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Upper mixed layer variability as a driving force of the ecosystem dynamics: Preliminary results from a global 0.25^o coupled physical and biological NEMO run

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We discuss preliminary results from a global 0.25^o resolution (ORCA025) physical ocean model forced with high frequency NCEP/ECMWF atmospheric fields and coupled with a new 10 component ecosystem model. Biological state variables include two types of phytoplankton (diatoms and non-diatoms) with corresponding Chl-a concentrations, two types of zooplankton (micro- and mesozooplankton), Nitrogen, Silicate, Iron and slow sinking detritus. Fast sinking particles are modelled implicitly and assumed to be instantaneously transferred through the water column.

The agreement between model results and observations is discussed using comparisons at various JFOFS time series sites: BATS, HOT, KERFIX, Papa and station India as well as satellite-derived global distributions of Chl-a.

We discuss the main features of the spatial and temporal distribution of the UML depth and its link with the ecosystem dynamics. The work emphasises the need to pay particular attention to the parameterisation of mixed layer physics in global ocean ecosystem modelling as a prerequisite to increasing the complexity of ecosystem models.