

Results from BIOMAS (a coupled sea ice/ocean/ecosystem model)

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This data set includes the BIOMAS (**B**iology/**I**ce/**O**cean **M**odeling and **A**ssimilation **S**ystem) simulated monthly mean results for the Arctic Ocean planktonic ecosystem over the period 2004–2008. Also included is a movie that shows monthly variations of a few ecosystem components over the period 2006–2008.

BIOMAS is a coupled sea ice, ocean, and marine planktonic ecosystem model (Zhang et al., 2009) with a model domain over the northern hemisphere north of 49°N. The mean horizontal resolution for most of the Arctic Ocean is about 22 km. This biophysical model is driven by the NCEP/NCAR reanalysis forcing.

Data parameters and units:

Photosynthetically active radiation at the ocean surface (W/m^2): par.txt

Vertically integrated primary productivity ($\text{gC/m}^3/\text{yr}$): pp.txt.

Surface (in upper 5 m, same for others below) chlorophyll a (mg/m^3): chl.txt.

Surface flagellates (mmolN/m^3): pf.txt.

Surface diatoms (mmolN/m^3): pd.txt.

Surface microzooplankton (mmolN/m^3): zs.txt.

Surface copepods (mmolN/m^3): zl.txt.

Surface predator zooplankton (mmolN/m^3): zp.txt.

Surface nitrate (mmolN/m^3): nitrate.txt.

Surface ammonium (mmolN/m^3): ammonium.txt.

Surface dissolved organic nitrogen (mmolN/m^3): don.txt.

Surface detrital particulate organic nitrogen (mmolN/m^3): pon.txt.

Surface silicate (mmolSi/m^3): silicate.txt.

Data format: ASCII.

Data structure:

Column 1: year; column 2: lat; column 3: lon; columns 4–15: monthly results from January to December.

The movie: arctic_ecosystem.gif

References:

Zhang, J., Y. Spitz, M. Steele, C. Ashjian, R. Campbell, L. Berline, and P. Matrai, Modeling the impact of declining sea ice on the Arctic marine planktonic ecosystem, *J. Geophys Res.*, in review, 2009.