



Multiple contacts in the vicinity of grounding lines?

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We present numerical simulations of the flow in the transition zone of marine ice sheet that suggest the possibility of multiple contacts in the vicinity of grounding lines. In these situations, the shelf lower surface changes curvature: the surface, which initially departs from the bedrock at the grounding line, makes contact with the bedrock at a finite distance from the grounding line. We examine this behavior with a full Stokes finite element model, which also determines the position of free surfaces (ice-air and ice-water interfaces). We investigate how these features depend on the basal conditions upstream from the grounding line by implementing a range of sliding laws, and on the choice of flow law exponent in the ice rheology. We conclude by addressing the implication of these results for the behavior of marine ice sheets.