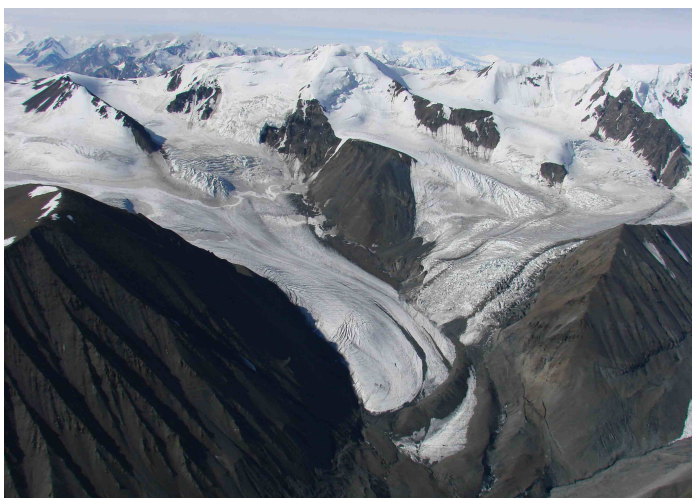


SURGING GLACIERS IN THE ST. ELIAS MOUNTAINS OF YUKON



One of the highest concentrations of surge-type glaciers worldwide lies within the St. Elias Mountains, in the traditional territories of the Kluane, White River and Champagne and Aishihik First Nations



WHY DO SOME GLACIERS SURGE BUT NOT OTHERS?

This is the question that researchers from Simon Fraser University have been asking. Graduate student Jeff Crompton and Professor of Earth Sciences Gwenn Flowers have just finished a study started in 2013 of 16 small glaciers in the Donjek Range (between the Kaskawulsh and Kluane Glaciers), 9 of which are known to “surge”. Surging is a perplexing form of glacier flow in which ice moves slowly for decades and then suddenly speeds up by a factor of 10 to 1000.

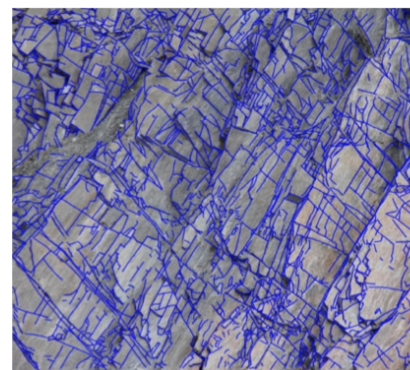
The researchers revisited an early scientific hypothesis that glacier surging may be related to how fractured the underlying bedrock is.

To test this hypothesis, they evaluated photographs and measurements of the bedrock around each of the glaciers they visited. Contrary to expectation, they found that surging glaciers in the Donjek Range were associated with less fractured bedrock than non-surging glaciers.

To explain these results, the researchers propose that bedrock fracture may control the nature and distribution of rocky debris under the glacier, in some cases creating just enough friction between the ice and bed to allow a reservoir of ice to develop between surges.

Perhaps the abundance of surging glaciers in this area is partly a result of the bedrock having just the right fracture characteristics.

Gwenn and Jeff wish to thank the Kluane First Nation, Parks Canada and Yukon Government for access, and NSERC, PCSP, the Weston Foundation, Yukon Geological Survey and SFU for funding.



For more information: contact Gwenn Flowers (gflowers@sfu.ca) or visit www.sfu.ca/~gflowers/.

Full reference: Crompton, J.W., Flowers, G.E., & Stead, D. 2018. Bedrock fracture characteristics as a possible control on the distribution of surge-type glaciers. *Journal of Geophysical Research: Earth Surface*, <https://doi.org/10.1002/2017JF004505>