

Metadata S4

Maxime Benoît-Gagné, Gaëtan Olivier, Stephanie Dutkiewicz, Laurent Mémery, Dany Dumont, Raphaël Larouche, Christiane Dufresne, Inge Deschepper & Frédéric Maps

The overlooked importance of wintertime survival of phytoplankton

Journal name: Journal of Marine Systems

- Description of:

Data S4: Model output generated for this study using NEMO 3.6 (Madec et al., 2017, <https://doi.org/10.5281/zenodo.3248739>) coupled with LIM 3.6 (Rousset et al., 2015, <https://doi.org/10.5194/gmd-8-2991-2015>).

The model outputs were generated for the location of the Qikiqtarjuaq ice camp 2016 (67.4797°N, -63.7895°E). Some of these outputs were used as forcing fields for MITgcm. The code that generated the files in DataS4_output_nemo_lim3 is not publicly available.

- Files:
 - **GE_mod_var.nc** is model output for 2013 to 2017. The value of the variable at the Qikiqtarjuaq location is at indices (y_grid_T=1, x_grid_T=1) meaning centre of grid point. Variables:
 - **kz**: Vertical mixing (m² s).
 - **salinity**: Salinity (unitless).
 - **solar_heat_flux_under_ice_for_100:100_ice_cover**: Surface downwelling shortwave in water (below ice for 100% ice cover). The standard name in NEMO is surface_downwelling_shortwave in water.
 - **temperature**: Temperature (°C).
 - **Ice_d.nc** is also model output for 2013 to 2017 and contains snow and ice data. Variables:
 - **ice_concentration**: Sea ice concentration (between 0 and 1).
 - **ice_volume**: Ice volume (m). Ice volume is the weighted average of ice thickness averaged by the sea ice concentration. For example, if there is 50% of sea ice concentration and 2 m of ice on the sea ice covered part of the pixel, ice volume will be 1 m. The expression "ice thickness" in the labels of the plots corresponds to the variable "ice volume" in NEMO-LIM3 and Ice_d.nc.
 - **snow_volume**: Snow volume (m). Snow volume is the weighted average of snow thickness averaged by the sea ice concentration. For example, if there is 50% of sea ice concentration and 2 m of snow on the sea ice covered part of the pixel, snow volume will be 1 m. The expression "snow thickness" in the labels of the plots corresponds to the variable "snow volume" in NEMO-LIM3 and Ice_d.nc.
 - **siarea.nemo.2016.365.32bits.bin**: is the variable ice_concentration of Ice_d.nc for 2016 in a more convenient format as a forcing field for MITgcm.