

# **Initial effects of oceanic warming on a coupled ocean-ice shelf-ice stream system**

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The initial retreat of ice-shelf grounding lines stabilized on seaward-sloping beds is influenced by the rheology of these beds, according to new model results. We apply a fully-coupled process model to investigate how the response of an ice stream to increased ocean temperature beneath its ice shelf depends on the assumed form of its basal flow law. For the same applied oceanic warming, the increase in grounding-line flux can be twice as great for an effectively-plastic bed as for a linear-viscous bed, suggesting that improved knowledge of the basal flow law of ice streams is necessary for predicting ice-sheet response to climatic forcing.