



## **Basal control of supraglacial lakes**

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Observations show that supraglacial lakes formed in Greenland tend to occupy the same locations relative to the geographic reference frame year after year, despite the presence of strong downstream flow of the ice sheet through the reference frame. Using idealized ice-dynamic model we demonstrate that ice flow over bed with variable topography or basal traction creates conditions favorable to formation of supraglacial lakes. Stress regime associated with this flow promotes development of cracks and crevasses upstream of a supraglacial lake. These crevasses are advected into the lake area and could be developed into conduits and moulins, that could potentially facilitate delivery of the surface water to the ice-sheet bed.