Geophysical Research Abstracts,
Vol. 10, EGU2008-A-08048, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-08048
EGU General Assembly 2008

Reducing uncertainties of oceanic CO_2 uptake: A multi model approach

J. Segschneider (1), L. Bopp (2), C. Heinze (3), F. Joos (4), T. Froehlicher (4)

(1) Max-Planck-Intitute for Meteorology (joachim.segschneider@zmaw.de), (2) LSCE/IPSL, Gif-sur-Yvette, (3) University of Bergen (4) University of Bern

Uncertainties in estimates of present and future CO_2 uptake by the ocean arise from many sources, like emission scenarios, climate feedback, model resolution/configuration, representation of processes, and coupled model behaviour as compared to forced runs. Within CarboOcean, several Earth System Models as well as stand alone models of the oceanic carbon cycle are employed at different institutes. These can first be used to estimate and secondly to reduce the above uncertainties. A first step to derive the uncertainties is to compare the model output with observations. As the coupled models are forced by CO_2 emissions only, they cannot be expected to resemble the observed climate over the last decades year by year. Therefore, additional ocean only experiments are performed. NCEP forcing is used to drive these experiments.

Using this complex set of model simulations we are in a position to estimate uncertainties due to climate feedback, model dependent uncertainties as well as uncertainties arising from deviations of the climatic state of the coupled model. Overall, the uncertainty of the accumulated uptake by 2100 amounts to several Gt of carbon, and thus represents a significant portion of the estimated uptake.