



Antarctic subglacial conditions inferred from combined interferometric velocity data and ice sheet modeling

B. Van Liefferinge and F. Pattyn

Laboratoire de Glaciologie, Université Libre de Bruxelles, Belgium (bvlieffe@ulb.ac.be)

Antarctic subglacial conditions can be elucidated through several techniques. However, since direct measurements are only limited to a few deep drillings to the bed, there is always a substantial amount of ice sheet and thermodynamical modeling involved. This can either be done based on a fully coupled thermomechanical ice sheet model, or a thermodynamical model coupled to present-day ice sheet geometry and environmental conditions. The latter technique was recently employed by Pattyn (2010) in an attempt to determine the likelihood of basal temperate conditions of the Antarctic ice sheet using a series of existing datasets on mass balance and geothermal heat flux. Here, we made an update of this estimate using new data on bedrock elevation and ice thickness (ALBMAP; Le Brocq et al., 2010) and observed surface velocities obtained from interferometric analysis (Rignot et al., 2011). The latter were further constrained by a hybrid ice sheet/ice shelf model to correct for the interior ice flow (where observations are lacking) and for correcting the ice flow across subglacial lakes. The new estimates are compared to the initial basal temperature calculation.