

The Dynamic Green Ocean Model: Plankton functional groups in an Ocean Global Circulation Model

Erik T. Buitenhuis^{1,3}, Corinne Le Quéré¹, Olivier Aumont²

¹ Max Planck Institute for Biogeochemistry, PO box 100164, D 07745 Jena, Germany, fax +49-3641-686710

² Laboratoire d'Océanographie Dynamique et de Climatologie, T26-E4, 4 Place Jussieu, 75252 Paris cedex 05, France

³ tel. +49-3641-686735, martinburo@email.com

In the Dynamic Green Ocean Project our goal is to improve the representation of biogeochemical fluxes in an Ocean General Circulation Model. The components of the project are improving model parameterisation, including a coastal model, improving the representation of the marine food web and extending model validation datasets. Here we focus on the inclusion of six major phytoplankton groups in the model food web. This project is analogous to the inclusion of plant functional types in models of land biology. The Dynamic Green Ocean Model (DGOM) is developed in collaboration with a group of scientists worldwide (http://www.bgc.mpg.de/bgc_prentice/projects/green_ocean/). The basis for this project is the PISCES ocean biogeochemistry model (Aumont et al., in preparation), which includes the potentially limiting nutrients NO_3^- , Fe and SiO_3^- in colimitation with light. The PISCES model already includes diatoms, nanophytoplankton, micro- and mesozooplankton. The Green Ocean Model will further represent coccolithophorids, N_2 -fixers, phaeocystis and picophytoplankton. We will discuss the selected plankton functional types and their parameterisation. We will show preliminary model results of the mean, seasonal and interannual variability of the different groups, and compare our results to observations.