Firn-model contribution to uncertainty in altimetry-derived ice-sheet mass balance estimates

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Abstract

I. Introduction

- Basic Description of problem

- Brief review of efforts (e.g. early recognition of firn correction, application of densification model

II. Methods

a. The Community Firn Model

We have developed the Community Firn Model (CFM), an open-source model framework that allows the user to run firn-densification physics from a suite of published models.

Currently, the CFM includes the firn-densification physics described by Herron and Langway (1980), Barnola …

In addition to firn-densification, the CFM solves for heat diffusion,

The modular nature of the CFM allows the user to add new firn-densification physics

The CFM uses a Lagrangian (particle-following), finite-volume numerical scheme. Heat transfer is calculated implicitly, and densification drho/dt, as well as other physics such as grain growth, are calculated explicitly.

The CFM is hosted on GitHub at ####.