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Appendix
Variability

Point Scale - boxplots, std, Zigzag - vertex vs measured, plots, variograms, mean + std + vario summary table Watershed - plots, variograms, mean + std + vario summary table

Point Scale

Observer differences

A one-way ANOVA for each transect pattern of snow depth measurements taken by different observers shows that there are no differences between observers. The only exception is the Lower Hourglass on Glacier 4, where one observer had higher mean snow depth than the other two ($p < 0.05$). This shows that observer bias is not present in this study and no corrections to the data based on observer were applied.

Standard deviation of snow depth

The mean standard deviation of snow depth measurements taken at each location within various groups can be seen in Table 1. The mean standard deviation varies between glaciers, patterns, and observers but overall, the reproducibility of depth measurement is on the order of centimetres. This is a small variability compared to the overall standard deviation of measurements as seen in Table 2. The standard deviation of measurements over the study area is on the order of 10^1, while the standard deviation of measurement reproducibility is on the order of 10^0.

Variability in snow depth differs considerably between glaciers, as can be seen in Figure 1. Both the range and mean depth are largest for Glacier 4 and smallest for Glacier 13. Glacier 13 has the most outliers (>1.5 $\times$ Inner quartile range), which could be a result of a prominent surface meltwater channel.

1.

Table 1: Mean standard deviation (cm) of snow depth measurements for various groupings.

Glacier	**Pattern**	**Overall Glacier**	**Overall Pattern**	**Person** AP	GF	CA	AC
G04	LH	3.5	5.1	4.8	—	8.5	2
	LC		4.7	4.3	—	8.2	1.7
	LM		3.7	—	4.7	4.6	1.9
	UH		2.6	3.4	2.2	—	2.3
	UC		1.9	1.9	2.3	—	1.5
	UM		1.9	—	1.7	2	2
	UT		3.9	3.7	—	2.4	5.6
G02	LH	5.1	5.4	4.8	—	6.1	—
	LC		5	3.9	—	6.2	—
	LM		6.5	—	6.8	6.5	6
	UH		4.1	3.5	4.4	4.5	—
	UC		7	5.5	7	8.7	—
	UM		4.2	3.2	5.2	4.1	—
	UT		5.6	3.2	—	8.2	—
	BT		2.2	2.2	—	3	1.5
G13	LH	4.2	3.8	3.1	4.1	4	—
	LC		4.5	2.9	4.8	5.8	—
	LM		6.6	4.6	7.7	7.6	—
	UH		3.5	3.4	3.6	3.4	—
	UC		3.8	3.4	4	4	—
	UM		4.8	4.4	5.8	4.4	—
	UT		4.1	2.7	4.8	4.6	—

Table 2: Standard deviation (cm) of snow depth measurements for various groupings.

Glacier	**Pattern**	**Overall Glacier**	**Overall Pattern**	**Person** AP	GF	CA	AC
G04	LH	44.7	51.3	51.4	—	54.8	45.7
	LC		45.2	50.5	—	44.1	39.8
	LM		27.2	—	21.6	36.3	22.5
	UH		48.5	48.6	51.2	—	45.8
	UC		44.2	44.8	38.2	—	48.2
	UM		22.5	—	24.1	20.7	22.7
	UT		26	25.1	—	25.1	27.7
G02	LH	49.3	29.9	29.2	—	30.6	—
	LC		29.3	28.6	—	30.1	—
	LM		18.4	—	20.8	15.5	18.1
	UH		42	39.1	41.6	45.6	—
	UC		55	55.3	55.2	56.1	—
	UM		35.1	38.4	34.5	31.8	—
	UT		36.4	27.3	—	43.9	—
	BT		20.8	13.8	—	13.7	30.4
G13	LH	30.5	27.4	25.7	27.5	28.9	—
	LC		27.1	25.8	21.4	32.6	—
	LM		24.9	22.8	27.5	23.6	—
	UH		21	21.1	21.4	20.4	—
	UC		16.3	17.6	14.5	16.6	—
	UM		29.4	26.6	33.4	28	—
	UT		32.7	21.5	44.4	26.4	—

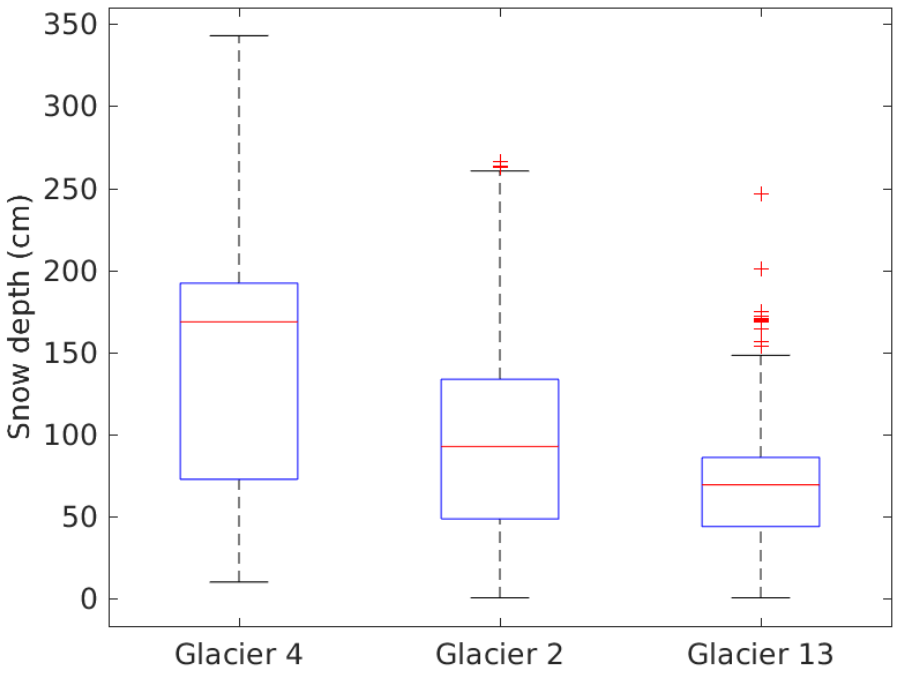

Figure 1: Variability in snow depth measurements taken at each glacier.