



An improved understanding of biogeochemical cycles in the World Ocean is key to predicting the response of the ocean-atmosphere system to global change. The objectives of the ANTARES program are to describe and model the biogeochemical processes that control the dynamics of nutrients (C, N, S, P) and silica in the Southern Ocean. But, prior to this exercise, one must acquire comprehensive data sets that depict the northern boundary and the benthic environment, that links present processes to the records of the past.

This special issue contains 11 contributions and reports on the Physics, Biology, and Geochemistry of the water column and the sea floor. The investigations were performed along a transect across the Polar Front Zone (PFZ) between the islands of Crozet and Kerguelen. The ANTARES 1 cruise embarked, for 51 days, 30 scientists of six different nationalities working on 15 different projects.

Hydrographic data refine the description of the transport of water masses across the PFZ. These results are corroborated by water column chemical and microbial tracer measurements. Investigations of the sediment/water interface bridge biological, chemical, and microbial studies that provide, altogether, a clear signature of the presence of a frontal structure, characterized by higher productivity. Finally, experimental and modelling approaches bring some new insights into the diagenesis of biogenic silica in Southern Ocean sediments.

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