A revised evaluation of Antarctic subglacial conditions and the contribution of basal melt to present day sea-level rise

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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 error of observations are to high) and for correcting the ice flow across subglacial lakes. We coupled the model with a new lake inventory from Wright *et al.* (in review) to improve the contribution of the geothermal heat flux to the temperature. This revised calculation of the temperature allows us to improve our knowledge of basal melting and its contribution to present-day sea-level rise.

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