The Albany/FELIX First Order Stokes Finite Element Ice Sheet Dynamical Core Built Using Trilinos Software Components: Performance, Next-Generation Capabilities and Validation

Abstract. This talk describes the Albany/FELIX First-Order Stokes finite element ice sheet code developed using Trilinos libraries, and its coupling to land ice dycores (CISM, MPAS) for dynamic simulations. We will discuss the algorithms that make the solver scalable, fast and robust. We will discuss the solver's next-generation capabilities: performance-portability, model calibration, UQ. We will show results of a recent validation study that simulates the period 1991-2013 with realistic climate forcing, performed using the CISM-Albany dycore.

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