Geophysical Research Abstracts,
Vol. 10, EGU2008-A-00000, 2008
EGU General Assembly 2008

Estimating pCO2 from remote sensing in the Case-II waters of the Belgian Coastal Zone - First results from the BELCOLOUR-II project

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In coastal waters, a purely data based approach will be probably insufficient to better constrain the air-sea CO2 fluxes, to study their inter-annual variability and their long-term changes. One approach to achieve these goals is to use remote sensing fields of relevant biogeochemical independent variables to extrapolate available data, and produce maps of the partial pressure of CO2 (pCO2) and air-CO2 fluxes. In the open ocean this approach has to some extent been successfully used based on fields of chlorophyll-a (Chla), sea surface temperature (SST) and sea surface salinity (SSS). This approach remains challenging in coastal waters that have complex optical properties (Case-II waters) and that exhibit highly dynamic pCO2 temporal and spatial variations. During the first year of the Belgian funded BELCOLOUR-II project (Optical remote sensing of marine, coastal and inland waters; http://www.mumm.ac.be/BELCOLOUR/EN/index.php), three field cruises for optical measurements were carried in April, July and September 2007. Here, based on the preliminary BELCOLOUR-II data, we investigate the possibility of deriving algorithms to predict pCO2 from remote sensed variables.