

Description of files contained in this archive:

SHAKTI-ISSM model output

Winter spin-up

Helheim_SHAKTI_N_2_1yr_H10.mat

- Winter base state spin-up simulation, final state serves as initial conditions for seasonal simulations

Seasonal hydrology-forced simulations

Helheim_big_seasonal_low.mat

- *Seasonal* simulation

Helheim_big_seasonal_firn.mat

- *Seasonal + firn aquifer* simulation

Helheim_big_seasonal_bigmelt.mat

- *Enhanced melt* simulation

Seasonal terminus-forced simulations

Helheim_termforce_year2_v3.mat

- *Termforce* simulation

Helheim_termforce_seasonal_v3.mat

- *Seasonal + termforce* simulation

Helheim_termforce_seasonal_firn_v3.mat

- *Seasonal + firn aquifer + termforce* simulation

Helheim_termforce_seasonal_bigmelt2_v3.mat

- *Enhanced melt + termforce* simulation

Sensitivity simulations

MOLHO_365d.mat

- Winter base state spin-up simulation using MOLHO instead of SSA

A15_365d.mat

- Winter base state spin-up simulation with flow law parameter for -15 deg C instead of -10 deg C

Helheim_br1_l100_1yr.mat

- Winter base state spin-up simulation including opening by sliding, final state serves as initial conditions for seasonal simulations

Helheim_br1_l100_bigmelt.mat

- *Enhanced melt* simulation including opening by sliding

Model setup scripts (to be used with ISSM in MATLAB)

runme_Helheim_inversion.m

- Script to perform stress balance inversion

Helheim_CG.exp

- Model domain coordinates

Greenland_clean.par

- Parameter file

merra2_runoff.mat

- 14-day smoothed meltwater input

runme_Helheim_shaktiissm_startfrominversion_clean.m

- Script to perform coupled SHAKTI-ISSM simulation, beginning from a model set up in the inversion script

runme_Helheim_continue_shaktiissm_clean.m

- Script to continue a coupled SHAKTI-ISSM simulation, beginning from the end state of a previous SHAKTI-ISSM simulation

runme_Helheim_continue_seasonal_clean.m

- Script to run a transient seasonal coupled SHAKTI-ISSM simulation, beginning from the end state of a winter SHAKTI-ISSM spin-up simulation

Plotting scripts

load_models_Helheim_termforce.m

- Load model output

plot_timeseries_coupled_point_paper_clean.m

- Plot time series of effective pressure, velocity, and meltwater input. Also plots scatter plot of velocity vs. effective pressure

plot_pm_logscale.m

- Plot difference in velocity compared to winter state with +/- log10 color scale

plot_pm_logscale_N.m

- Plot difference in effective pressure compared to winter state with +/- log10 color scale