

Monitoring, measuring, and modeling the Suicide Basin outburst flood



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Suicide Basin outburst floods

Mendenhall
Glacier

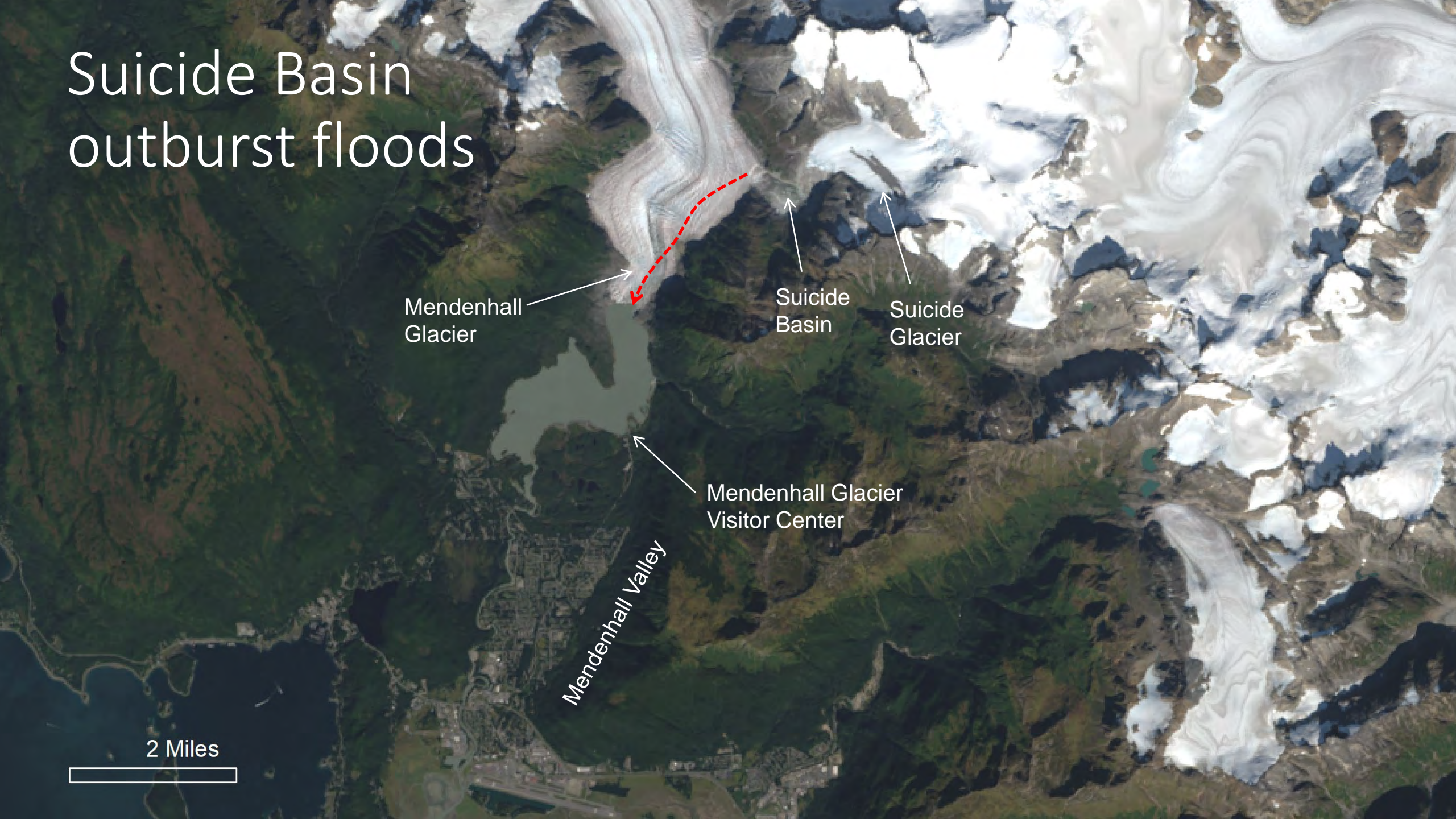
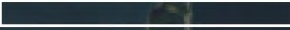
Suicide
Basin

Suicide
Glacier

Mendenhall Glacier
Visitor Center

Mendenhall Valley

2 Miles



2018

Mendenhall Glacier

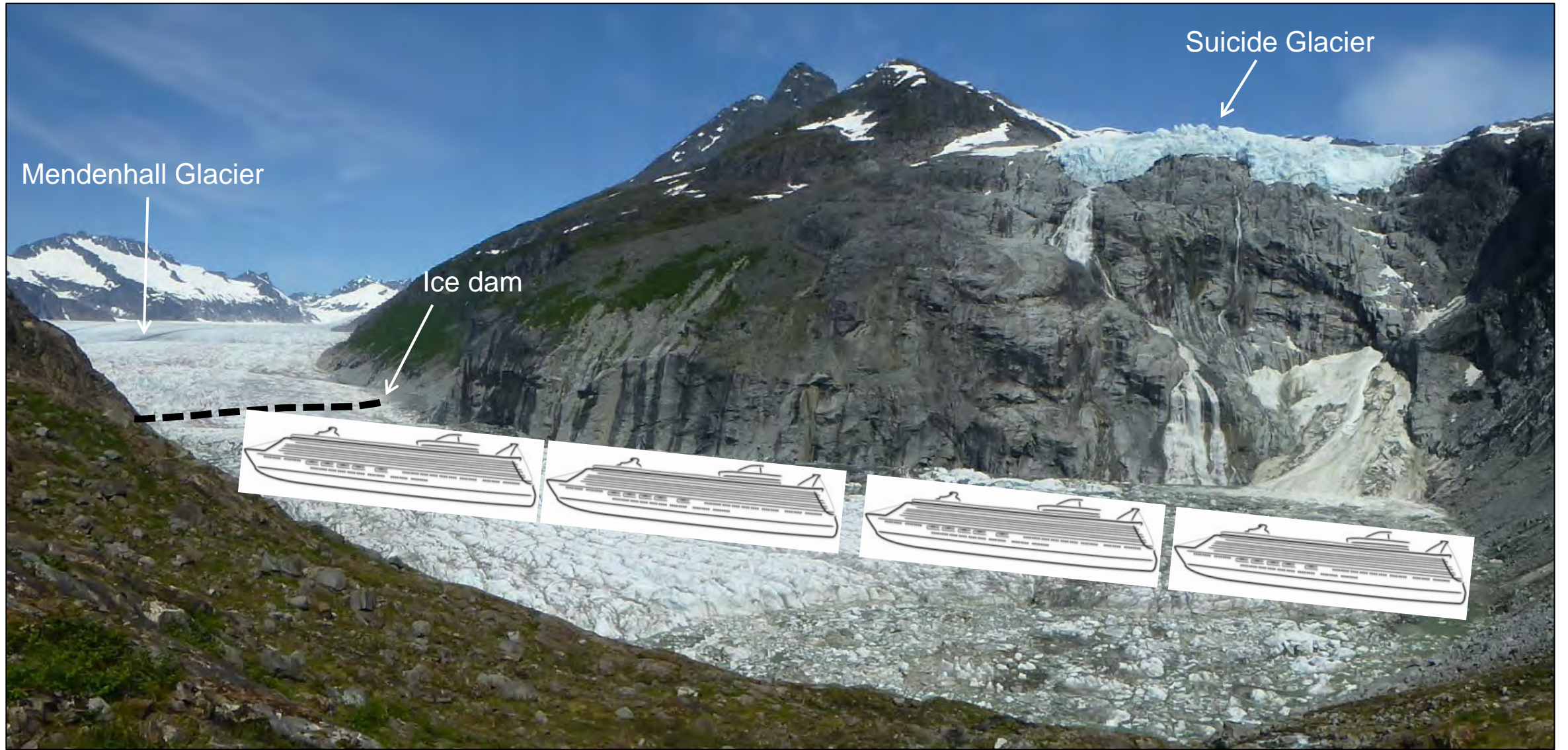
Suicide Glacier

Suicide Basin





Suicide Basin



Monitoring Efforts



Time Lapse Cameras

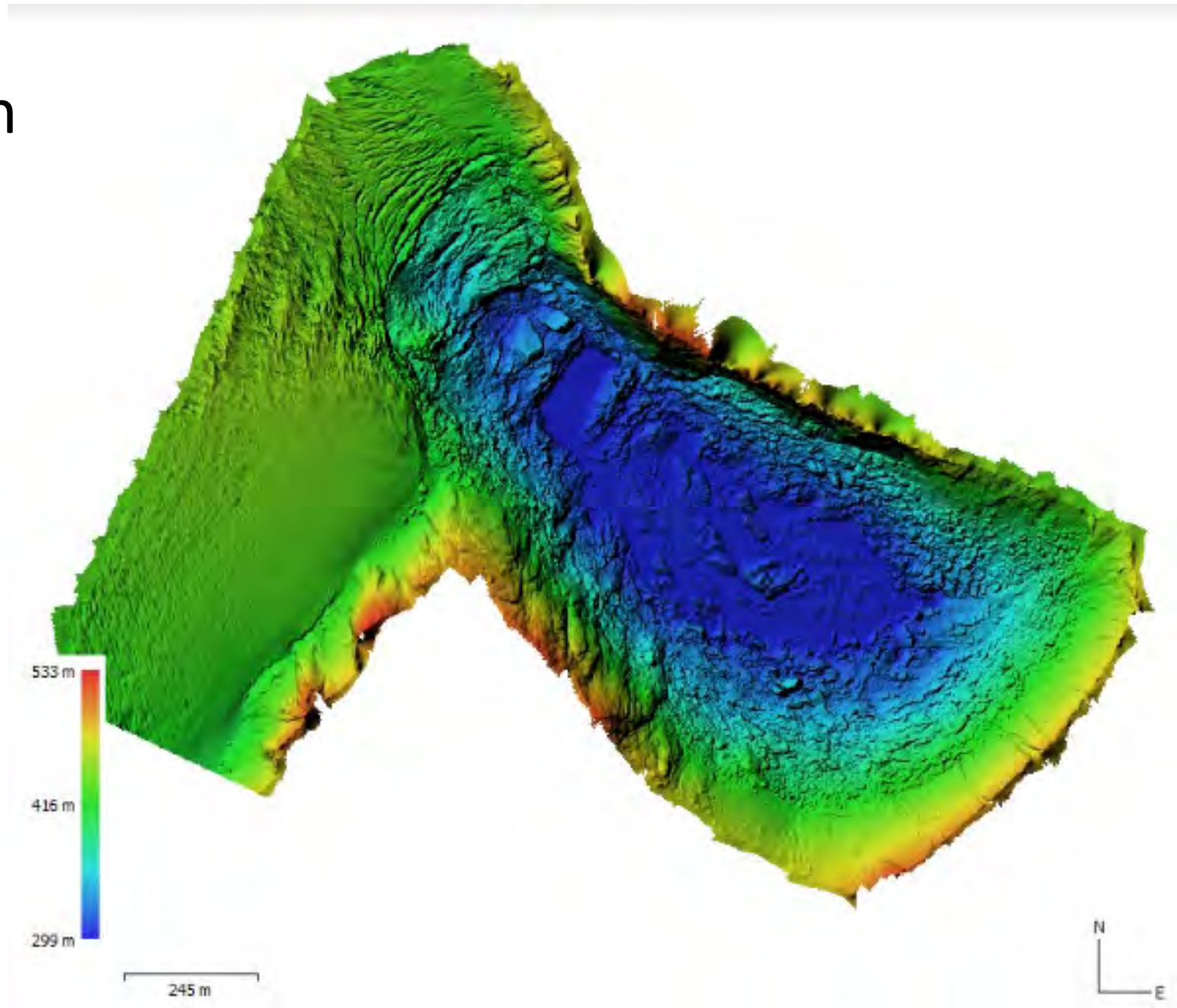


Drones



Laser Range Finder

Mapping the Basin



Challenges

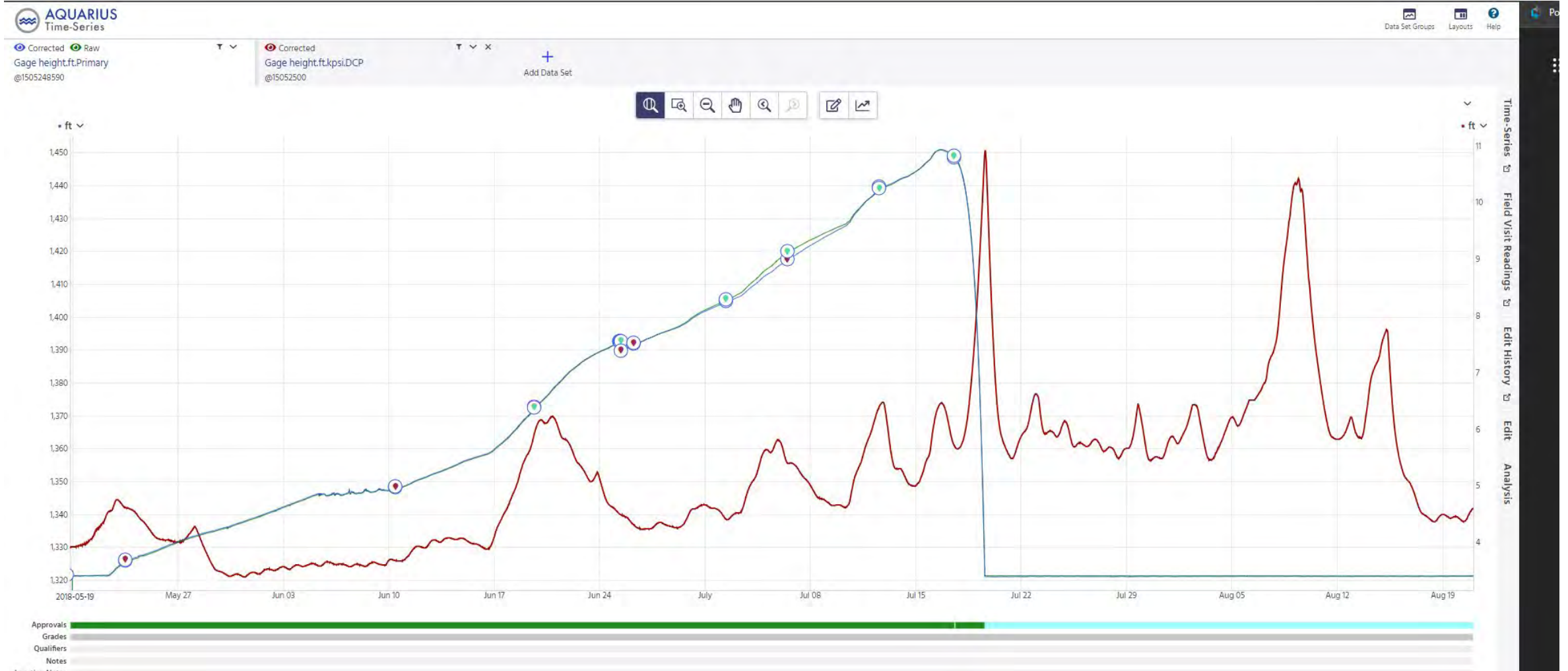


Access



Instrument damage

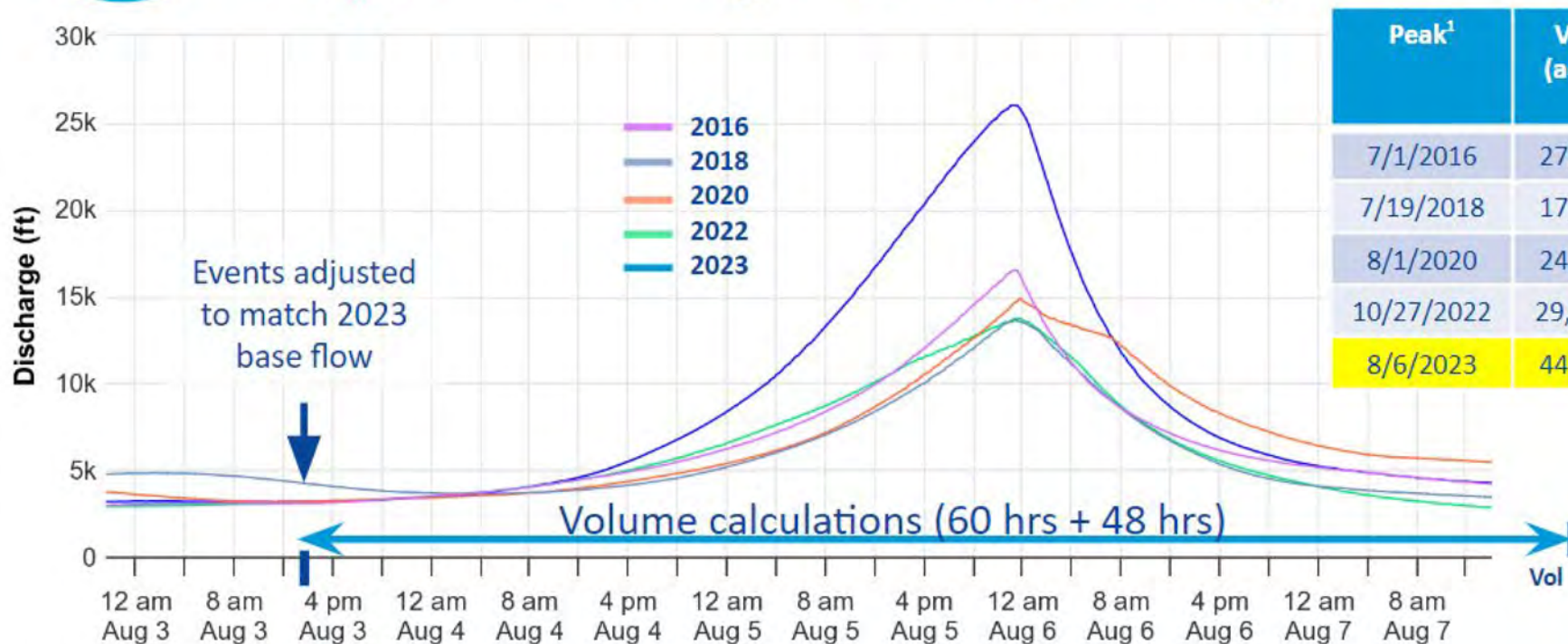
Basin water level and the onset of the flood





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Peak ¹	Vo/l (ac-ft)	Vol (m ³ x 10 ⁶)	Peak Q (cfs)	Q Increase (cfs)	Q Increase (m ³ /s)
7/1/2016	27,000	33.3	16,300	13,500	382
7/19/2018	17,000	20.9	13,600	9,200	261
8/1/2020	24,500	30.2	15,200	11,500	326
10/27/2022	29,000 ²	35.8	12,400 ^p	10,500	297
8/6/2023	44,500	54.9	26,000 ^p	23,000	651

¹ 2021 included 5.74" rainfall over previous 5 days and was excluded from the table and plot.

² Includes 3.41" rainfall over previous 5 days
GDL release volume with base flow removed

Peak Q Overall peak discharge at the river gage

Q increase Increase in discharge at the river gage over base flow

- Since 2016 there have been 6 large Glacier Dammed Lakes (GDL) events.
- Four events 2016, 2018, 2020 and 2022 were shifted in time to match the peak date/time of the 2023 event. These events were also adjusted to match the pre-event baseflow of the 2023 event.
- Volume calculations and discharge (Q) increase constrained to 60 hours prior to peak and 48 hours after peak.