

One more 3D global biogeochemical model: are we doing a better job?

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A nitrogen-based, five compartment biological model has been coupled to a 1°-OCCAM (Ocean Circulation and Climate Advanced Modelling Project) model with a KPP (“K profile parameterisation”) of the vertical mixing. The biological model state variables are Phytoplankton, Zooplankton, Detritus, Nitrate, and Ammonium. A comparison of the solution with global satellite ocean colour shows that the model is capable of a realistic description of the main seasonal and regional patterns of the surface chlorophyll. Agreement is also good for satellite derived estimates of primary production. In situ data available from local study sites (such as BATS (32°N, 65°W), NABE (47°N, 20°W), India (59°N, 19°W), PAPA (50°N, 145°W)) are used for the detailed comparison of the model output with the observed ecosystem dynamics in different biological provinces. We will discuss model derived estimates of the primary and new production and compare them with other estimates obtained from global and basin-scale coupled models.