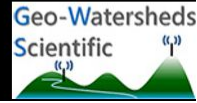




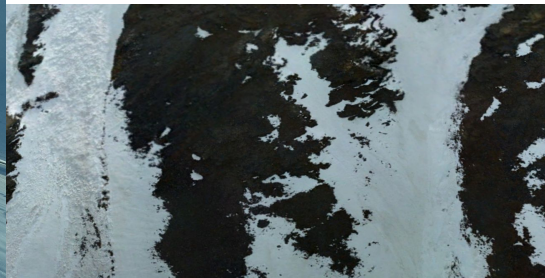
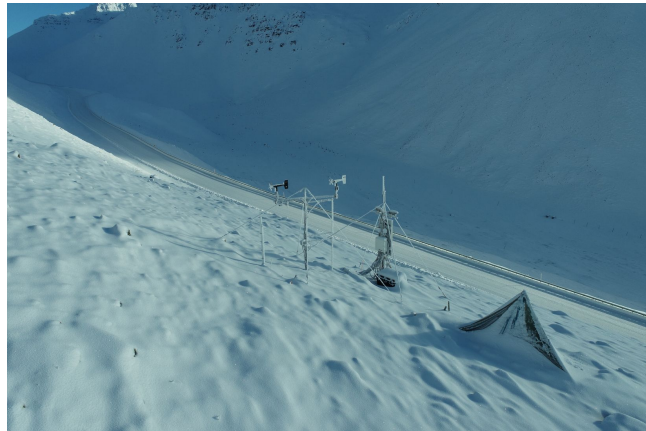
Arctic Infrastructure Development Center (AIDC)
University of Alaska Fairbanks



Integrating Winter-Hazard Stations with Unmanned Aircraft Systems to Aid in Avalanche Risk Assessments at Atigun Pass, Dalton Highway, Alaska

Eyal Saitet

September 13, 2022





Arctic Infrastructure Development Center (AIDC)
University of Alaska Fairbanks



Background- Atigun Pass

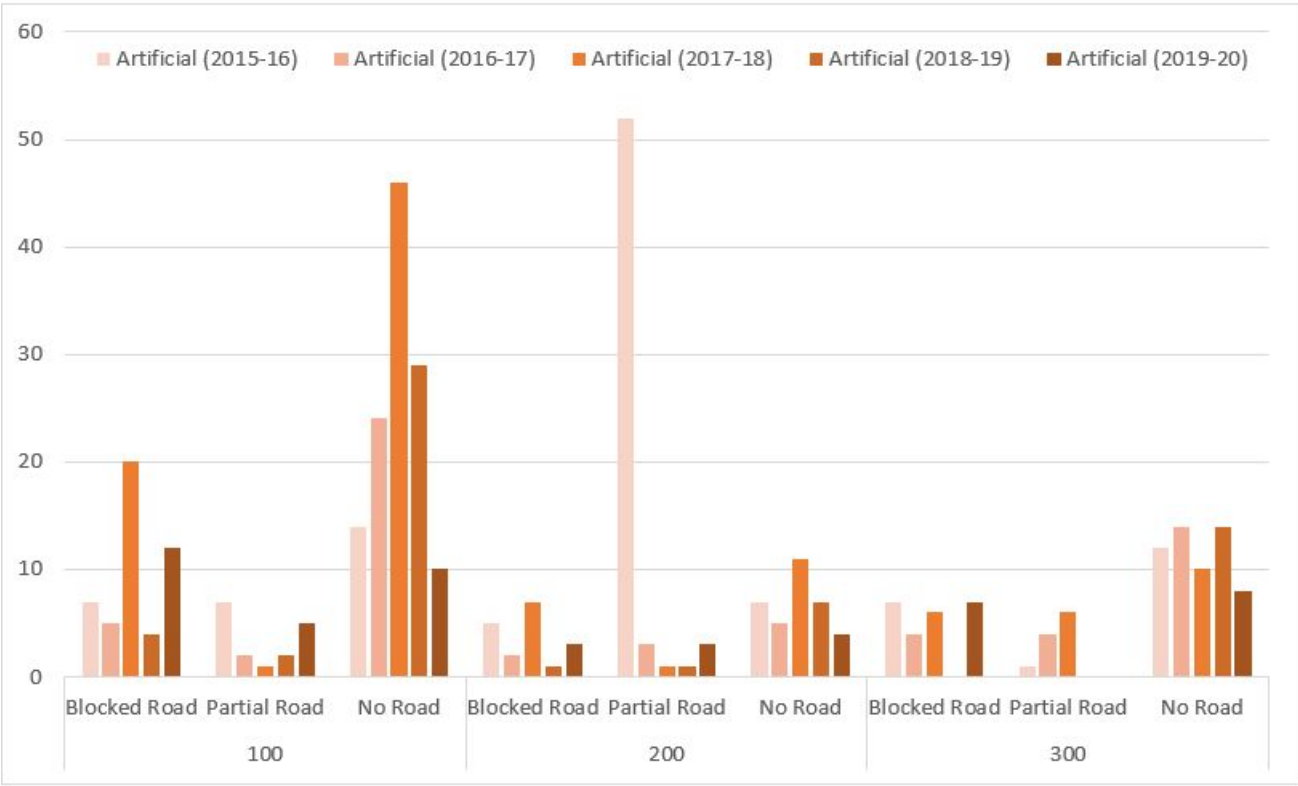




UAF Arctic Infrastructure Development Center (AIDC)
University of Alaska Fairbanks



Background-Avalanche events



Atigun Pass Winter Hazards Project



Arctic Infrastructure Development Center (AIDC)
University of Alaska Fairbanks



Background- Turning a desert data to an oasis

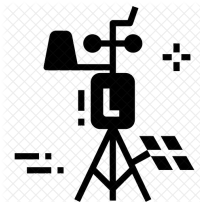
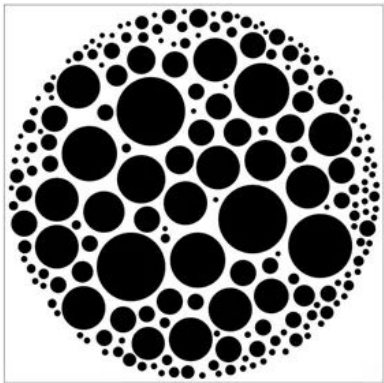




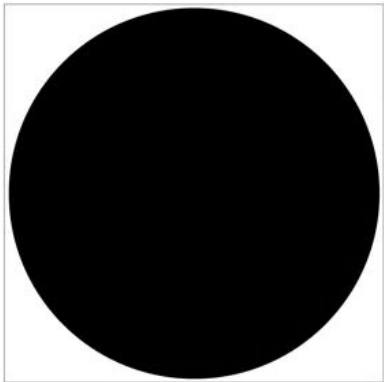
The whole is greater than the sum of parts



Spatial-temporal measurements
(snow depth, blowing snow)



Local-Continuous environmental
measurements
(snow depth, blowing snow)



A good overlap in time and space => The best overall cover

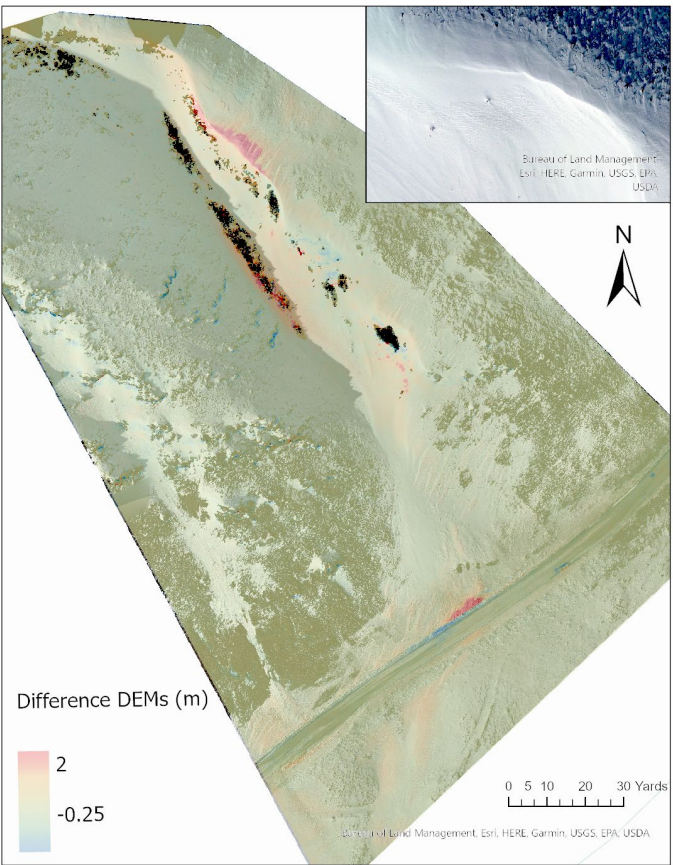
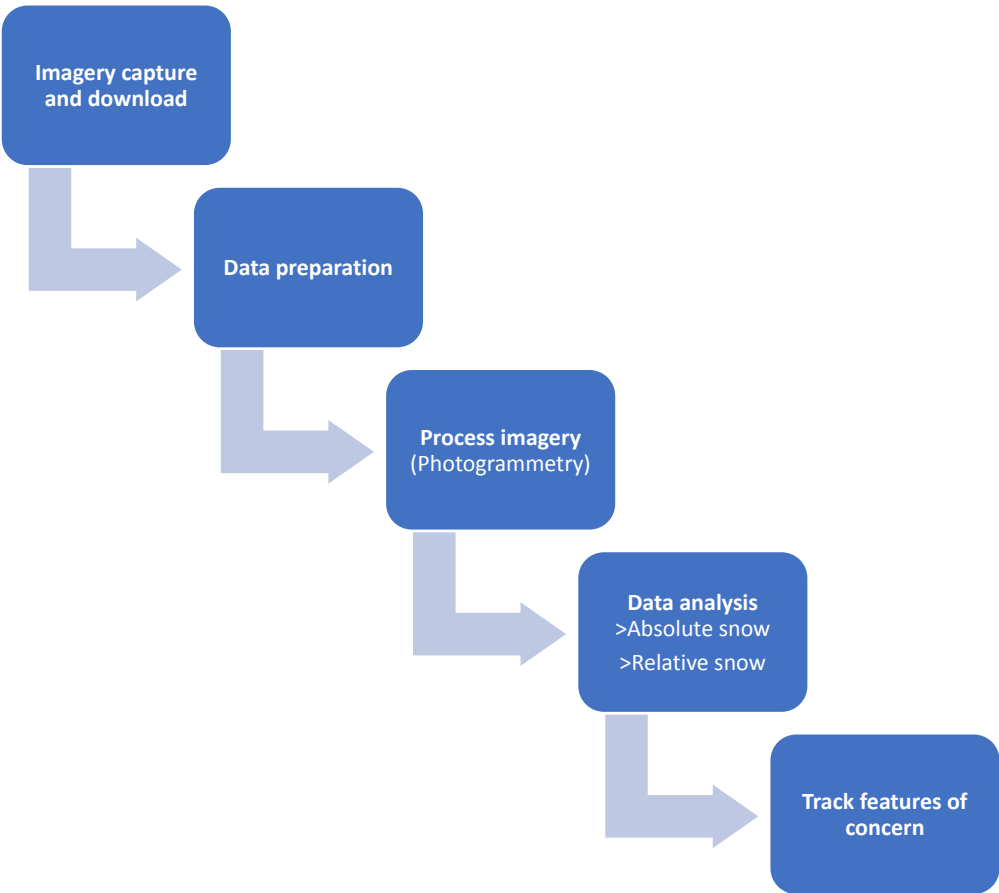


Arctic Infrastructure Development Center (AIDC)
University of Alaska Fairbanks



Elucidating snow maps from UAS

- Camera most common sensor -> photogrammetry workflow is inherit
- A hands-free: data -> information



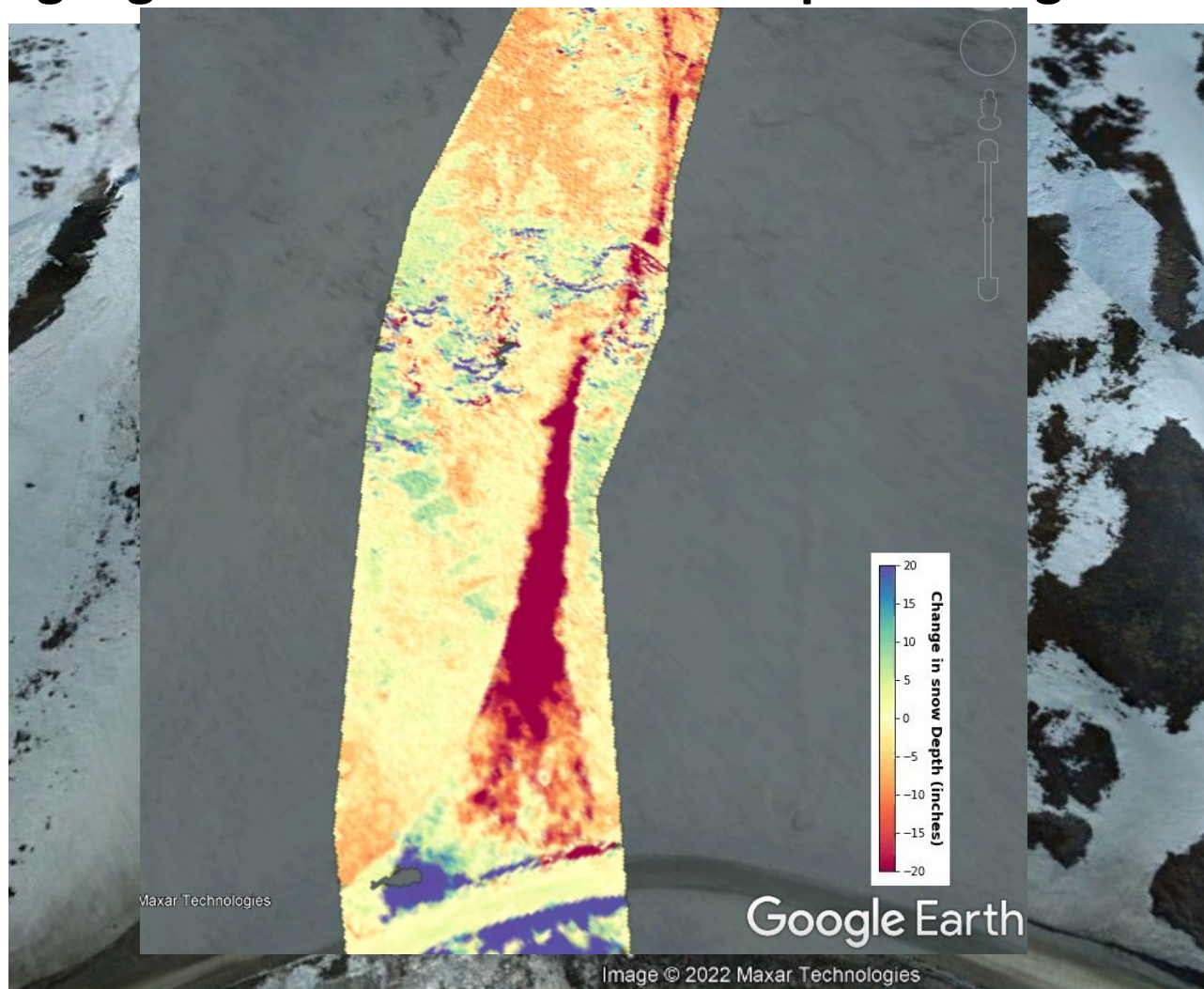
2021 Atigun Pass Winter Hazards Project



Arctic Infrastructure Development Center (AIDC)
University of Alaska Fairbanks

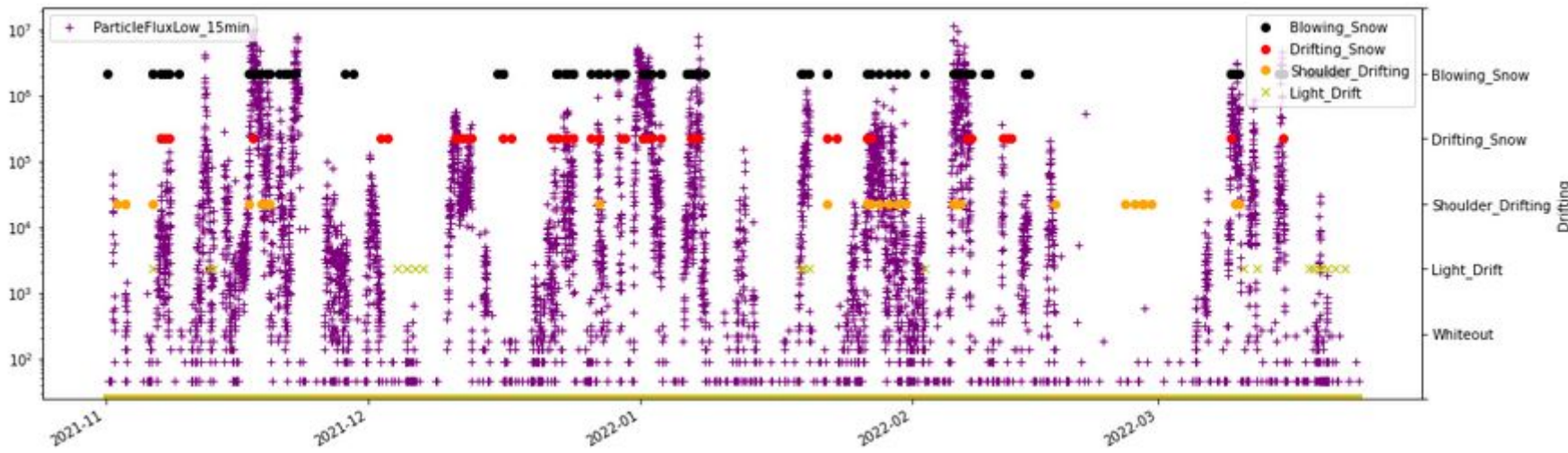


Data highlights -Automated UAS data processing





Intertwining: weather observations with M&O reporting

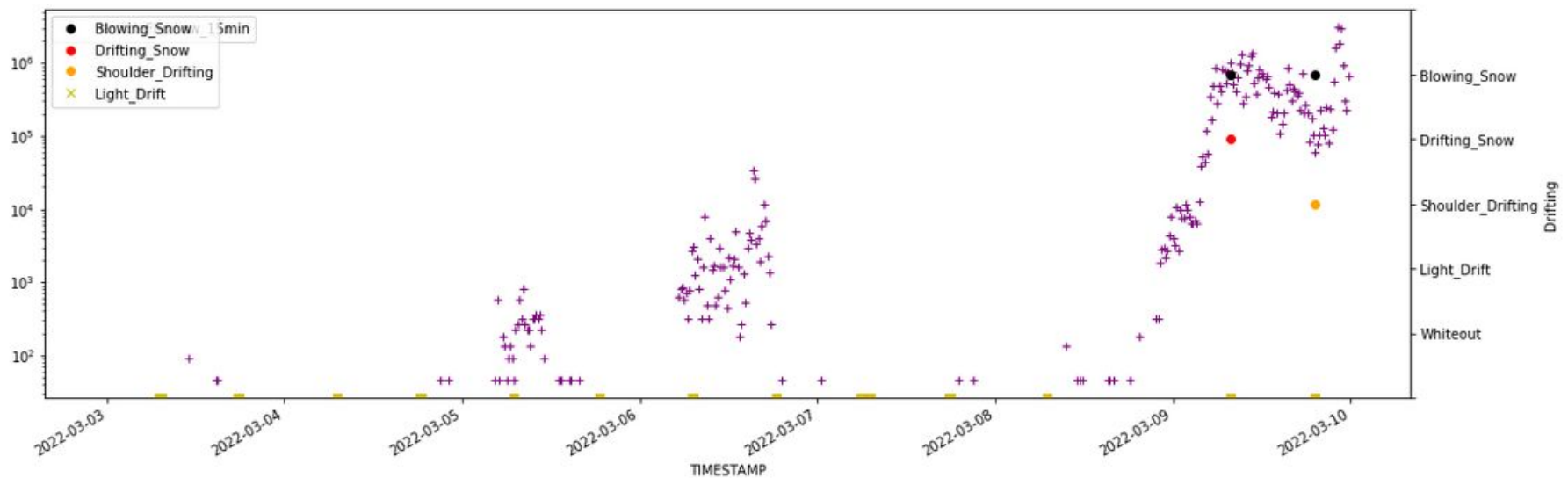




UAF Arctic Infrastructure Development Center (AIDC)
University of Alaska Fairbanks



Intertwining: weather observations with M&O reporting

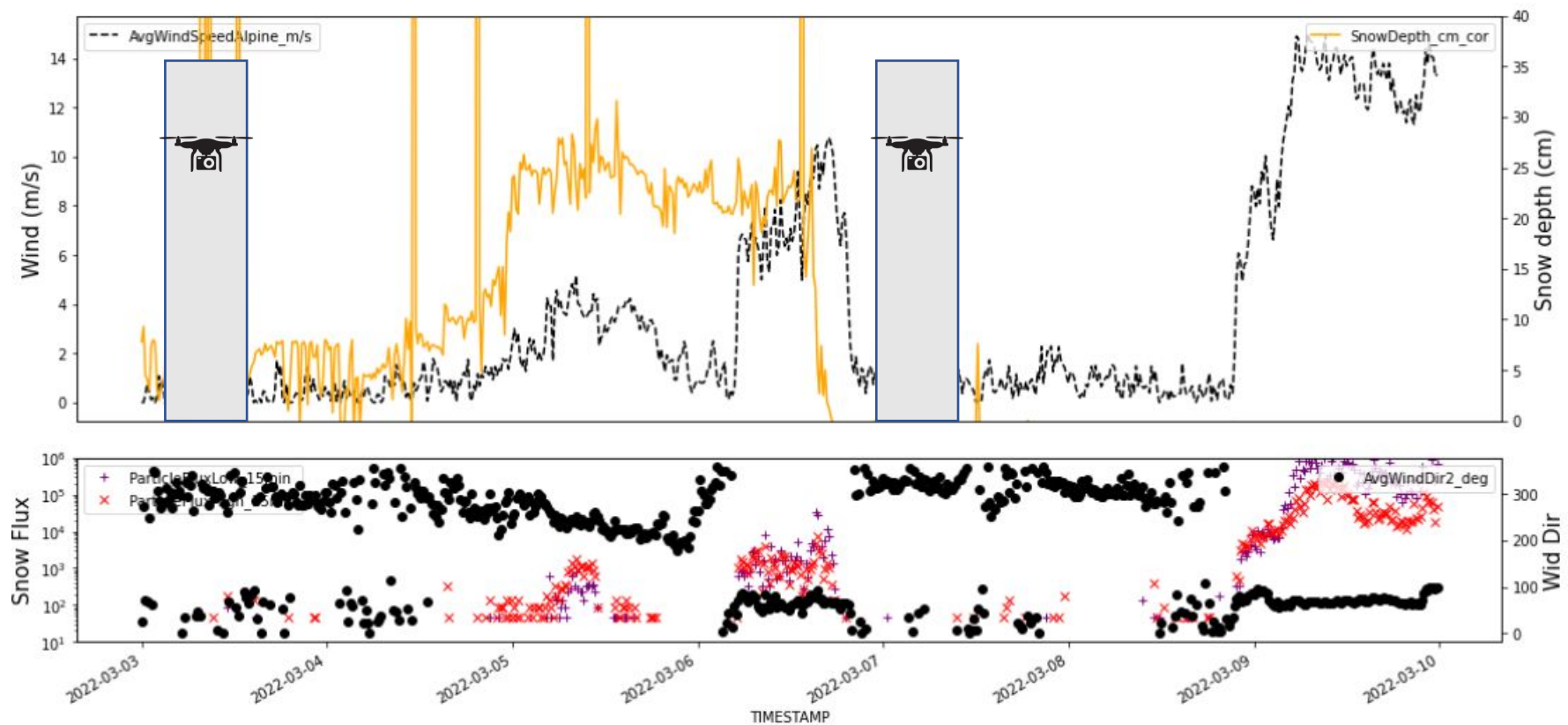




Arctic Infrastructure Development Center (AIDC)
University of Alaska Fairbanks




Intertwining –weather observations with M&O reporting



Atigun Pass Winter Hazards Project






Arctic Infrastructure Development Center (AIDC)
University of Alaska Fairbanks

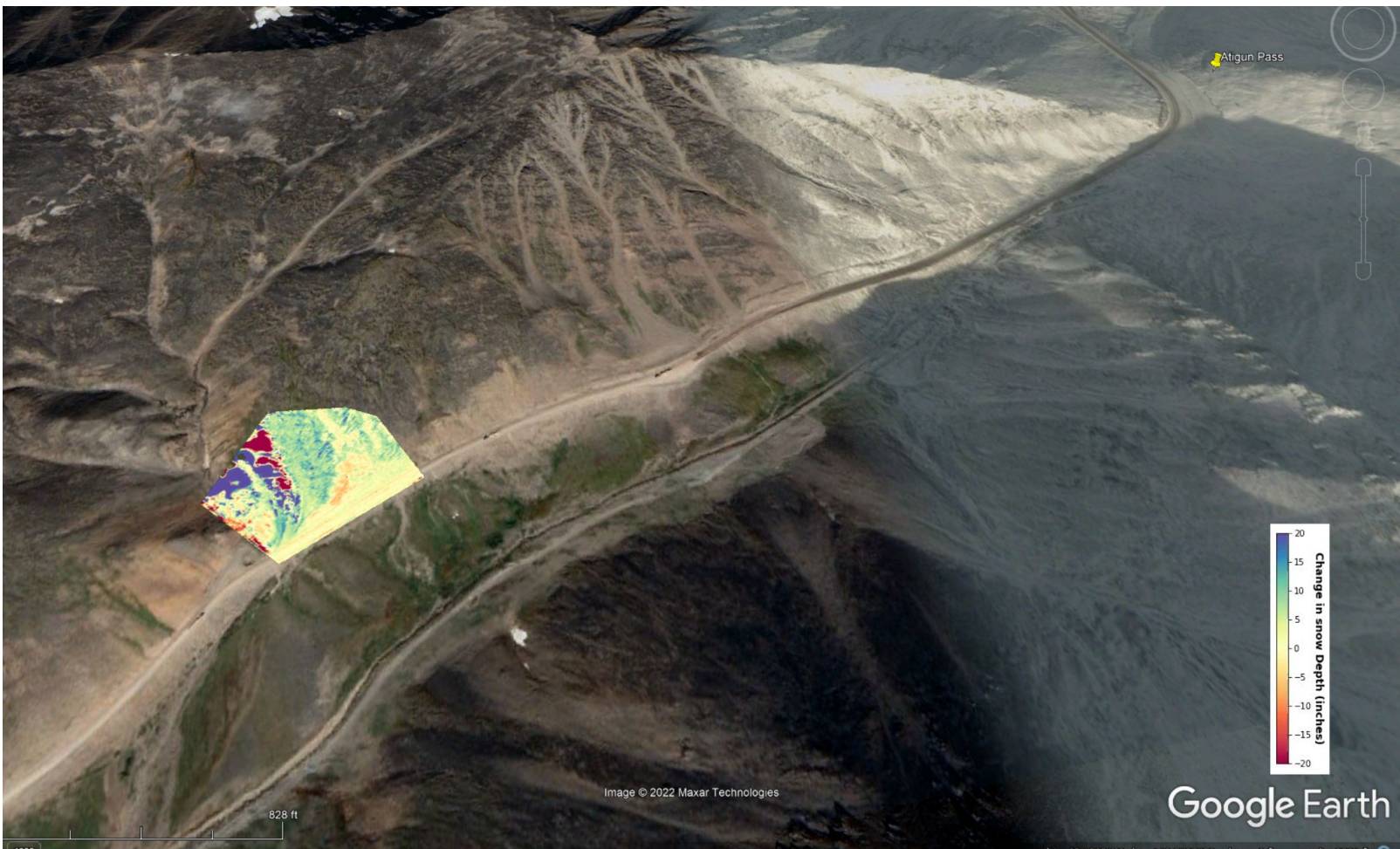


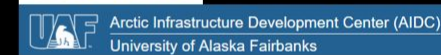
CAMPBELL
SCIENTIFIC
WHEN MEASUREMENTS MATTER



Geo-Watersheds
Scientific

Result seen in Google Earth





Summary

Without the ability to capture data everywhere all the time-
Trying to capture some data all the time and then interpolate

- Apply UAS/drone to map snow gullies ideally before and after a storm
- Continuously apply the winter hazard station observation with UAS surveys

Goal: predict changes to snow features/gullies during a storm



Questions?

