Satellite Snowfall Rate Validation Using SNOTEL Observations

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Objectives

- Validation satellite snowfall rate using ground SNOTEL observations.
- Create collocation package

Data

SNOTEL — Alaska

- Daily and Hourly data
- Precipitation, SWE, temperature

Satellites — MOB, MOC, N20, N19, NPP

- 2 - 6 passes a day

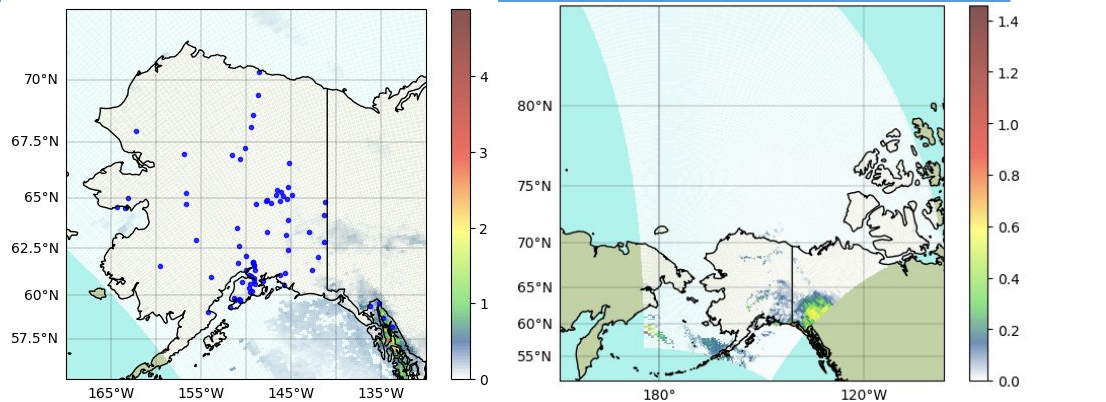New machine learning algorithm for snowfall rate product

- Improvement at low temperatures

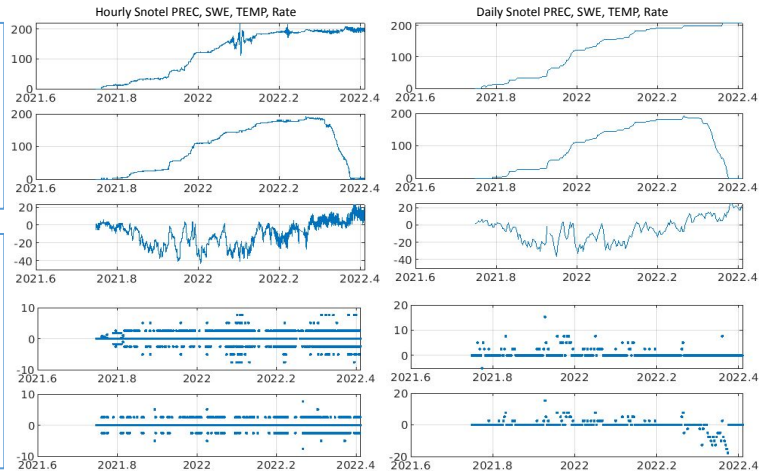## Methodology

Collocate satellite and SNOTEL

Criteria:

- 50km x 50km
- 2 hour time frame after satellite pass

Challenges

Data resolution:

2.54mm

Daily:

Rate Validation

Hourly:

Snow Detection

Results

- Correlation between SNOTEL and satellite SFR
  - SNOTEL data point quality best at lower latitudes with more human population
- Snow detection probability of detection around 0.68
- Correlation and Snow detection shows similar patterns depending on latitude
- Collocation Package

Future Work

- Validate all historical data
- Expand to regions other than Alaska