



A full-Stokes anisotropic ice flow model for Dome A, Antarctica

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Chinese scientists will start to drill a deep ice core at Kunlun station near Dome A in the near future. It is important to know the basal temperature of ice and estimate the age of the ice core. We apply a three-dimensional, thermo-mechanically coupled full-Stokes model to a $70 \times 70 \text{ km}^2$ domain around the Kunlun station, using the package Elmer/Ice. We conduct simulations using non-linear flow laws with isotropic and different prescribed anisotropic fabrics which affect the vertical advection and in consequence control both, the basal temperature and age profile. We also assess basal age and thermal state sensitivities to geothermal heat flux and surface conditions. For those parts of the bed in the domain that reach pressure melting point, which partially coincide with radar observations, we determine basal melt rates that in turn influence the age.