

ON THE COUPLING OF PRIMARY PRODUCTION AND CALCIFICATION AT THE CONTINENTAL MARGIN

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Until now, little attention has been paid to the processes controlling the production, dissolution and fate of biogenic calcium carbonate in the oceans. It is however well known that net deposition rates of inorganic carbon to the sediments are comparable to those of organic matter. Still large uncertainties remain concerning the production and redissolution of biogenic carbonate in the marine system and thus about the role of the carbonate pump in response to anthropogenic CO₂ perturbations. The understanding of these processes is also a prerequisite to predict the response of marine organisms to global environmental changes. In the framework of the Belgian global change programme, we have developed a project devoted to the study of the inorganic carbon cycle in the Bay of Biscay where coccolithophorid blooms occur frequently. The study focuses on processes associated with the oceanic production and dissolution of calcium carbonate, by combining field investigations, laboratory experiments and modelling efforts. Remote sensing demonstrates a close relationship between vertical mixing along the continental margin and the development of the phytoplankton bloom. We will present here, results of ¹⁴C incorporation experiments used to evaluate the rate of production of organic and inorganic particulate carbon, obtained during a coccolithophorid spring bloom in the investigated area. A tentative mass balance of the carbon fluxes for this area will be presented, confirming the importance that the calcium carbonate pump may play in the oceanic system.