

OUTBURST FLOODS FROM ICE-DAMMED LAKES



Photo: Flavien Beaud

Outburst floods occur regularly from ice-dammed lakes, with new lakes forming as glaciers retreat. These floods present a risk to downstream communities in some parts of the world.

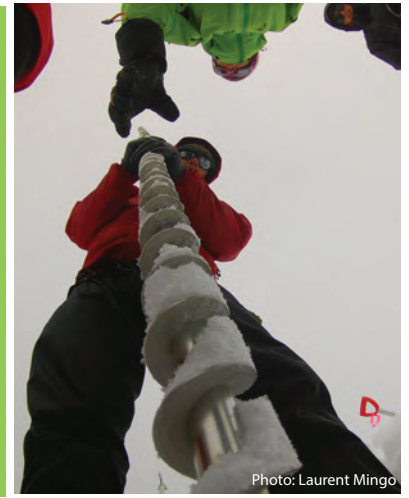


Photo: Laurent Mingo

WHERE IS ALL THE WATER STORED PRIOR TO AN OUTBURST FLOOD?

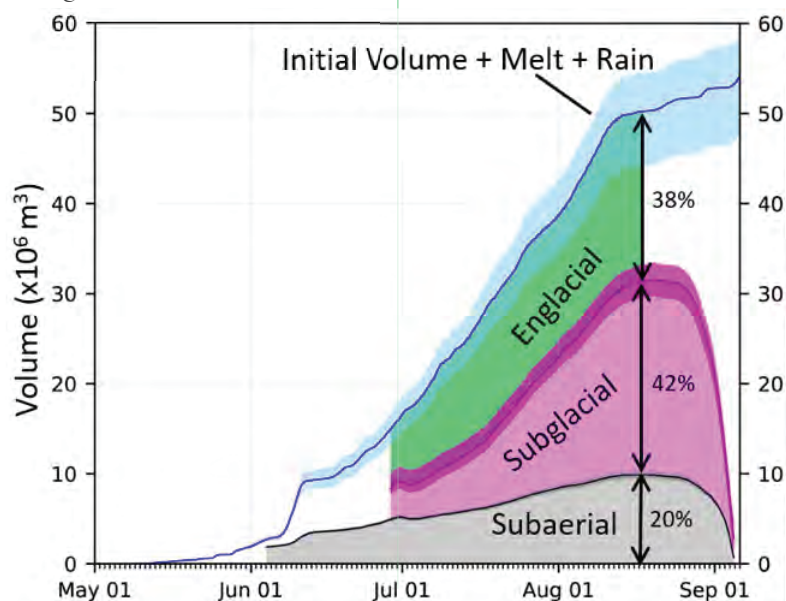
Outburst floods from ice-dammed lakes present a hazard that can pose serious threats to downstream infrastructure and communities in some parts of the world. These lakes form and drain on a regular (often annual) basis, with the number of lakes increasing as glacier retreat accelerates in a warming climate.

Researchers from Simon Fraser University and their colleagues set out to monitor the seasonal filling and drainage of a large lake dammed by the Kaskawulsh Glacier, 35 km from the glacier terminus. Using a suite of geophysical sensors and surveys, they estimated the lake volume to be 50 million cubic

metres of water at its peak. More surprisingly, they found that 80% of this water was stored out of sight—in or under the glacier—meaning the lake reservoir is much bigger than meets the eye. This hidden water is something that should be considered

in assessing any risk posed by unstable ice-dammed lakes.

We thank the Kluane First Nation, Parks Canada and Yukon Government for support and access, and NSERC, PCSP, NSTP, SFU for funding.



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

Full reference: Bigelow, D.G., G.E. Flowers, C.G. Schoof, L.D.B. Mingo, E.M. Young, B.G. Connal. 2020. The Role of Englacial Hydrology in the Filling and Drainage of an Ice-Dammed Lake, Kaskawulsh Glacier, Yukon, Canada, *Journal of Geophysical Research*, 125, 1–21. <https://doi.org/10.1029/2019JF005110>.