

Hi Ed,

Here are the highlights from our 04/18/18 class.

The shallow ice approximation (SIA) is used to analyze glacier flow equations in order to determine a simpler form of the momentum equations. The SIA exploits the fact that the geometry, in many instances, is such that $H/L \ll 1$, where H is the glacier thickness and L is the glacier length. We used the standard approach: 1) set coordinate system, 2) write momentum equations, 3) solve body forces, 4) solve for deviatoric stresses, 5) nondimensionalize, 6) substitute new expressions into momentum equation, 7) solve for strain rates, and 8) find a nondimensional constitutive relation for the stresses and deformation rate. We also began writing the stretching transformation, which involves rewriting the equations used in the first approach in a scaled form.

Brita