



SILICON BIOGEOCHEMISTRY IN THE SCHELDT CONTINUUM

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Anthropogenic activities have significantly increased the nitrogen (N) and phosphorus (P) loading in the Scheldt estuary. In contrast, the major land source of dissolved silicate (DSi) is through chemical weathering of silicate minerals and DSi inputs have barely been altered. Consequently, there is an increase in nutrient ratios (N:Si, P:Si) in Scheldt river discharge affecting the development of spring diatom blooms, which in turn modifies the marine food web in the Southern Bight of the North Sea.

Unlike the N, few studies on processes affecting the Si biogeochemical cycling in the Scheldt have been carried out. Little is known about the production of biogenic silica (BSi), and its regeneration and retention in this environment. In this context, the present study has been conducted within the framework of a larger coordinated Belgian project whose overall objective is to elucidate the biogeochemical cycle of Si and its anthropogenic perturbations in the Scheldt continuum river-estuary-coastal zone.

The upper freshwater reaches of the Scheldt estuary and its tributaries under the tidal influence were intensively sampled in 2003. Seasonal cruises in the Scheldt estuary were conducted and monthly surveys in the Belgian coastal zone were performed. Temporal and spatial distributions of DSi and BSi in the Scheldt continuum will be presented. Silicon biogeochemical cycling will be discussed in relation with primary production, and other physico-chemical and biological parameters.