Supplement of

Satellite telemetry of surface ablation observations to inform spatial melt modelling, Place Glacier, British Columbia, Canada

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1 Parts list

Table S1: Primary components of the smart stakes with prices in USD from June 6, 2025. This list does not include a detailed breakdown of the minor components nor the ablation pole hardware.

PART	COST (USD)	URL
Feather M0 Adalogger	19.95	https://www.adafruit.com/product/2796
Featherwing Terminal Block	14.95	https://www.adafruit.com/product/2926
PCF8523 Real Time Clock	6.95	https://www.adafruit.com/product/3295
Lithium Ion Battery – 3.7V 10050mAh (10 Ah)	29.95	https://www.adafruit.com/product/5035
Adafruit Solar Lithium Ion/Polymer Charger	14.95	https://www.adafruit.com/product/4755
Medium 6V 2W Solar panel – 2.0 Watt	34.00	https://www.adafruit.com/product/200
Nano Power Timer TPL5110	6.95	https://www.sparkfun.com/products/15353
RockBlock 9603	299.95	https://www.adafruit.com/product/4521
Ultrasonic (w. 6ft 7–Strand Shielded Cable)	293.00	https://maxbotix.com/products/mb7374
Temp/RH	29.50	https://www.dfrobot.com/product–912.html
Radiation shield	91.32	https://hoskin.ca/product/solar–radiation–shield–2/
Additional minor components (enclosure, desiccant, hose clamps, connection cables, etc.)	200.00	Miscellaneous
Total	**1041.47**	

2 Validation

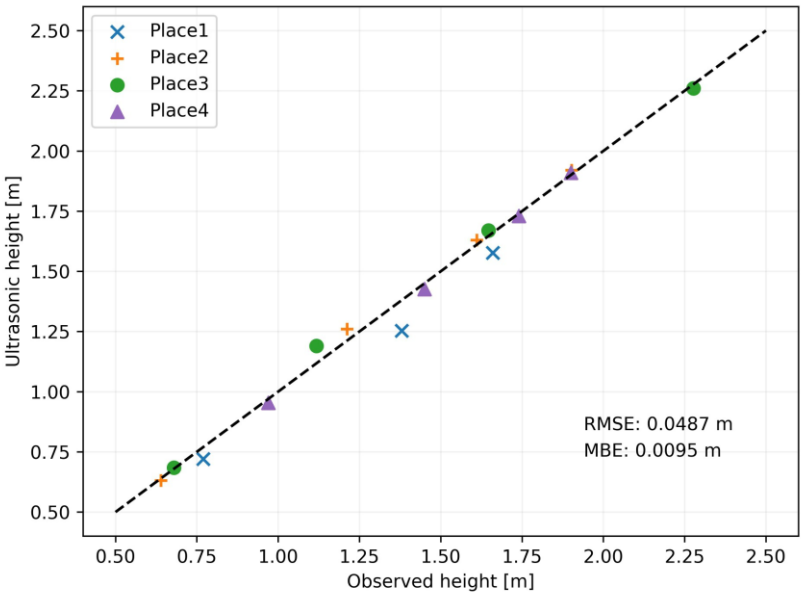

Figure S1: In–situ manual calibration of MaxBotix MB7374 ultrasonic sensor readings. The root mean square error (RMSE) and the mean bias error (MBE) are shown.

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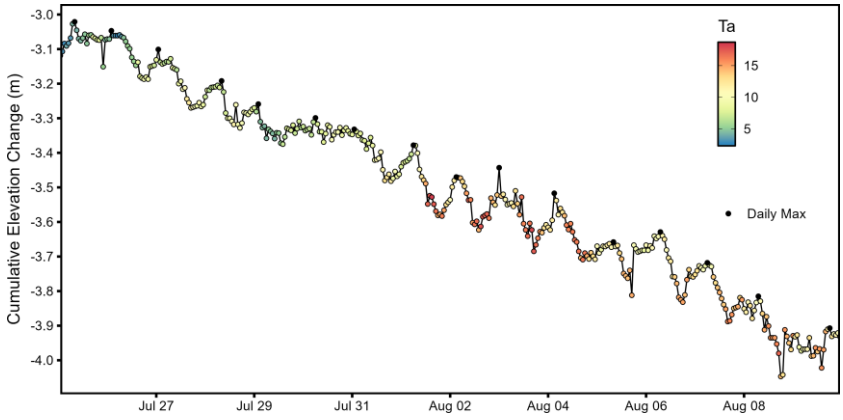

Figure S2: Time series of cumulative elevation change in meters since installation at Place Glacier 1. The points are colored by air temperature.

3 Daily Lapse Rate

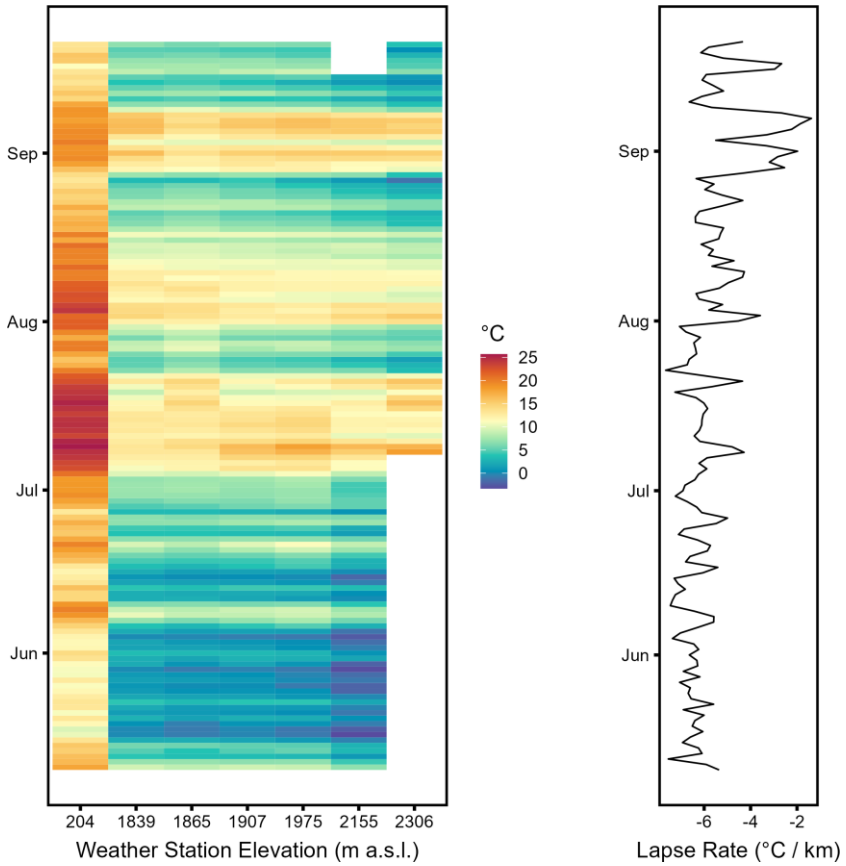

Figure S3: Average daily air temperature at the seven monitoring locations (see Error! Reference source not found.**). The daily air t emperature lapse rates are shown.**

4 Spatial Melt Model

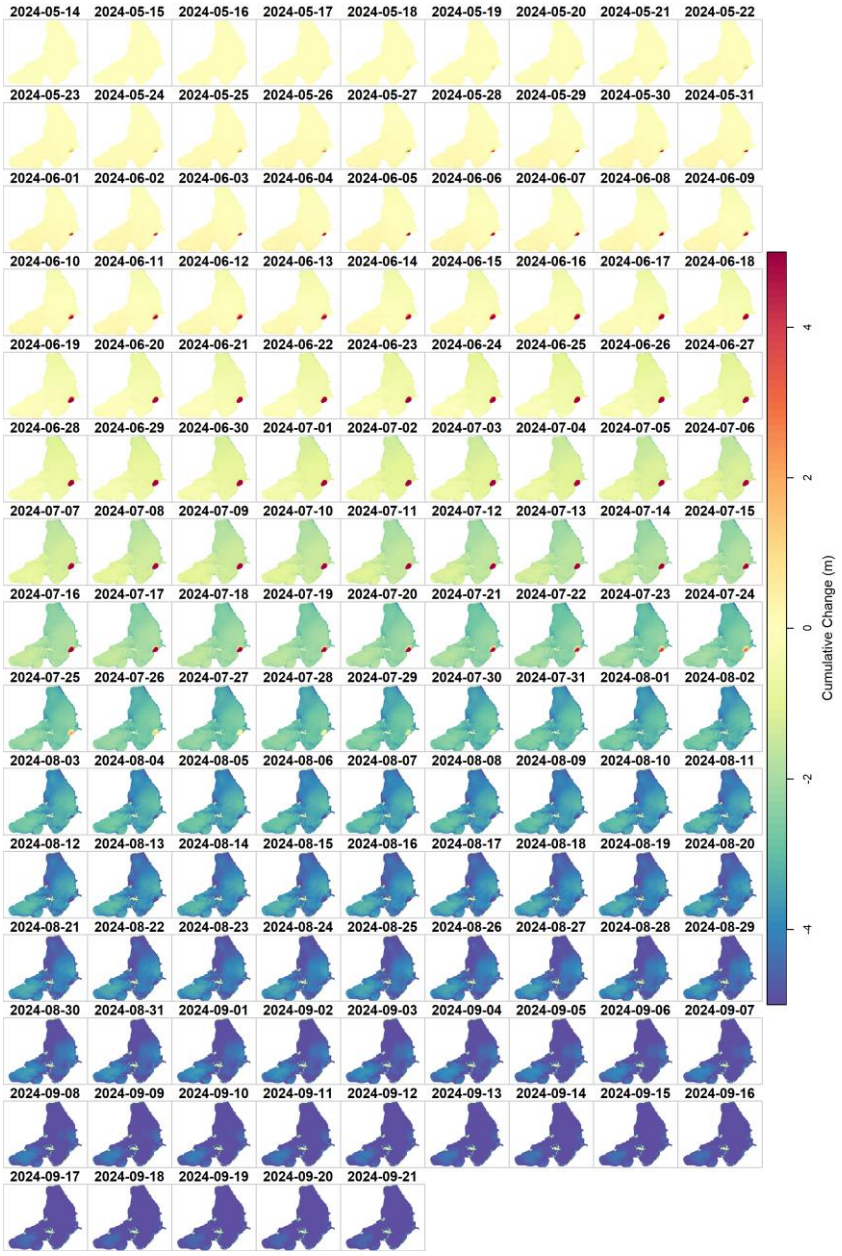

Figure S4: Interpolated daily 5 m resolution lidar digital elevation model from May 14 to September 21, 2024. The timeseries is expressed as the cumulative change from May 14, 2024.

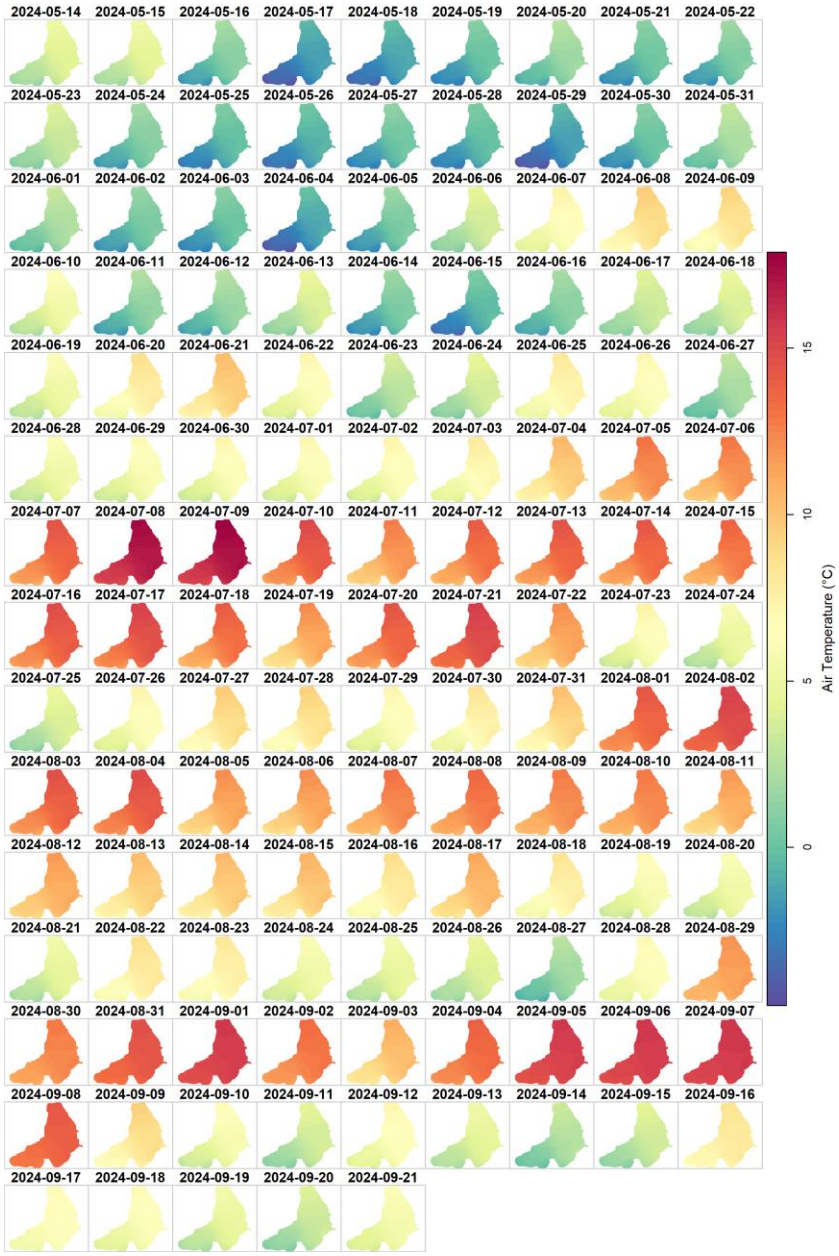

Figure S5: Interpolated daily 5 m resolution average air temperature model from May 14 to September 21, 2024.

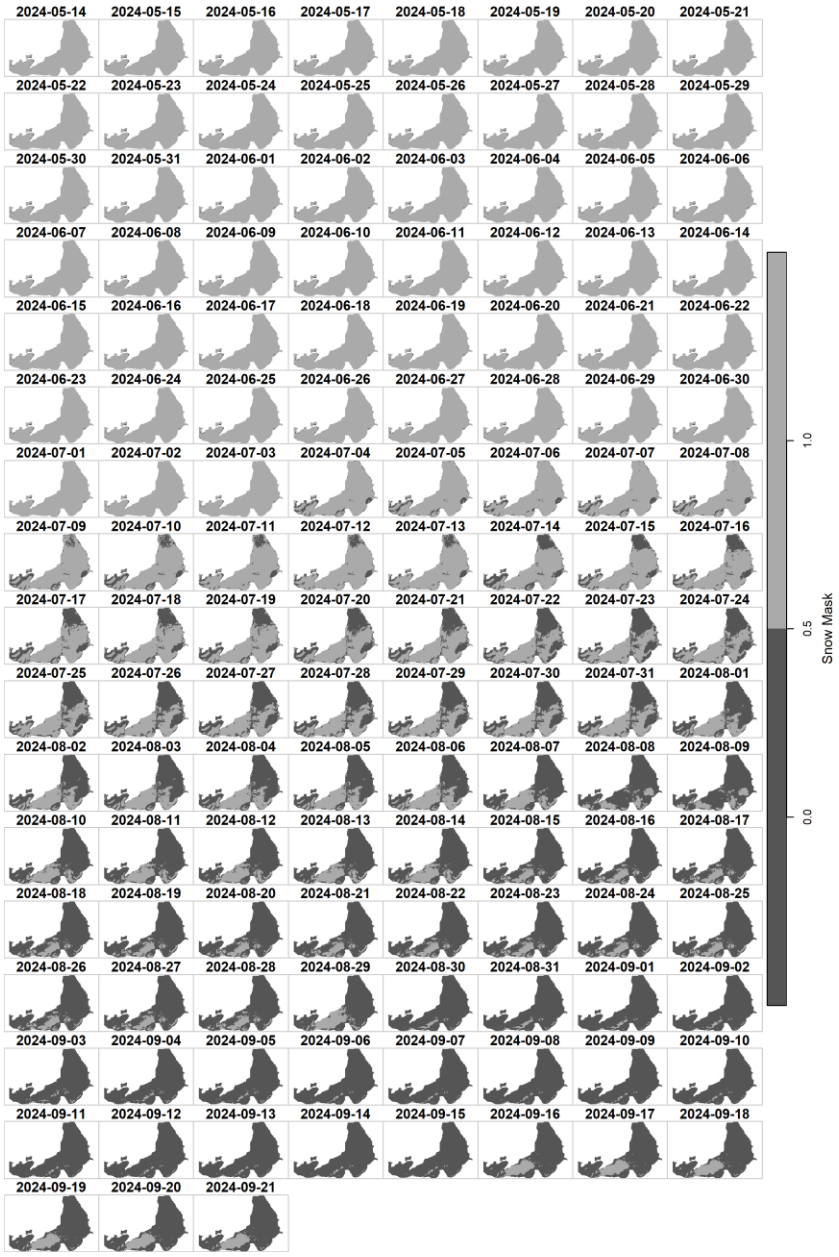

Figure S6: Interpolated daily 5 m resolution snow and ice cover classification from May 14 to September 21, 2024.

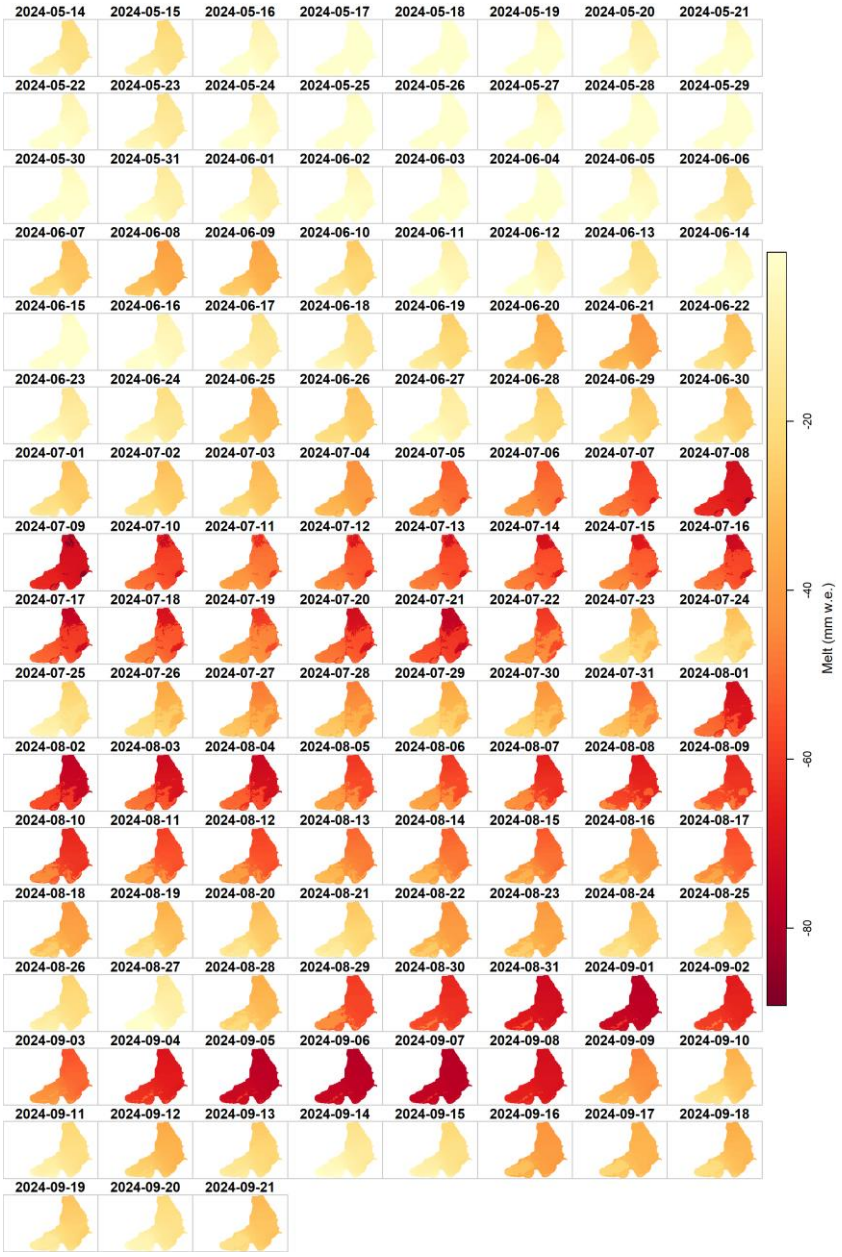

Figure S7: Daily 5 m resolution temperature–index melt model from May 14 to September 21, 2024.

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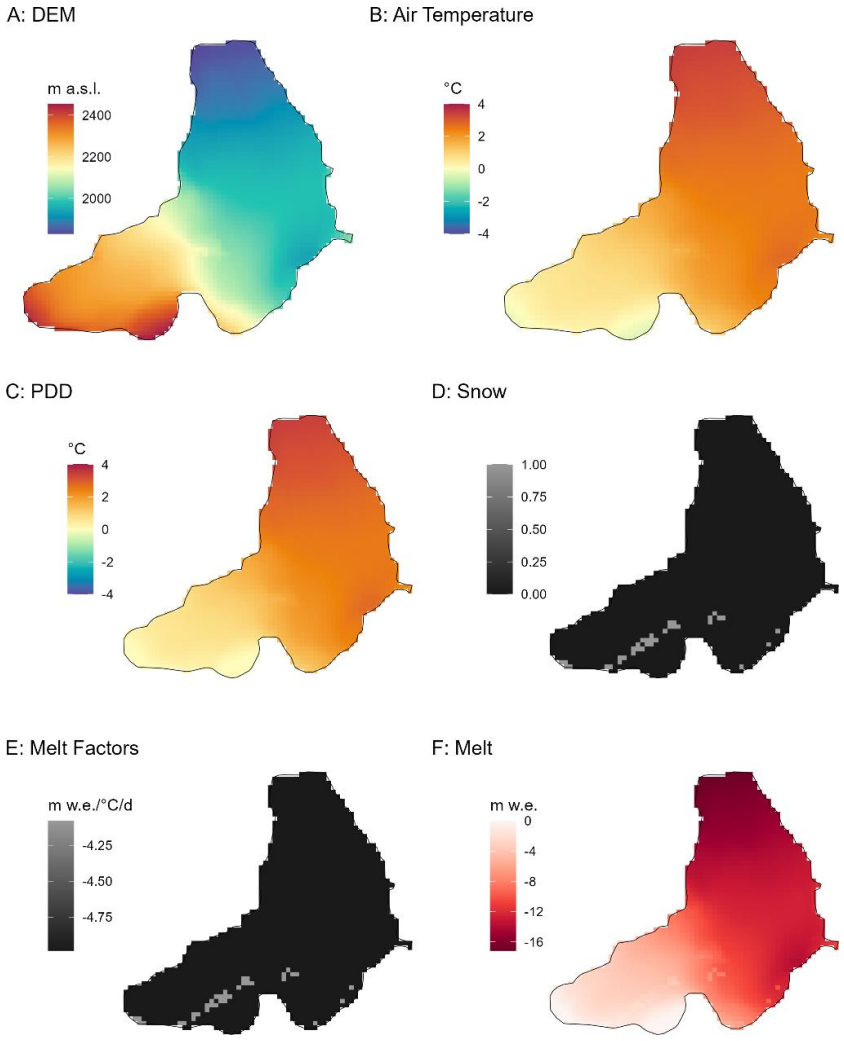

Figure S8: Example of the spatial melt model calculations for September 14, 2024. A) Digital Elevation Model; B) Air temperature; C) Positive Degree Days; D) Snow mask; E) Melt coefficients; and F) total daily melt.