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Remarks on the dynamic of carbon cycling in the Baltic and its influence on the Baltic/North Sea carbon flux

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The North Sea carbon budget quantification requires knowledge about exchange carbon fluxes with the Baltic Sea. Both of these reservoirs are connected via, shallow and narrow, Danish straits. This communication provides exchange of the water containing dissolved and suspended components, also carbon compounds, i. e. dissolved organic carbon (DOC), dissolved inorganic carbon (DIC), particulate organic carbon (POC) and possibly particulate inorganic carbon (PIC). The last one may be of minor importance, however requires more detailed information.

Available data (Thomas et. al. 2004) identify the Baltic Sea as a DOC and atmospheric CO_2 sink. DOC enters the Baltic Sea mainly by riverine input and primary production. Both pools, especially the latter one, are converted to DIC. The Baltic Sea acts as a DIC source for the North Sea.

Concentrations of carbon species, in the important to the exchange area- the Danish straits, depend on mechanisms affecting carbon budget in the Baltic Sea. Carbon concentrations and fluxes between compartments in the Baltic Sea are linked with specyfic topographical, hydrochemical and climatic conditions, i. e. depth, salinity, alkalinity, temperature (Thomas and Schneider 1999). Data concerning the carbon cycle in the Baltic Sea require further improvement of temporary and spatial resolution.

The study is under way aimed at making more accurate carbon inputs and outputs. New data will supply information about carbon dioxide uptake and the continental shelf pump hypothesis.