

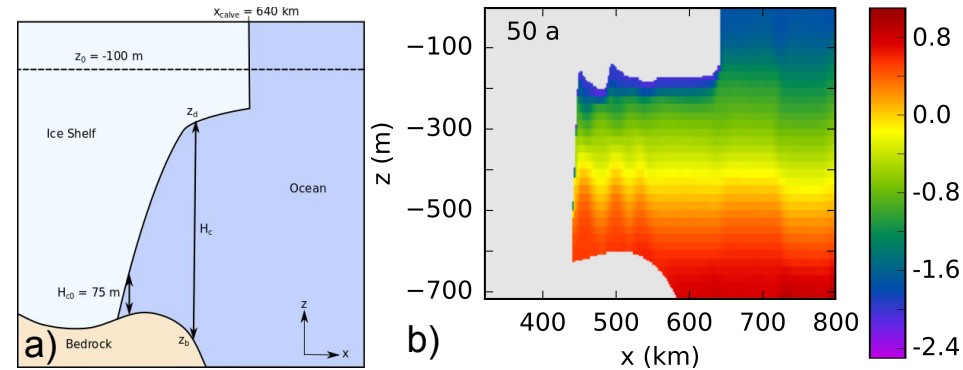
Experimental design for three interrelated Marine Ice-Sheet and Ocean Model Intercomparison Projects

Objective

The Marine Ice Sheet-Ocean Model Intercomparison Project (MISOMIP) aims to support community efforts to study sea-level rise using coupled ice sheet-ocean models. Here, we designed idealized experiments to aid in coupled model development and model evaluation.

Approach

- Three sets of idealized experiments, one each for ice sheet, ocean and coupled ice sheet-ocean models
- Common domain and topography, allowing comparison of standalone and coupled results
- Three model intercomparison projects (MIPs) already underway



a) Experimental setup showing a transect of an ice shelf and ocean cavity. b) DOE POPSICLES model results showing ocean temperature (color) and ice topography (gray).

Impact

By comparing results from a variety of models, we expect both to gain a better understanding of the models and to improve model parameterizations and numerical methods. The DOE BISICLES, POP2x and POPSICLES models played a critical role in the development of all experiments. DOE models are participating in all the MIPs.

Reference: Asay-Davis, X. S. et al.: Experimental design for three interrelated marine ice sheet and ocean model intercomparison projects: MISOMIP v. 3 (MISOMIP +), ISOMIP v. 2 (ISOMIP +) and MISOMIP v. 1 (MISOMIP1), *Geosci. Model Dev.*, 9, 2471-2497, doi:10.5194/gmd-9-2471-2016, 2016.