Soil Moisture and ALT data Synthesis to Validate SAR Products

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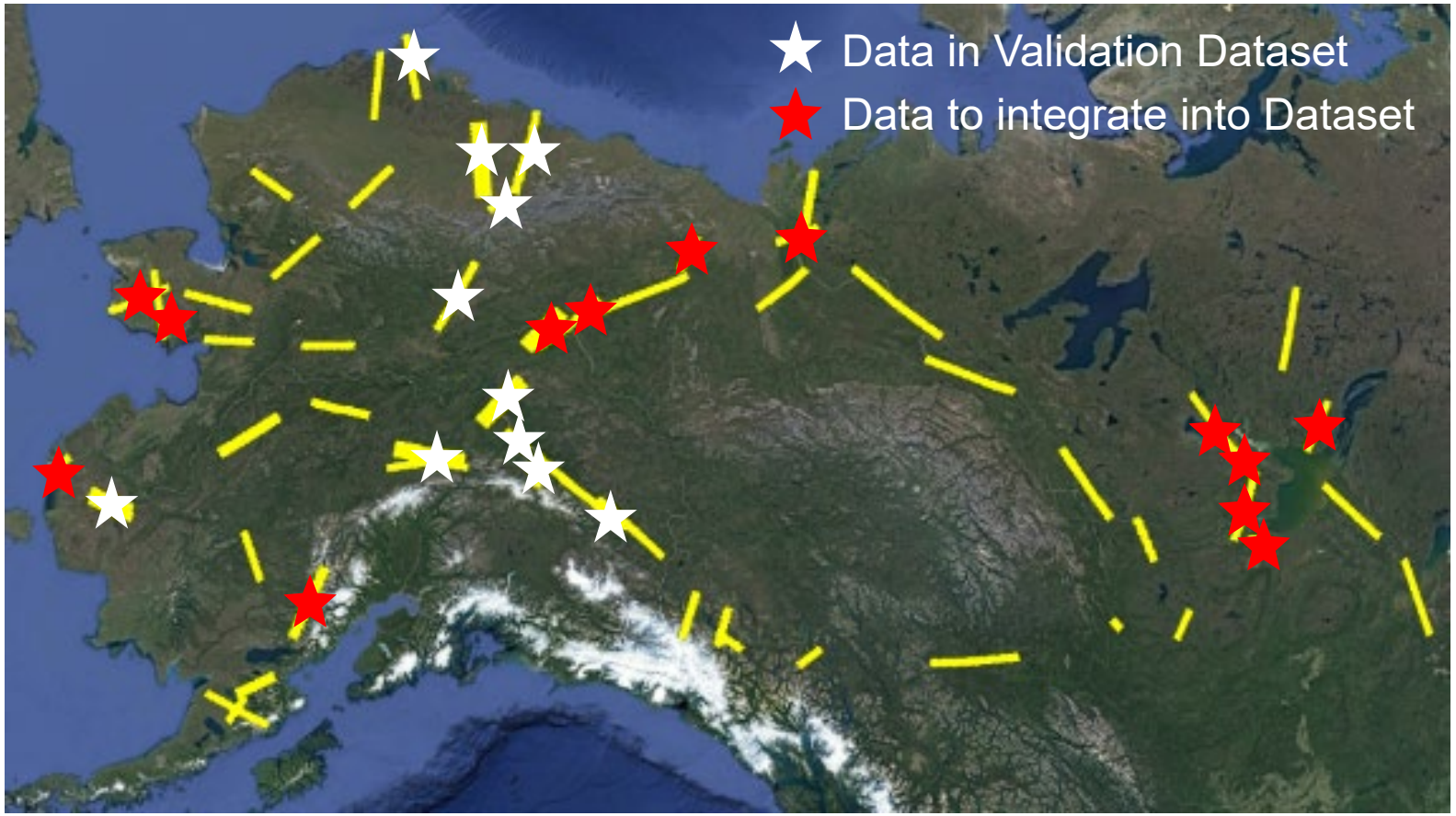
Multiple ABoVE Teams

Goal: validate all 66 flight lines

- Active Layer Thickness (ALT)
- Volumetric Water Content (VWC)
- Share data from other ABoVE Teams



Techniques

ALT: Probe

ALT: GPR

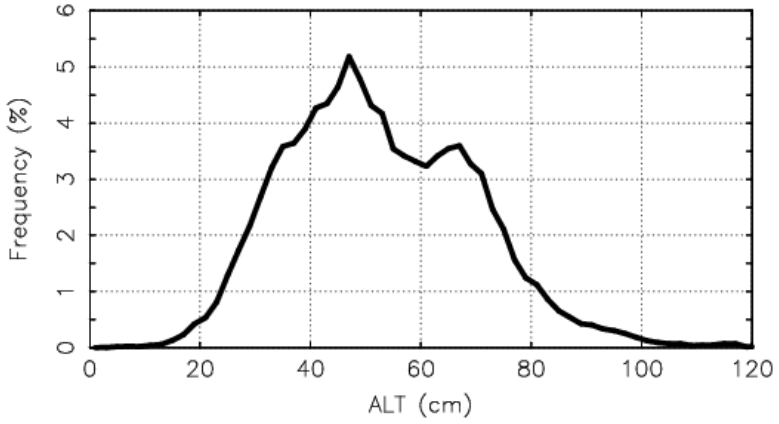
VWC: HydroSense II

VWC: Probe + GPR

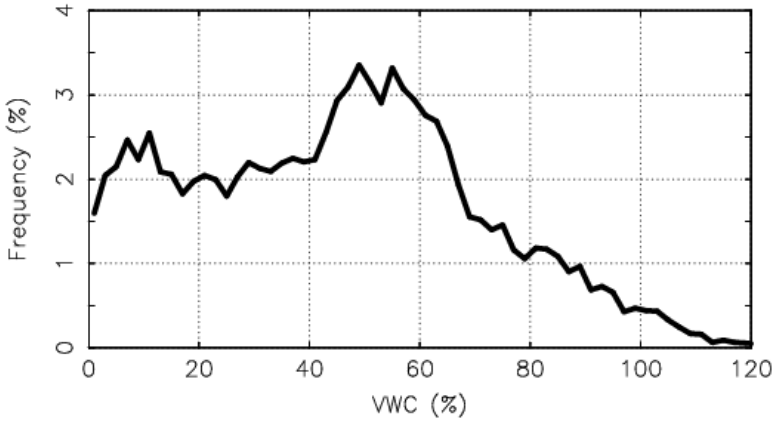
VWC: Duel EM

Data Summary: ~50 km, 100 sites, 20 lines

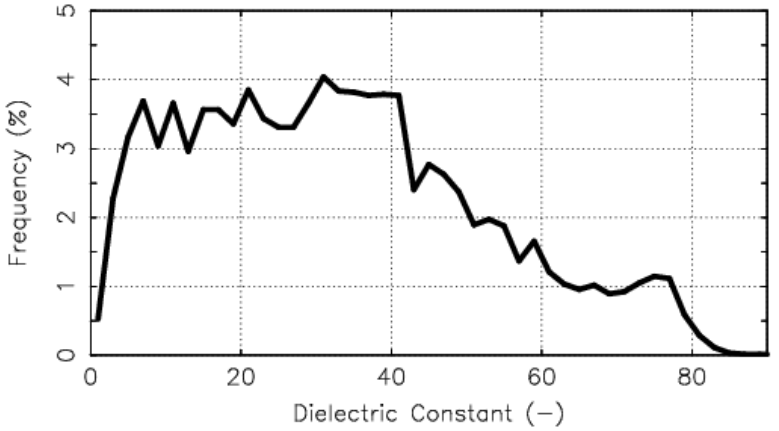
ALT N = 203,265



VWC N = 14,287

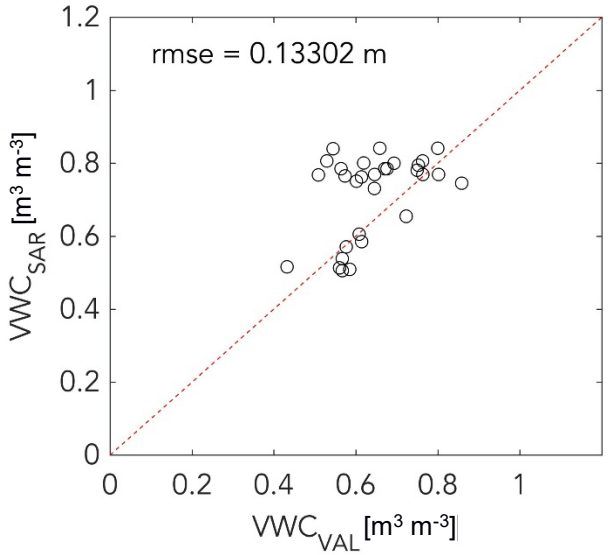


Dielectric N = 6286

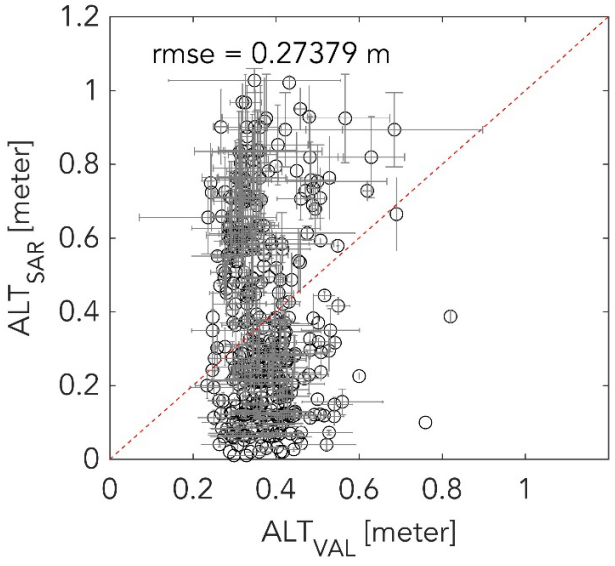


Validation Example: Utqiaġvik (Barrow)

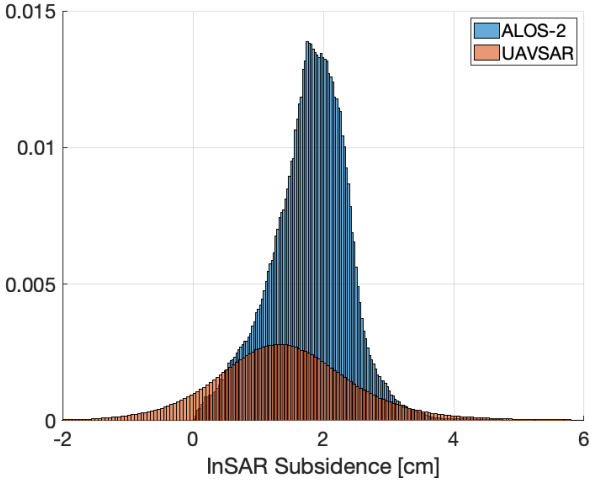
VWC (-)



ALT (m)

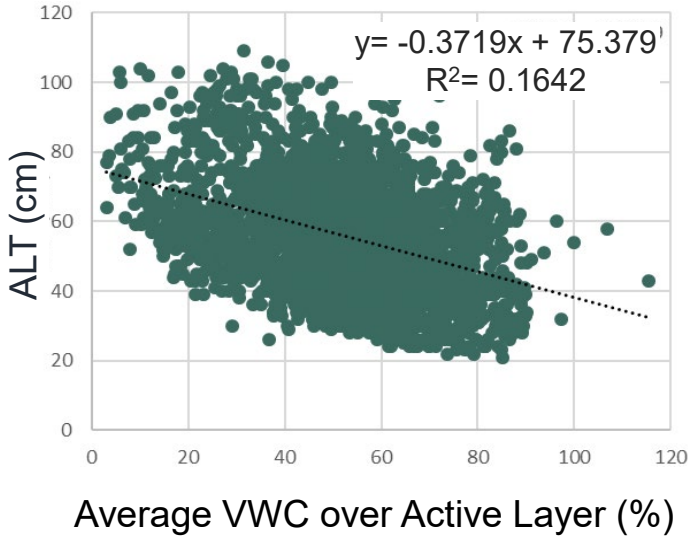


Satellite vs. Airborne Subsidence (cm)

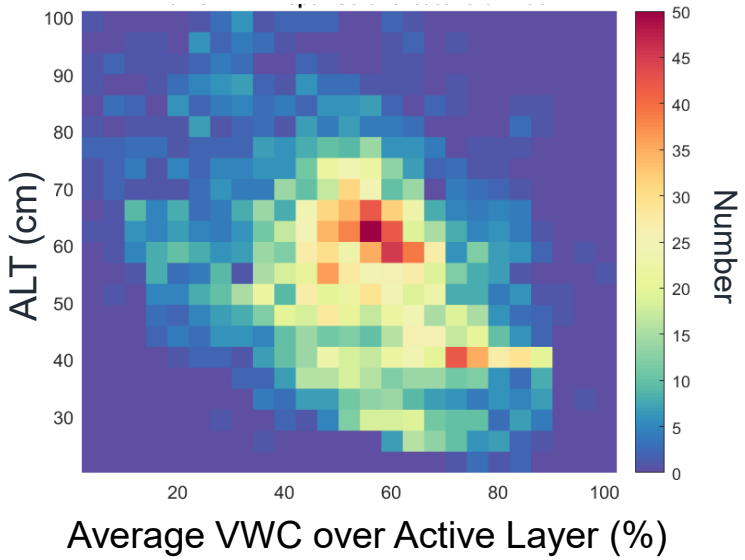


Does heat capacity or thermal conductivity control ALT?

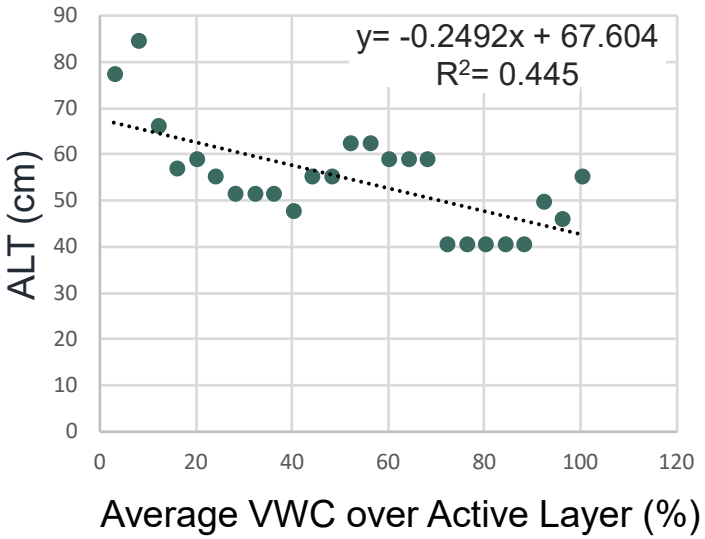
Shotgun Blast



2-D PDF



Most likely Regression



- No relationship for 12 and 20 cm HydroSense II data!

Credit: L. Clayton

Next Steps: Integrate more data

- Integrate more data
- Do you have ALT and VWC data?
  - Contact Kevin Schaefer (kevin.Schaefer@nsidc.org)
- Publish the dataset