

Potential responses of lower trophic levels to climate variability and climate change over the industrial era

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A suite of simulations using up-to-date global biogeochemical models is employed to investigate the impact of climate variability and climate change on marine production and ecosystems. Two biological models are used: the first one is a NPZD-type model including one generic phytoplankton limited by phosphate only (Aumont et al., 2002a); the second one is based on two phytoplanktonic groups (diatoms and nano/picoplankton) limited by the availability of phosphate, silicate and iron (Aumont et al., 2002b).

Intra-decadal to inter-decadal variabilities as well as potential impact of future global warming are presented. Reconstructions are made above the 1979-1999 period using meteorological archive or satellite observations (Le Quéré et al., 2001) and over the industrial period (1860-2100) using a coupled climate-carbon model forced by anthropogenic CO₂ emissions (Bopp et al., 2001).

Preliminary analysis on variabilities, trends and shifts of both biological properties (chlorophyll, phytoplanktonic groups) and geochemical properties (oxygen, CO₂, DMS) will be presented.

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