**Metadata S4**

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

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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**](https://doi.org/10.5281/zenodo.3248739)**) coupled with LIM 3.6 (Rousset et al., 2015,** [**https://doi.org/**](https://doi.org/10.5281/zenodo.3248739)**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.