# Maximizing Insights: The Power of Leveraging Multiple Data Networks for a Comprehensive Forensic Analysis

Kelly Cebulko, *STM Weather*

“Consider that within 50 miles of downtown Boston there are over 6 dozen civilian airport sites, 5 military sites, and over 5 dozen cooperative weather stations, producing many thousands of observations each day..”

WARD AND LEAVITT, BULL. AM. MET. SOC., DECEMBER 1971

# Data Sources: The Foundation

ASOS/AWOS

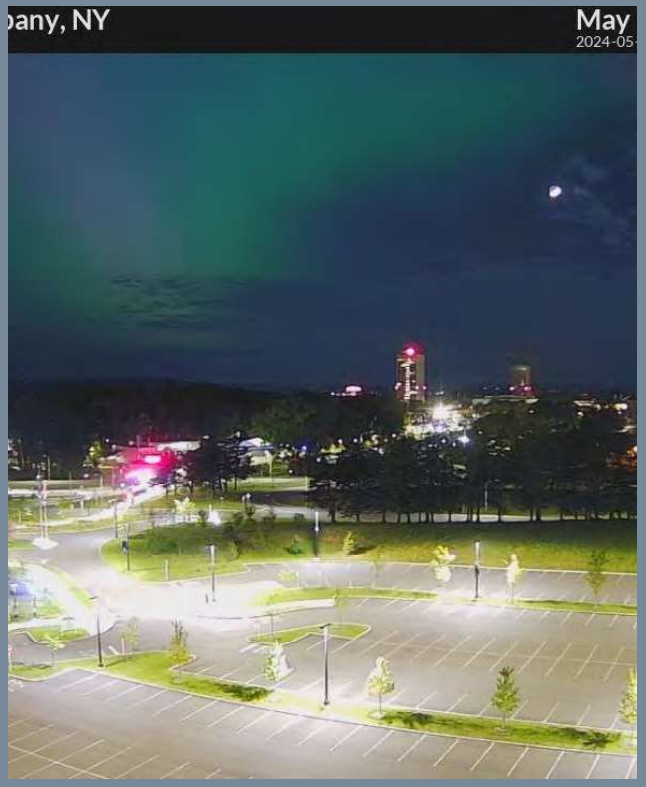
Radar

NWS Text Products

# Data Sources: The Framework

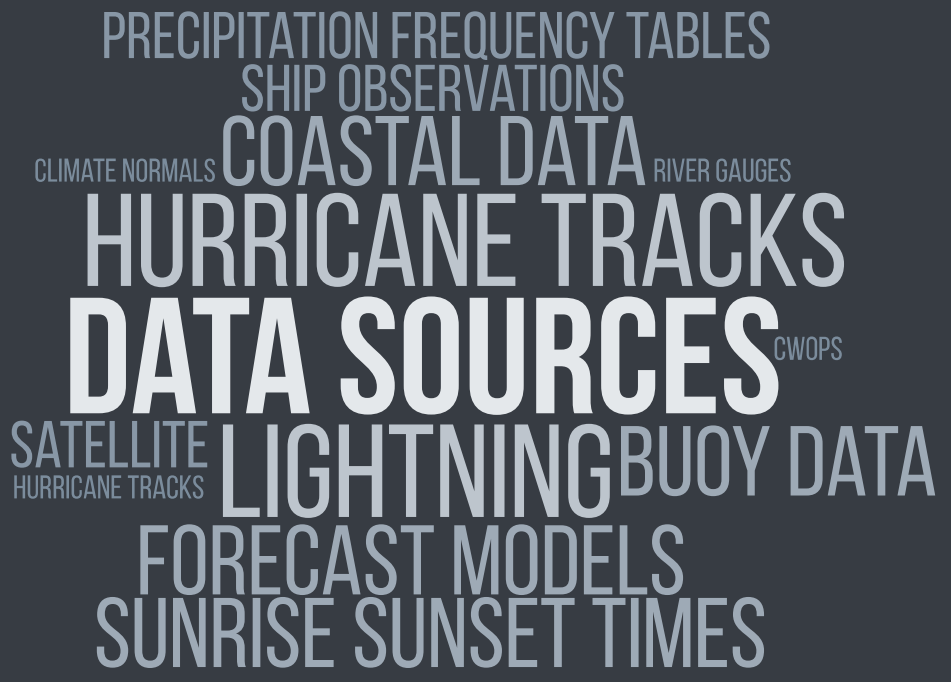
COOP

CoCoRaHS




Mesonets

# Data Sources: The Ad-hocs



# Informative, Diverse, Reliable

What our supplemental resources do well

# Station Metadata

Open Site Photos Viewer

## General Information

| | |
|---|---|
| **Station ID** | VOOR |
| **Location** | 3.8 km (2.4 mi) W of Voorheesville |
| **County** | Albany |
| **Latitude** | 42.65242° / N 42° 39' 8" |
| **Longitude** | -73.97562° / W 73° 58' 32" |
| **Elevation** | 115.1 meters / 378 feet |
| **Installed** | August 16, 2016 12:10 pm |
| **Station Number** | 3 |
| **Climate Division** | 5 - Hudson Valley |
| **NWS Forecast Office** | ALY - Albany, NY |
| **Type of Site** | Vineyard/Orchard |
| **Soil Type** | Chenango gravelly silt loam, loamy substratum |
| **Obstructions within 100m** | Orchards, trees |
| **Surroundings** | Open area surrounded by orchards and some larger trees |

Show Measured Variables >

## Soil Information

The NYS Mesonet collects soil samples from each level of soil where we install instruments. The soil samples are sent to a laboratory for analysis. This table shows the soil composition at each level.

| | % Clay | % Sand | % Silt | Chart | Texture |
|---|---|---|---|---|---|
| **5 cm** | 11.2 | 44 | 44.8 | | loam |
| **25 cm** | 10.3 | 46.6 | 43.2 | | loam |

## WMO Classifications

WMO guidelines give different variables a classification number, with 1 being the best. Higher-numbered classifications indicate that the site's surrounding environment may cause uncertainty in the data.

| | | |
|---|---|---|
| **Temperature/Humidity** | 1 / 5 | |
| **Surface Wind** | 3 / 5 | Roughness class = 6 because of orchards and trees |
| **Precipitation** | 2 / 5 | Small group of trees to the N with angular height of 17 degrees and angular width of ~5 degrees |

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Current Location: Elev: 55 ft. Lat: 39.8367° N Lon: 75.0446° W
Station: **SOMERDALE 4 SW, NJ US USC00288173**

# Record of Climatological Observations

**These data are quality controlled and may not be identical to the original observations.**

Generated on 05/08/2024

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: Unknown Observation Time Precipitation: 0700

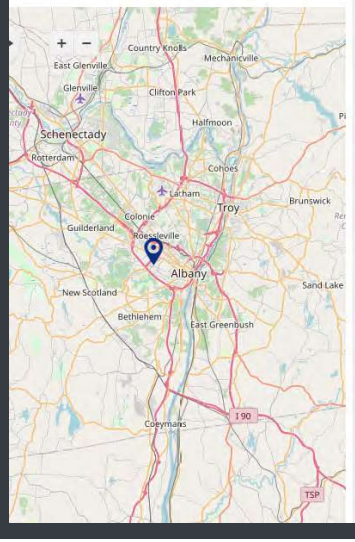
## Station Information

| | |
|---|---|
| City | **Hamilton** |
| State | **NJ** |
| Alt. name | **Mercer County Soil Conservation District** |
| County | **Mercer** |
| Elevation | **19 m** |
| Wind Sensor Height | **3 m** |
| Latitude | **40.245472** |
| Longitude | **-74.659353** |
| Type | **Campbell Scientific** |
| Network | **Mesonet** |
| Heated Rain Gauge | **No** |
| Activation | **2010-01-01** |
| Deactivation | |

## Deployed Sensors

Texas Electronics TR-525USW
R.M. Young Company 03001
Apogee SP-110
Rotronic HC2S3

Map




## Station Information

| | |
|---|---|
| Station Number | NY-AB-23 |
| Station Name | Albany 0.7 SW |
| Creation Date | Jan 11, 2010 |
| Country | USA |
| State | New York |
| County | Albany |
| Longitude | -73.810343 |
| Latitude | 42.660193 |
| Elevation | 256 ft. |
| NWS CWA | Albany ( ALY ) |

February 1, 2020 12:00 AM EST
Schaghticoke, NY
3
2
1
0
NYS Mesonet
UNIVERSITY AT ALBANY
http://nysmesonet.org/

# Evolution of Winter Storm

# Evolution of Winter Storm

# Evolution of Winter Storm

# Evolution of Winter Storm

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# Helpful Comments: CoCoRaHS and COOP

## COOP Regional Reports

"Numerous reports of icy roads this morning where the roads have gone untreated, reports from local, county, and state DOT departments within the county of Hudson. still, isolated reports of icy surfaces were noted at this time. APM / HSNN4"

## CoCoRaHS Depth Notes

**Snow depth reported: 1.5"**

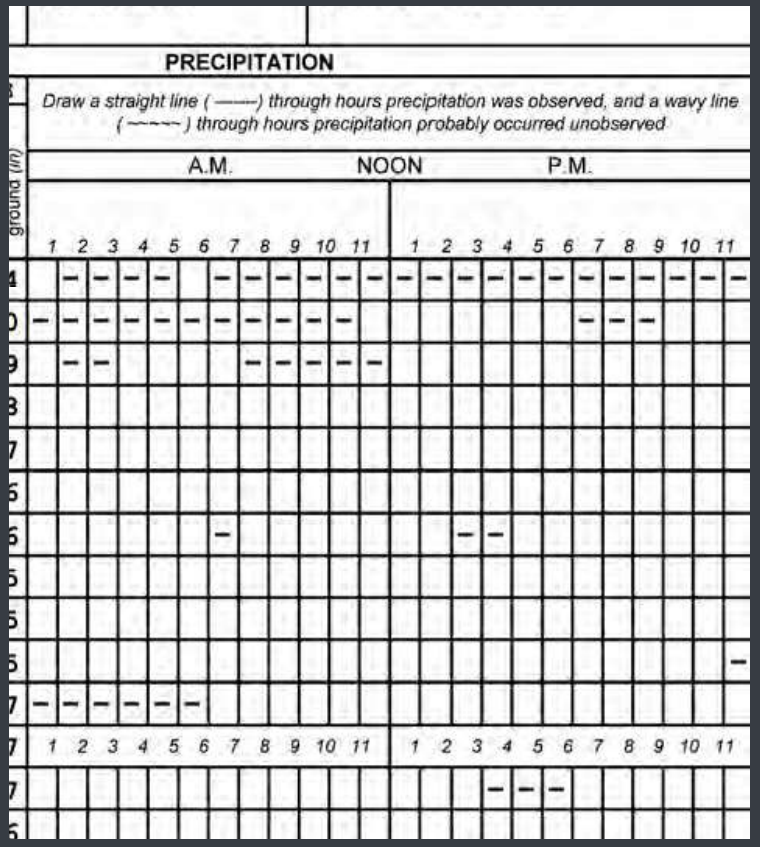
Comment: "Snowpack varies from 0 to 3 in"

## CoCoRaHS/COOP Precipitation Times

Precipitation observed times

Precipitation likely times

Rain and sleet began about 11 am




## CoCoRaHS/COOP Precipitation Types

"snow began about 7:30 and there was an inch on the ground by 9:30."

"Snow began between 7-8am changed to brief period of sleet about 11am at which time I measured 1.3" accum. Changed quickly to freezing rain which lasted into early afternoon with aprox 0.1" ice then plain rain mid afternoon thru early eve ended by 10pm"

## Almost helpful...but not quite

**Snow depth reported: 7"**

"The Total Snow is measured in an area where no sunlight hits right now during the day. The areas, where sunlight hit have little to no snow now"

# Summary

| Daily Precipitation Report | |
|---|---|
| **Station Number: MA-MD-12** | **Station Name: Acton 1.3 SW** |
| **Observation Date** | 1/8/2024 7:00 AM |
| **Submitted** | 1/08/2024 7:04 AM |
| **Gauge Catch** | 0.45 in. |
| **Notes** | Overcast, light air, snow ended around 9PM yesterday; 25.0F, RH 93%, BP 30.13" rising. Quite a bit of snow drifting yesterday afternoon. Snowpack depth average of 5 locations. |
| **Snow Information** | |
| **24-hr Snowfall** | 5.6 in. |
| **24-hr Snowfall SWE** (Snow Water Equivalent) | 0.47 in. |
| **24-hr Snowfall SLR** (Snow to Liquid Ratio) | 11.9 : 1 |
| **Snowpack Depth** | 10.0 in. |
| **Snowpack SWE** (Snow Water Equivalent) | 1.09 in. |
| **Snowpack Density** | 11% |
| **Duration Information** | |
| **Precipitation Began** | -- |
| **Precipitation Ended** | -- |
| **Heavy Precip Began** | -- |
| **Heavy Precip Lasted** | -- |
| **Duration Time Accuracy** | -- |
| **Additional Information** | |
| **Flooding** | -- |
| **Additional Data Recorded** | No |

## Data consistency

Long term record, no missing data, multi-day totals noted when data missing

## Anything extra beyond data

Metadata, photos, comments

## Future:

- Certification of comments/observation time
- More info on surrounding area, photos or text

# Thank You!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http://www.stmweather.com

https://www.linkedin.com/company/stmweather

https://www.facebook.com/STMWeather