Datasets-for-whole-ice-sheet-models

The datasets listed below are only suggestions, and fulfill the requirements that they are publicly available and used by ISMIP6 members in initialization of ice sheet models. If you have datasets that you would suggest adding, please let us know! Note: The list was compiled in ~2016 at the beginning of ISMIP6. The ISMIP7 initiative will incorporate a larger repository.

Note that the CMIP5 and CMIP6 climate datasets used by ISMIP6 for its projections are distributed via Ghub on the Browse Data. Please reference the Globus instructions to access these datasets. These are freely available.

### ISMIP6 21st Century Forcing Datasets
These datasets contain the 21st century atmospheric and oceanic forcing datasets used for Greenland and Antarctic standalone ice sheet model simulations as part of the ISMIP6 project.

### ISMIP6 21st Century Greenland Projections
This dataset provides the Greenland ice sheet model output produced as part of the ISMIP6 Project (Eyring et al., 2016; Nowicki et al. 2016).

### ISMIP6 21st Century Antarctic Projections
This dataset provides the Antarctic ice sheet model output produced as part of the ISMIP6 Project (Eyring et al., 2016; Nowicki et al. 2016).

### ISMIP6 initMIP-Greenland simulations
This dataset contains the initMIP-Greenland model simulations from the ISMIP6 Project.

### ISMIP6 initMIP-Antarctica simulations
This dataset contains the initMIP-Antarctica model simulations from the ISMIP6 Project.

### ISMIP6 ABUMIP Simulations
These datasets contain the ice sheet model simulation from the ABUMIP (Antarctic BUttering Model Intercomparison Project) effort.

**Greenland data**
Surface elevation


Bedrock topography

**Bed elevation of Greenland:** Bed elevation dataset for Greenland derived from a combination of multiple airborne ice thickness surveys undertaken between the 1970s and 2012, using about 420,000 line kilometres or airborne data and interpolated on a 1 km grid.


IceBridge BedMachine Greenland: Bed topography beneath the Greenland Ice Sheet based on mass conservation derived from airborne radar tracks and satellite radar. Provided by NASA NSIDC IceBridge.


Ice front position

**Greenland Ice Mapping Project (GIMP) ice cover mask:** A raster binary land classification mask with 1 for glacier ice and 0 for all other terrain or water from Landsat 7 and RADARSAT-1, mostly 2000. Provided by OSU Byrd Polar and Climate Research Center.


Surface velocities

**Interferometric Synthetic Aperture Radar (InSAR) data from the RADARSAT-1 satellite:** Ice velocity data for the winter of 2000-2001 and 2005-2006, 2006-2007, and 2007-2008 acquired from RADARSAT-1 InSAR data, and 2008-2009 mosaic derived from the Advanced Land Observation Satellite (ALOS) and TerraSAR-X data. Provided by NASA NSIDC.

- **I. Joughin, B. Smith, I. Howat, T. Scambos,** and T. Moon, Greenland Flow Variability

**MEaSUREs Multi-year Greenland Ice Sheet Velocity Mosaic, Version 1:** Multi-year ice-sheet-wide velocity mosaic for Greenland derived from Interferometric Synthetic Aperture Radar (InSAR), Synthetic Aperture Radar (SAR), and Landsat 8 optical imagery data. Indicate the subset used. Provided by the [National Snow and Ice Data Center](http://dx.doi.org/10.5067/QUA5Q9SVMSJG).


**Geothermal heat flux**

**Geothermal heat flux from seismic model:** Global seismic model of the crust and upper mantle to guide the extrapolation of existing heat-flow measurements. Provided by [CU Boulder CIRES](http://dx.doi.org/10.5067/QUA5Q9SVMSJG).


**Geothermal heat flux from tectonic model:**


**Geothermal heat flux from magnetic model:** Crustal magnetic field models based on high quality magnetic measurements from recent satellites to determine the thickness of the magnetic crust, from which estimates of the geothermal heat flux are derived. Provided by [Danish Meterological Institute](http://dx.doi.org/10.5067/QUA5Q9SVMSJG).


**Mean annual air temperature**

***DR. NOWICKI PLEASE ADD HERE***

**Surface mass balance**

**RACMO2.3 surface mass balance:** Contemporary (1958-2013) monthly surface mass balance, 2m air temperature and surface temperature from high-resolution (11km) regional atmospheric climate model (RACMO2.3). Other variables and time resolution are also available.
Contact Michiel van den Broeke (M.R.vandenBroeke@uu.nl) for a data request.


**MAR surface mass balance and components:** Surface mass balance and components from high-resolution regional atmospheric climate model MAR. Data in Globus [Browse Data](#).


**HIRHAM5 surface mass balance** Recent Surface Mass Balance components and associated climate variables from the High Resolution (5km) Regional Climate Model HIRHAM5 1980 – 2014 forced by ERA-Interim. This will be updated on an ongoing basis.


**Antarctic data**

The datasets listed below are only suggestions and fulfill the requirements that they are publicly available and used by ISMIP6 members. If you have datasets that you would suggest adding, please let us know! These lists are still in construction. Refer to the public repository for the latest version.

**Surface elevation**

**Bedmap2 – Ice thickness and subglacial topographic model of Antarctica:**


**Bedrock topography**

Bedmap2 – Ice thickness and subglacial topographic model of Antarctica See details under *Surface elevation*

**Ice thickness**

Bedmap2 – Ice thickness and subglacial topographic model of Antarctica See details under *Surface elevation.*

**Ice front position**

***DR. NOWICKI PLEASE ADD HERE***

**Grounding line position**

Antarctic Grounding Line from Differential Satellite Radar Interferometry: High-resolution mapping of grounding lines in Antarctica, derived using differential satellite synthetic aperture radar interferometry (DInSAR) data, for years 1994 to 2009. Provided by NASA NSIDC.


**Surface velocities**

Interferometric Synthetic Aperture Radar (InSAR) data: Digital mosaics of ice motion in Antarctica assembled from multiple satellite interferometric synthetic-aperture radar data, acquired during the International Polar Year 2007 to 2009. Provided by NASA NSIDC.


**Geothermal heat flux**

***DR. NOWICKI PLEASE ADD HERE***
Mean annual air temperature

***DR. NOWICKI PLEASE ADD HERE

Surface accumulation

RACMO2.3 surface mass balance Monthly RACMO2.3 (1979-2014, 27 km resolution) smb, Ts and T2m (and many more parameters)


Contact Michiel van den Broeke (M.R.vandenBroeke@uu.nl) for a data request.

Firn thickness

RACMO2.3 firn thickness Contact Michiel van den Broeke (M.R.vandenBroeke@uu.nl) for a data request.


Sub-ice shelf melting rate

Calving fluxes and basal melt rates: Depoorter et al. (2013)


Rignot et al. (2013)