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Variability of the CO2 air-sea fluxes in the North Sea

H. Thomas (1), Y. Bozec (2), K. Elkalay (2), R. Heerdink (2), H.J.W. deBaar (2), L.-S. Schiettecatte (3) and A.V. Borges (3)

(1) Dalhousie University, Department of Oceanography, Halifax, Canada (helmuth.thomas.dal.ca), (2) Royal Netherlands Institute for Sea Research, Texel, The Netherlands, (3) University de Liege, Liege, Belgium

In order to investigate the role of coastal seas in the global carbon cycle, an intense field campaign has been carried out in the North Sea located at the NW European shelf. The partial pressure of CO2 (pCO2) and related parameters have been measured in the surface waters of the North Sea with high spatial and temporal resolution in all 4 seasons consecutively. The variability of the pCO2 and the corresponding CO2 air-sea fluxes will be investigated. Two biogeochemical regions can be identified in the North Sea, and the different control mechanisms such as biology, temperature, terrestrial inputs of the pCO2 will be unraveled. The effects of climate change processes on the CO2 air-sea fluxes will be assessed employing an ecosystem model for three different scenarios: increased temperature, increased CO2 and increased temperature and CO2.