



Integration of Biogeochemistry and Marine Ecosystem Model in Mercator-Ocean Systems

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Accounting for ocean biogeochemistry and marine ecosystem dynamic is of strong interest in the context of Earth System modelling to better represent the marine component to the global atmospheric cycle of greenhouse gases that influence climate as CO₂. Furthermore, treating the ocean as a whole is also the way to address large anthropogenic impacts on marine systems as climate change, nutrients loading, acidification, and eventually overfishing and habitat destructuring. To forecast how interactions between marine biogeochemical cycles and ecosystems respond to and force global change, several efforts have been promoted on biogeochemical integration into operational Mercator Ocean systems.

The aim of this work is to implement a marine biogeochemical and ecosystem component at global scale into the MERCATOR operational system, using first PSY3 analysis at 1/4° then PSY4 at 1/1°. Previous works have conducted successfully the integration of a multi-nutrient and multi-plankton biogeochemical model (PISCES, N5P2Z2D2 type) into MERCATOR system. This allowed the use of MERCATOR operational analyses to drive near real time forecast of marine primary production. Results will be shown and advances on biogeochemical model integration within Mercator Systems will be discussed.