

THE IMBALANCE AND RETREAT OF THE KASKAWULSH GLACIER



The 70 km-long Kaskawulsh Glacier is an iconic outlet of the icefields, and until recently, supplied water to Lù'àn Mìn. It holds an estimated 9% of all glacier ice in Yukon, but is poised to retreat dramatically.



HOW MUCH WILL THE KASKAWULSH GLACIER RETREAT?

Researchers from Simon Fraser University have been investigating the health of the Kaskawulsh Glacier. Graduate student Erik Young and Professor Gwenn Flowers have just finished a study started in 2017 to determine how much net melting has occurred at the surface and how fast the ice has been flowing between 2007-2018. Glaciers flow very slowly downhill much like rivers. As they flow to lower elevations, the air gets warmer and melting increases. Glaciers shrink when they melt back faster than they flow forward.

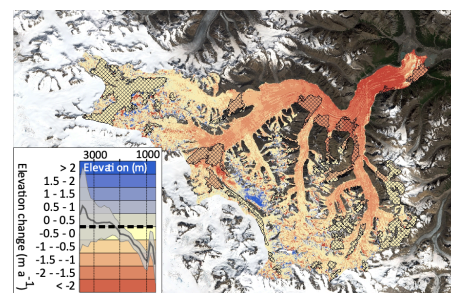
By collaborating with satellite remote sensing specialist Etienne Berthier from France, the researchers found that the

Kaskawulsh Glacier is losing ice: it is thinning by nearly half a meter per year (lower right figure). It is also flowing faster than is sustainable under the current climate, meaning it must eventually slow down. If the current climate persists, the Kaskawulsh Glacier will ultimately lose at least 15% of its volume and 23 km of its length.

To arrive at these conclusions, the researchers combined a computer model that calculates snowfall and melt, with measurements of ice depth obtained using a specialized ski-mounted radar system (upper right photo) and ice-flow speeds measured by satellites.

The next step is to use projections of climate warming in Yukon to figure out how long the predicted ice loss might take, and what the Kaskawulsh Glacier of the future will look like.

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

Full reference: Young, E., Flowers, G., Berthier, E., & Latto, R. (2020). An imbalancing act: The delayed dynamic response of the Kaskawulsh Glacier to sustained mass loss. *Journal of Glaciology*, doi:10.1017/jog.2020.107