New York State Mesonet Snow Network

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- Reports every 6 minutes
  - Over 1,000 Sensors
  - 967,205 observations per day
  - 25,000 upper air obs per day

- All data collected, quality controlled, archived, and disseminated to customers in real-time

NYSM Snow Network

2018-2019 Winter Snow Fall

First 3-D Profiler Network
- 17 sites
  - Generally placed within 500 m of a Standard Site

LIDAR:
  - Vertical wind profiles up to 3 km AGL
  - SNR/Cloudscope 306

Microwave Radiometers:
  - Vertical temperature and moisture profiles up to 4 km AGL
  - Selected Radiometrics MP-3000A

Mobile radiometers system for calibration and special operations (interferometer)

First Flux Network (17)

- Four-component radiation (K&Z CNR4)
- 3D Sonic and gas analyzer (CS 15240)
- Ground heat flux plates (Hukasflux)

Challenges in Snow Depth:
- Snow drifting, blowing & Sastrugi
- Horizontal inhomogeneity
- Changes in reference height
  
- ...

Comparisons of CS725 & manual SWE

- Larger SWE from CS725 than manual snow core
- Much larger differences for frozen soil

- Smaller SWE at OLDf from CS725 due to wet soil

Snow depth, SWE, snow density, precipitation
(Jan 2019 at North Hudson)

- Precip accumulation 5.98
- SWE 0.57
- Snow Depth 0.97
- Snow Density 0.16
- High correlation among SWE, depth and precip.
- Lighter snow after big snow storm on 1/20

Conclusions

- NYS provides ideal locations for all types of winter storms over complex terrain (blizzard, lake-effect snow storms, snow squall, ice storms ...)
- Given its complex terrain and diversity, NYS provides unique challenges and opportunities for satellite measurements.
- NYSM provides comprehensive snow measurements along with other surface and atmospheric measurements with unprecedented high spatial and temporal resolution.

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Sastrugi