Metadata S4

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Exploring controls on the timing of the phytoplankton bloom in western Baffin Bay, Canadian Arctic

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- 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 (m^2 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.

- **NEMO_GE_2016.tar** is the variables kz, salinity and temperature in 2016 from GE_mod_var.nc in a format more convenient for MITgcm.
- **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.