Glaciology
EESCGU4220

Practical 5: Examining and extending our shallow-ice model

1. Sensitivity to model parameters

- make your code into a function so it can easily be called while varying A and recording some metric of the ice sheet once it is steady state.

- write a simple script to call the function many times with different physical parameters and plot the metric as a fn. of *A* (with A along the horizontal axis).

2. Transience

- write a new function which runs the model with a sinusoidally-varying equilibrium line position.

- plot a time-varying metric (e.g. ice thickness at some location) against time.

- plot this metric against equilibrium line position as both vary throughout a model run. (this is a phase-space plot).

- examine how the shape of the phase-space plot changes as you vary the period of the sinusoidal variation in equilibrium line position.

3. A spatially-varying bed

- write a new function that allows the bed elevation to vary. This will require modifying the model equations a little.

- examine the affect of adding bedrock mounds on ice dynamics.

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