

ACCURATE SNOW-DEPTH MEASUREMENTS ON GLACIERS



Winter snowfall replaces some of the ice lost each year as glaciers melt. Finding accurate and efficient ways to measure snow depth helps us determine glacier health.



HOW CAN WE IMPROVE SNOW SURVEYS ON GLACIERS?

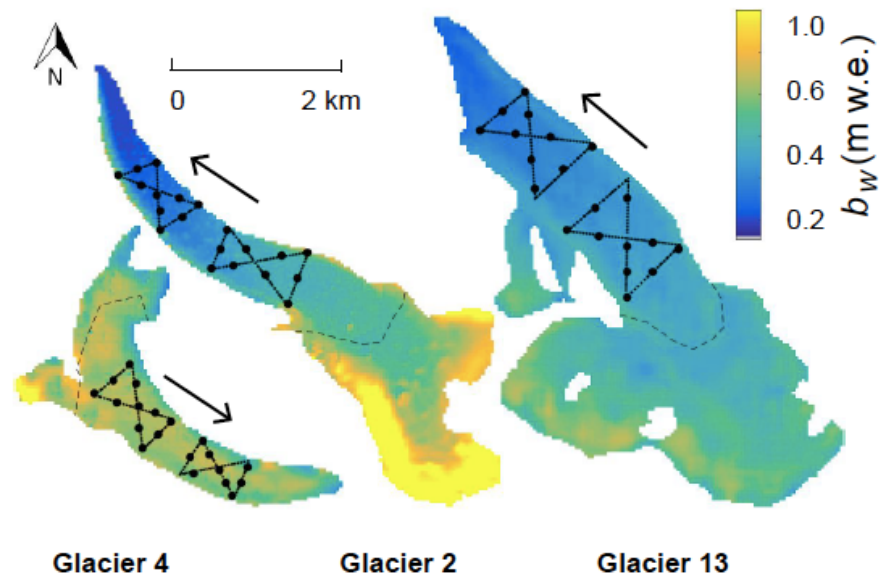
Making measurements of snow depth is labour intensive and time consuming. Researchers are therefore trying to determine the most efficient survey designs for this task.

Using over 9000 measurements of snow depth made on three glaciers in the Donjek Range, Alexandra Pulwiczki and Gwenn Flowers (from Simon Fraser University) tested different survey designs, ranging from a single centerline profile, to circles, to a shape that resembles an hourglass or bowtie (figure at right).

Using these data and computer models, Alex and Gwenn found that the unconventional hourglass or

bowtie survey design performed best overall, and that accuracy increased rapidly with as few as 10-15 measurements. This work will help us conduct more efficient surveys in the future without compromising accuracy.

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

Full reference: Pulwiczki, A., G. E. Flowers, D. Bingham. 2019. Pursuit of optimal design for winter-balance surveys of valley-glacier ablation areas, *Frontiers*, doi/10.3389/feart.2019.00199, 7, 199.