

## **Subglacial hydrological modelling of a rapid lake drainage event on the Russell Glacier catchment, SW Greenland.**

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We use local-scale subglacial hydrological models to assess the development of the basal drainage system in response to a rapid lake-tapping event on the Russell Glacier catchment, SW Greenland. Water inputs to the model are constrained by in-situ records of the lake drainage rate. Subglacial conditions are estimated from active seismic line analysis including basal topography and substrate characteristics.

A borehole slug test model is used to determine the radial flux of water from the drainage input point. Water flowing in the downstream direction is used to drive a 1-D flowband model, which allows development of interacting channelised and distributed drainage systems. The simulated basal water pressures are applied to an elastic beam model to assess vertical uplift at the lake drainage site. Modelled uplift outputs are compared with results from GPS stations located next to the lake. Initial modelling results suggest that channels are necessary for evacuation of water from rapid lake drainage events, even with the presence of a sediment-based bed, the latter of which is usually associated with distributed drainage.