README

Dataset for “Mass loss of the Greenland ice sheet until the year 3000 under a sustained late-21st-century climate”

16 model experiments

- hist: historical simulation 1990–2015.
- ctrl_proj: constant-climate projection control experiment 2015–3001.
- exp05–10, expa01–a03, expb01–b05: future-climate experiments 2015–3001 (see Table 1 of the paper).

Zip archives

- hist.zip, ctrl_proj_long.zip, exp05_long.zip, exp06_long.zip, …, expb05_long.zip: netCDF output files for the 16 experiments (one file for each variable).
- run_specs_headers.zip
  SICOPOLIS run-specs headers for the 16 experiments.

Scalar state variables

lim	–	Total ice mass (kg)
limnsw	–	Mass above floatation (kg)
iareagr	–	Grounded ice area (m^2)

These variables are provided as snapshots for the full years 2016–3001 (time variable ‘time’).

Scalar flux variables

tendacabf	–	Total surface mass balance flux (kg a^{-1})
tendlibmassbf	–	Total basal mass balance flux (kg a^{-1})
tendlicalvf	–	Total calving flux (kg a^{-1})

These variables are provided as yearly averages over the intervals bounded by the years 2015–3001 (time variables ‘time’, ‘time_bnds’).

2D state variables

lithk	–	Ice thickness (m)
orog	–	Surface elevation (m)
base	–	Ice base elevation (m)
topg	–	Bedrock elevation (m)
xvelsurf	–	Surface velocity in x (m a^{-1})

yvelsurf – Surface velocity in y (m a^{-1})
zvelsurf – Surface velocity in z (m a^{-1})
horvelsurf – Horizontal surface velocity (m a^{-1})
xvelbase – Basal velocity in x (m a^{-1})
yvelbase – Basal velocity in y (m a^{-1})
zvelbase – Basal velocity in z (m a^{-1})
horvelbase – Horizontal basal velocity (m a^{-1})
xvelmean – Mean velocity in x (m a^{-1})
yvelmean – Mean velocity in y (m a^{-1})
horvelmean – Horizontal mean velocity (m a^{-1})
litemptop – Surface temperature (K)
litempbot – Basal temperature (K)
strbasemag – Basal drag (Pa)
sftgif – Land ice area fraction (–)

These variables are provided as snapshots for the years 2020 (5) 2100 (25) 3000, 3001 (time variable 'time').

2D flux variables

acabf – Surface mass balance flux (kg m^{-2} a^{-1})
libmassbf – Basal mass balance flux (kg m^{-2} a^{-1})
licalvf – Calving flux (kg m^{-2} a^{-1})
dlithkdt – Ice thickness imbalance (m a^{-1})
hfgeoubed – Geothermal heat flux (W m^{-2})

These variables are provided as averages over the intervals bounded by the years 2015 (5) 2100 (25) 3000, 3001 (time variables 'time', 'time_bnds').

Further details

Please see the metadata in the netCDF files (e.g., by Linux command 'ncdump –h' or MATLAB command 'ncdisp') and the paper.