PMIP4 GLAC-1D ice-sheet data

Grid

- nb_lat, nb_lon = 360, 360
- latitude_values = [-89.75, -89.25, -88.75, ... 88.75, 89.25, 89.75]
- longitude_values = [0.5, 1.5, 2.5, ... 357.5, 358.5, 359.5]
- time axis: see the *Time steps* section below

Time steps and data files

26 ka BP to 0

- 261 time steps in one file : data every 100 years, from 26k to 0k BP
- time_values = [-26. , -25.9, -25.8, ... -0.2, -0.1, 0.]
- all the variables and all the time steps are in the same file: `TOPicemsk.GLACD26kN9894GE90227A6005GGrBgic.nc`

140 ka to 122 ka BP

- 37 time steps in one file : data every 500 years, from 140k to 122k BP
- time_values = [-140, -139.5, -139, ... -123, -122.5, -122]
- all the variables and all the time steps are in the same file: `TopoIcem-140-122k.nc`

Variables

- **HDC**: GLAC contemp. elevation(masl), meters
  - on continents (including ice sheets) and ice shelves: surface altitude (including ice sheets/shelves)
  - on ice-free ocean: bathymetry
- **HDCB**: GLAC contemp. elevation(masl), bathymetry for floating ice, meters
  - on continents (including ice sheets) and ice shelves: surface altitude (including ice sheets)
  - on ice-shelves: altitude of the bottom of the floating ice
  - on ice-free ocean: bathymetry
- **ICEM**: GLAC ice mask, fraction
  - ice fraction values between 0.0 (no ice) and 1.0 (100% ice)

Notes:

- The land-sea mask can be computed with:
  - HDCB > 0 : ls_mask = 1 (land)
  - HDCB ≤ 0 : ls_mask = 0 (no land)
- Computing the HDC - HDCB difference yields:
  - ice-shelves thickness where there are ice shelves

- 0.0 everywhere else

Freshwater fluxes

Melt-uniform option

Check the Download section to access the `GLAC-1D_fwf_uniform.txt` data file

Melt-routed option

Fix Me!

References

Please cite **all** the following papers:

- Lev Tarasov and W. Richard Peltier **Greenland glacial history and local geodynamic consequences**, Geophysical Journal International, 150, July 2002, Pages 198-229, doi:10.1046/j.1365-246X.2002.01702.x
- Lev Tarasov, Arthur S. Dyke, Radford M. Neal and W.R. Peltier, **A data-calibrated distribution of deglacial chronologies for the North American ice complex from glaciological modeling**, Earth and Planetary Science Letters, Volumes 315–316, 15 January 2012, Pages 30–40, doi:10.1016/j.epsl.2011.09.010
- Robert D. Briggs , David Pollard , Lev Tarasov, **A data-constrained large ensemble analysis of Antarctic evolution since the Eemian**, Quaternary Science Reviews, Volume 103, 1 November 2014, Pages 91–115, doi:10.1016/j.quascirev.2014.09.003
- 4th paper to be added here (Eurasian component)
- Ayako Abe-Ouchi, F. Saito, K. Kawamura, M. Raymo, J. Okuno, K. Takahashi, and H. Blatter: **Insolation-driven 100,000-year glacial cycles and hysteresis of ice-sheet volume**, Nature, 500, 190–193, 2013, doi:10.1038/nature12374

Download

You will find below a table with all the available data files, and their *md5sum* checksum (if you want to check that you download was OK, you can just type `md5sum file.nc` and compare the result to what is displayed in the table).

If you want to download a file, click on the ice_sheet download link and then on the file you need.

md5sum output	Data file
58b651c86c4f49ee6375ba1ab818e2be	GLAC-1D_fwf_uniform.txt
e8be8847a4dabd0a446682d51f6d77c3	TOPicemsk.GLACD26kN9894GE90227A6005GGrBgic.nc
74bf007ae6d7deb53cccb13feeea4ab6	GLAC1DHiceF26.nc

md5sum output	Data file
d886af74f68ee59751b2cd49679cb013	GLAC1DdrainagePointerF26ka.nc
f0afcb1b73c7ae30c33826e57f93c6ba	TopoIcem-140-122k.nc