



Silicon and nitrogen isotopes in two water profiles together with silcic acid, nitrate and oxygen concentrations



SEM images from a) Chaetoceros resting spores, mainly of Chaetoceros diadema, b) Skeletonema sp., scale bars are 10 µm (from Brodie and Kemp, 1994)