Geophysical Research Abstracts, Vol. 8, 06117, 2006
SRef-ID: 1607-7962/gra/EGU06-A-06117

Estimating surface pCO2 with a Neural Network using data from a high resolution coupled ecosystem-circulation model of the North Atlantic

T. Friedrich (1), A. Oschlies (2), C. Eden (1)

(1) IfM-Geomar, Kiel, Germany (tfriedrich@ifm-geomar.de, ceden@ifm-geomar.de), (2) NOC, Southamton, UK (azo@noc.soton.ac.uk)

A high resolution coupled ecosystem-circulation model of the North Atlantic is used to examine driving mechanisms of spatial and temporal scales of surface pCO2 variability. Basin wide charts of temporal and spatial autocorrelation functions are computed and used to suggest improved strategies for future underway pCO2 measurements. Furthermore, model output is used to train a backpropagating Neural Network (NN) to estimate surface pCO2 from other parameters such as sea surface temperature (SST), chlorophyll, mixed layer depth etc. The ability of the NN to predict pCO2 is assessed as a function of available data types and sampling schedules. The correctly trained NN will be applied to satellite (SST, altimeter data, ocean colour) and ship (SST, SSS, Nutrients) data to produce global charts of pCO2 making it possible to improve estimates for marine carbon source and sinks on very short (monthly and shorter) time scales.