Introduction to the Maryland Mesonet

Comprehensive Weather Monitoring for the State of Maryland

MWCOG Regional Transportation Resilience Subcommittee - May 21, 2026

UNIVERSITY OF MARYLAND

FEARLESSLY FORWARD

MARYLAND Department of Emergency Management

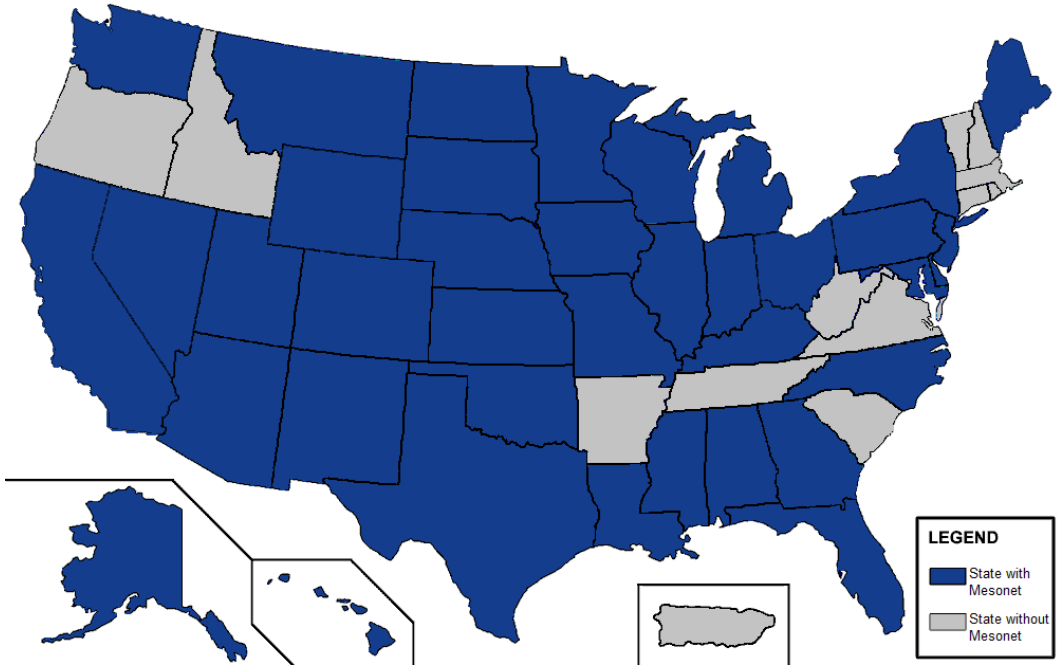
What is a Mesonet?...

MARYLAND MESONET

A University of Maryland + Maryland Department of Emergency Management Partnership

A series of integrated weather stations that span a regional scale, often a state.

- **Spacing 10-40 miles apart (MD = ~15 mi)**
- **Between 10-100+ stations (MD = 72)**
- **Inter-comparable instrumentation**
- **Designed to serve the region's needs**



NATIONAL MESONET

<u>Other East Coast Mesonets:</u>

Delaware Mesonet – 80 Stations
New York Mesonet - 127 Stations
North Carolina EcoNet - 45 Stations
New Jersey Weather Network - 66 Stations
Pennsylvania Environmental Monitoring Network – 65* Stations
Maine Mesonet – 6* Stations
Vermont Mesonet– 3* Stations

*** Like us, is currently growing their network**

jthyde@umd.edu

Our Mission : Advance Resilience & Commerce

Agriculture & Environment

- Growing Degrees
- Pest and Weed Control
- Forestry
- Fire Prevention & Control
- Research

State and Local Resilience

- Policy Decisions
- Roads and Infrastructure
- Rapid Assessment
- Water Use & Management
- Crimes & Forensics
- Emergency Management

Efficiency of Commerce

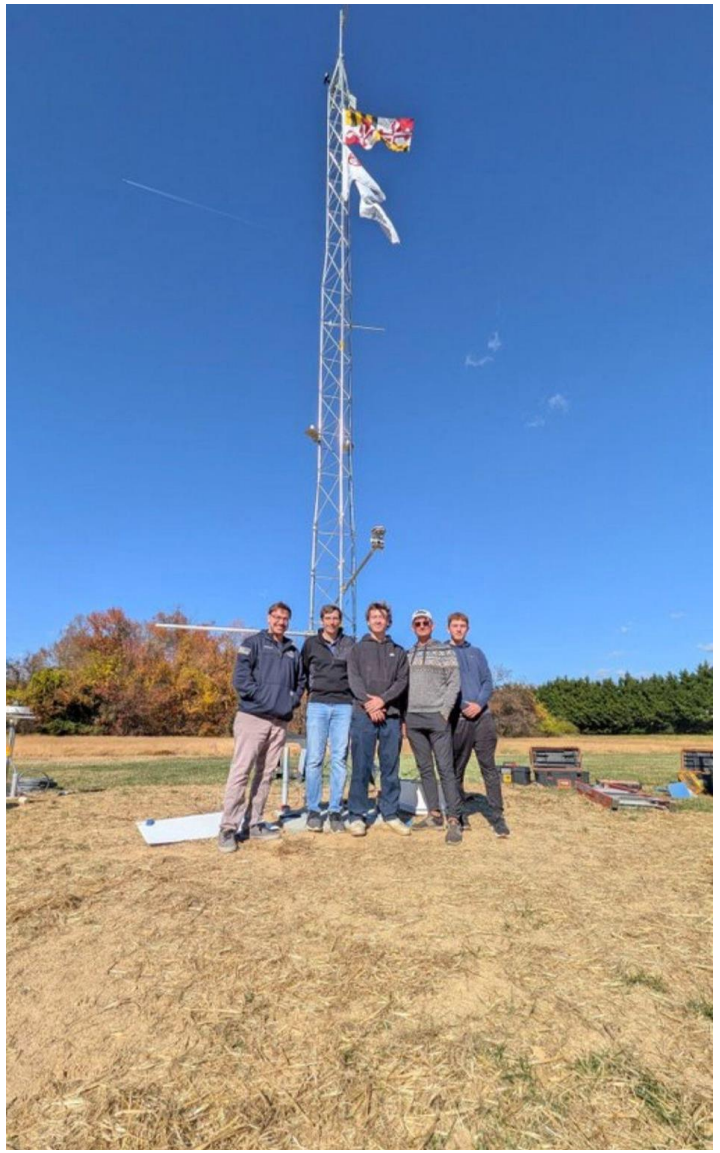
- Utility Planning & Operations
- Energy Resources
- Construction
- Media
- Operations Efficiency

What Makes Mesonet Different?

The Mesonet provides local, trusted data for continuous monitoring.

- We live here too!
- Measurements, in your community, for your community.
- We know our stations, and communities personally.
- Long term support, no “hit and run science”
- Test, Calibrate, Replace. Accuracy is priority.
- “We measure the weather today to prepare for tomorrow”

Mesonet is designed to give real-time data-driven solutions to local weather problems.



jthyde@umd.edu

Mesonet Timeline

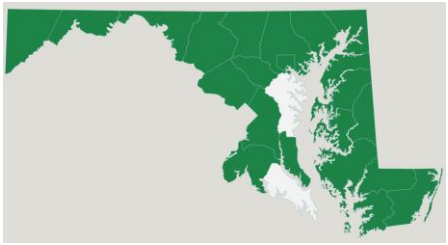
2018: Maryland Department of Emergency Management conceptualizes the process of bringing a Mesonet to Maryland

2020: UMD Atmospheric Sciences under the leadership of Dr. Sumant Nigam and MDEM establish partnership to advance Mesonet concept.

2022: Governor Larry Hogan designates $4 million to the project & agreements between UMD and MDEM are finalized.

2024: First stations installed and real-time website established. Data is fed to National Weather Service.

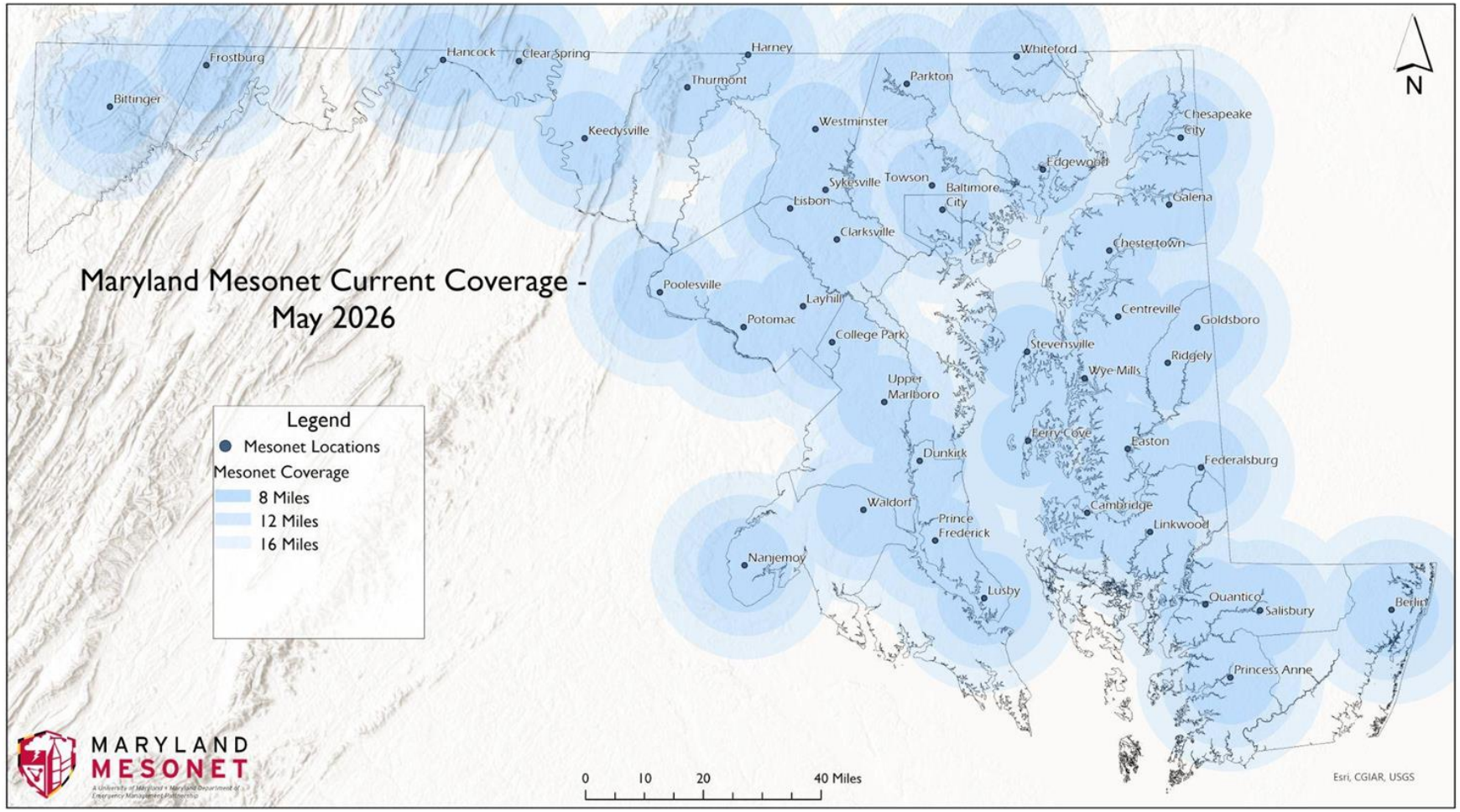
Today: Initial build out of project more than halfway complete with 43 stations operational.



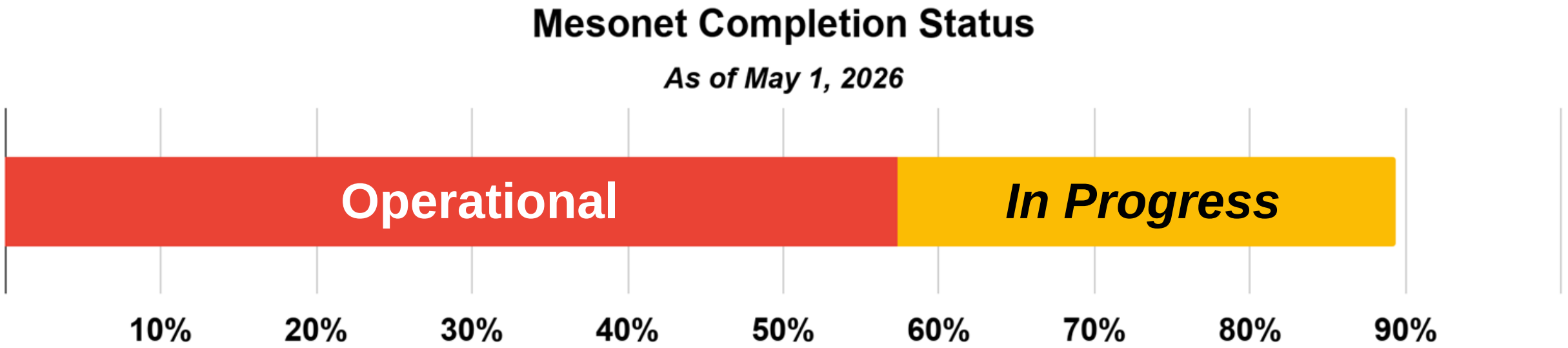
2027: Expected completion of the initial network buildout (72 Stations).

2018 | 2020 | 2022 | 2024 | 2026 | 2028

Maryland Mesonet Buildout Progress: May 2026



Mesonet Station Progress:



jthyde@umd.edu

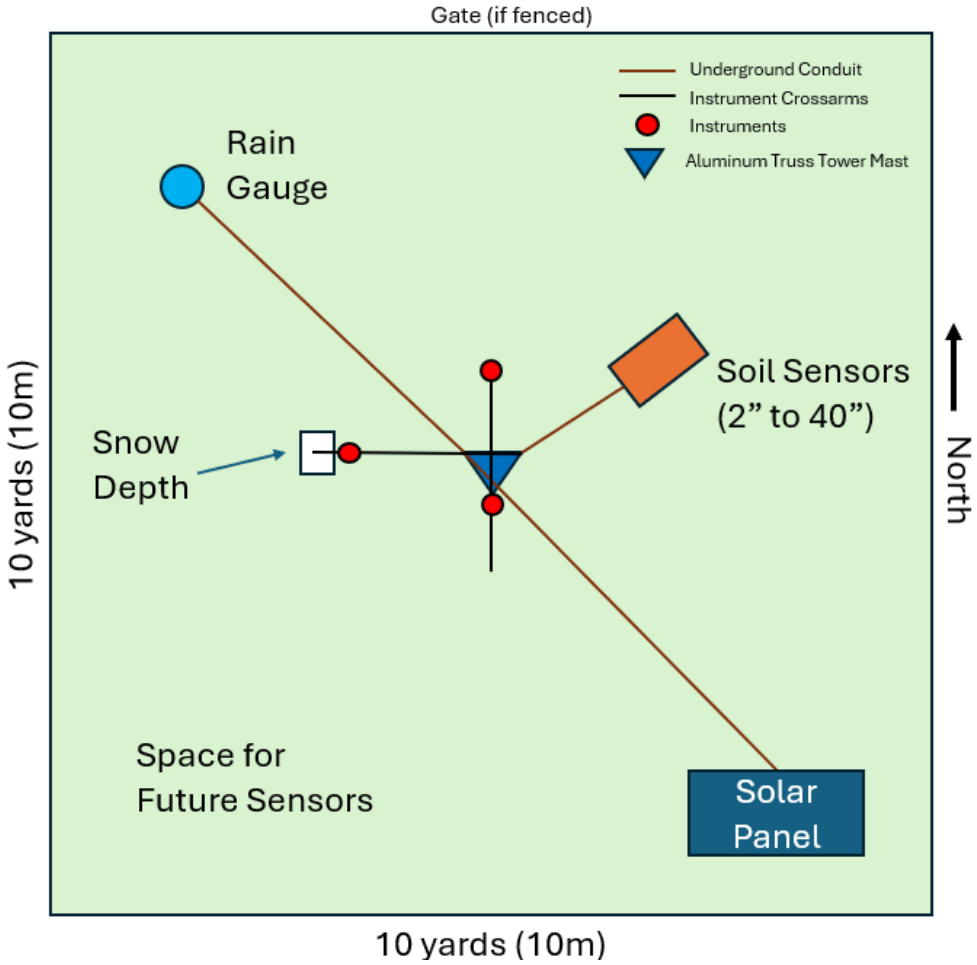
What the Mesonet Measures

- Temperature
- Dew Point / Humidity
- Wind Speed & Direction
- Sunshine & Clouds
- Soil Temperature & Moisture
  - 2”,4”,8”,20”,40”
- Rainfall
- Snow Depth

jthyde@umd.edu

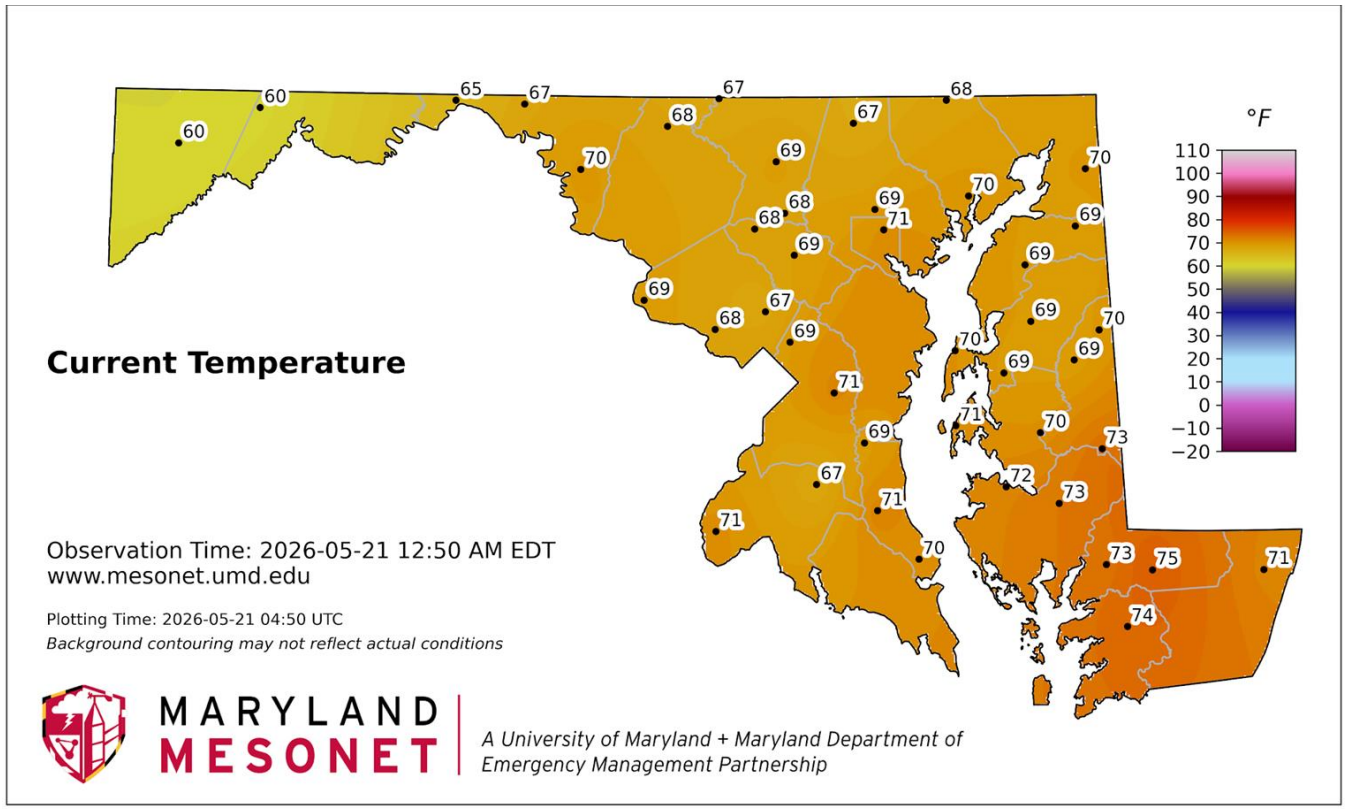
Standard Mesonet Site

[redacted]



jthyde@umd.edu

Mesonet Website: mesonet.umd.edu



Current Conditions At College Park As of 10/27/2025, 8:32:00 AM

Current Wind

Wind Direction: N
Wind Speed: 1.4 mph
Max Gust: 1.6 mph

Current Temperature

38 °F

Dew Point: 38 °F
Relative Humidity: 100%
Heat Index: 38°F

Other Parameters

Rainfall (Last Hour): 0.00 in.
Rainfall (Since Midnight): 0.00 in.
Sea-Level Pressure: 1027.8 mb
Solar Radiation: 166 W/m^2

Past Conditions

	Since Midnight	Yesterday
High Temp:	38 °F	62 °F
Low Temp:	34 °F	34 °F
Avg. Temp:	36 °F	47 °F
Rainfall:	0.00 in.	0.00 in.
Max Wind:	4.0 mph	8.5 mph

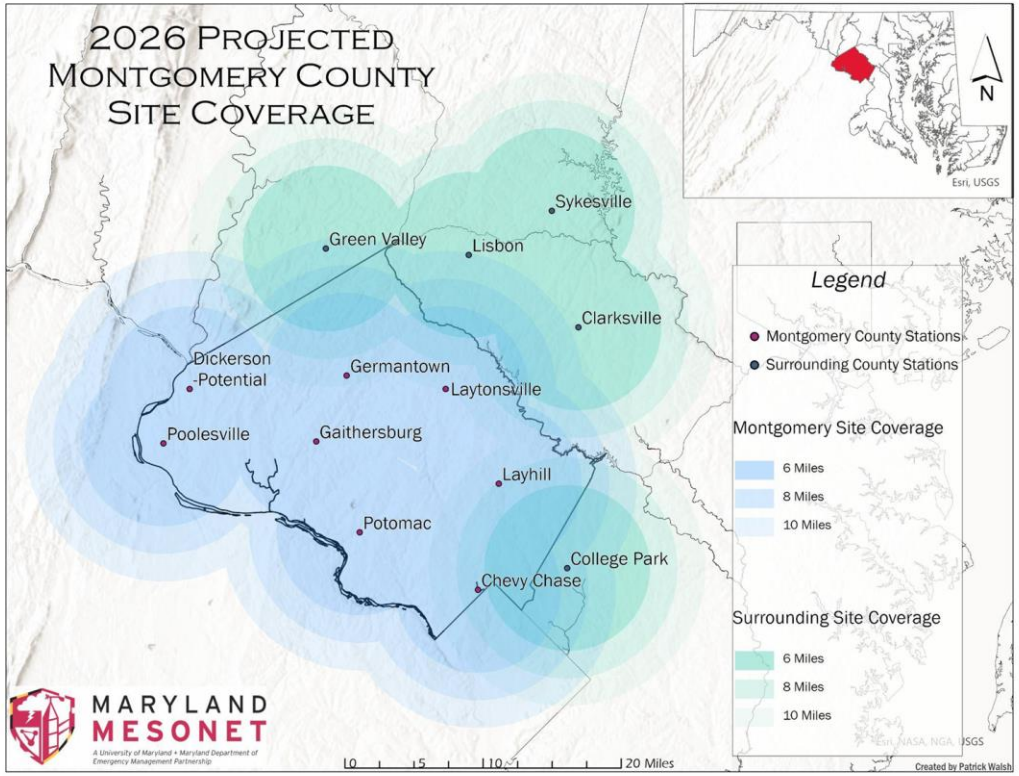
Current Soil Data

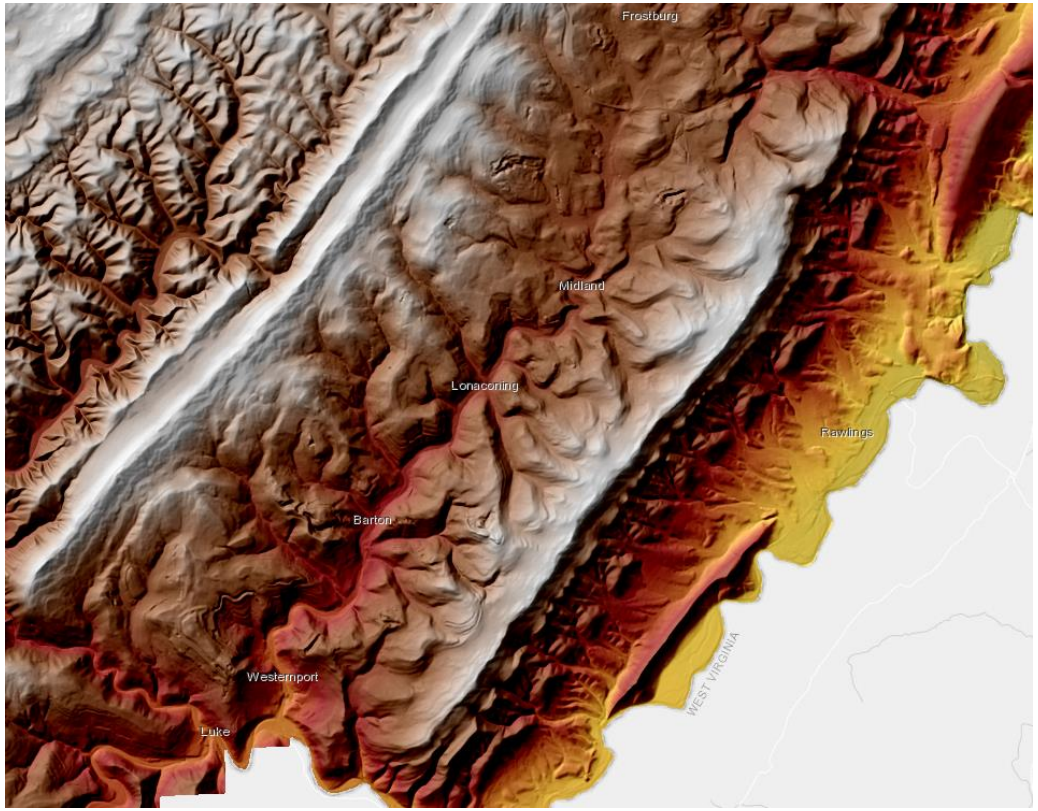
Temperature (°F)	Moisture (vwc)	
2":	51	0.097
4":	53	0.113
8":	57	0.216
20":	59	0.272
40":	62	0.315

jthyde@umd.edu

What's Next?

- Micronet's & Speciality Networks

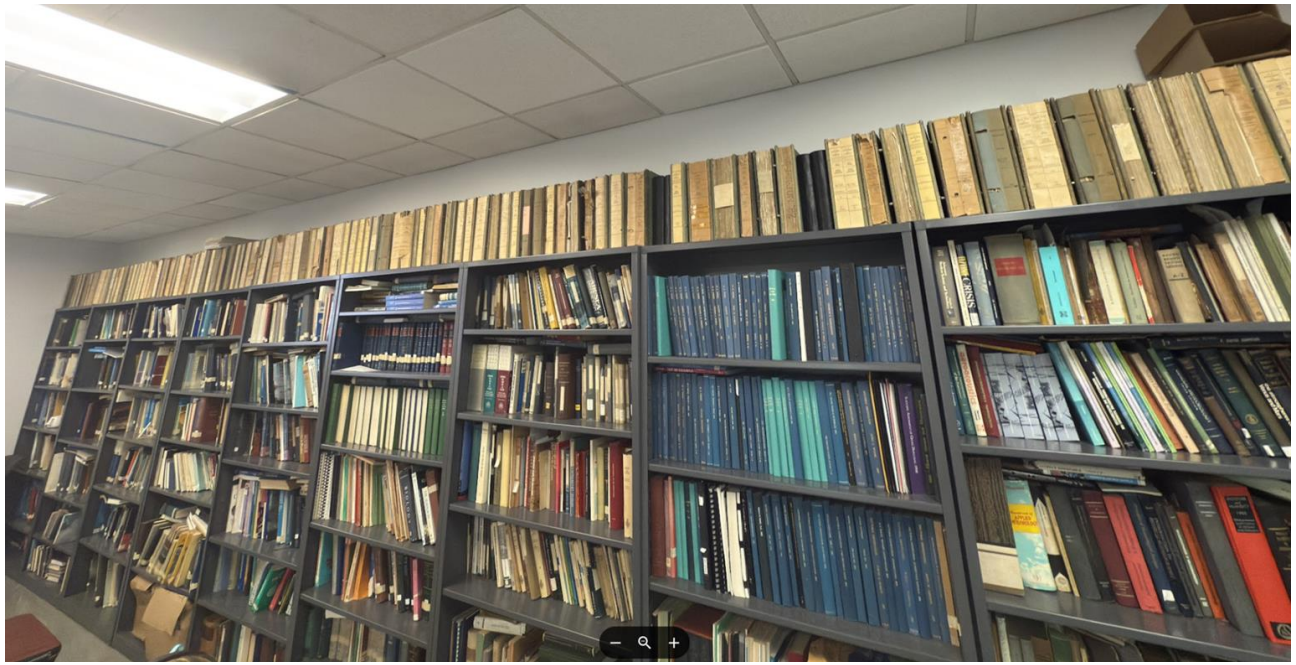


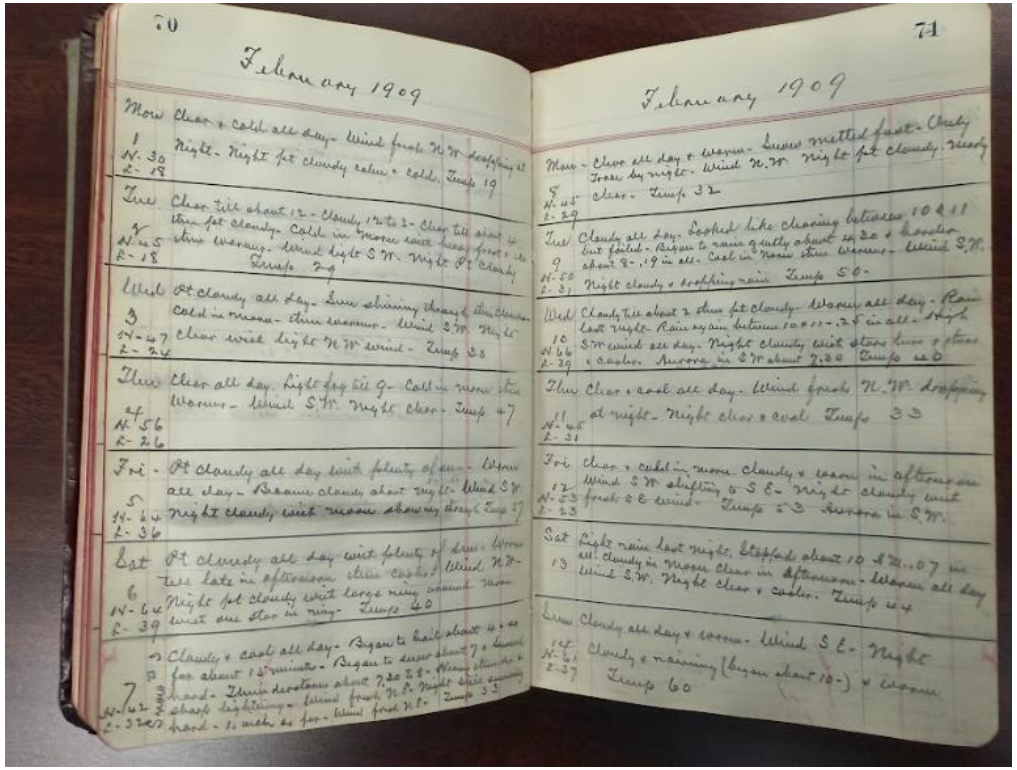


jthyde@umd.edu

What's Next?

- Digitization and *Qualitative* Assessment of Maryland's Climate History





jthyde@umd.edu

What's Next?

- Research & Development of cost-effective instrumentation

COTS: $500 - $2000

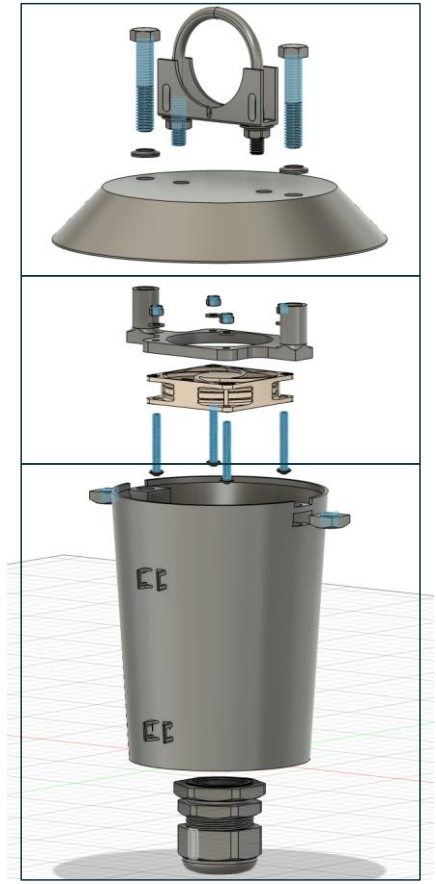
Mesonet Prototype: $45-50

Lehman, K., Hyde, J., & Boyle, T. (2026). Design and Evaluation of a Low-Cost 3D-Printed Aspirated Radiation Shield for the Maryland Mesonet. University of Maryland - AOSC, *Senior Research Project, preprint*

Hat →

Fan Mount →

Shield Body →



jthyde@umd.edu

What's Next?

- Training / Teaching the Next Generation of Observers

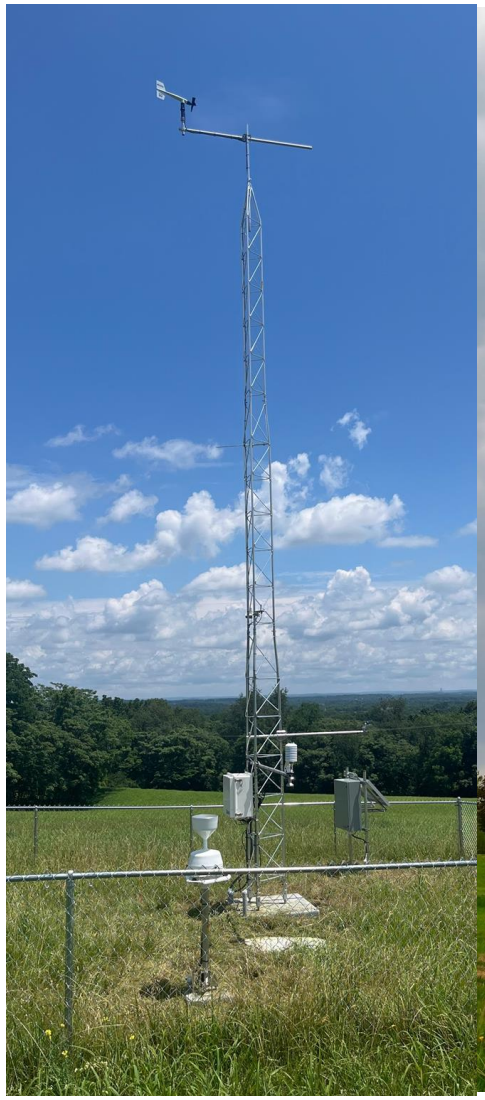
jthyde@umd.edu

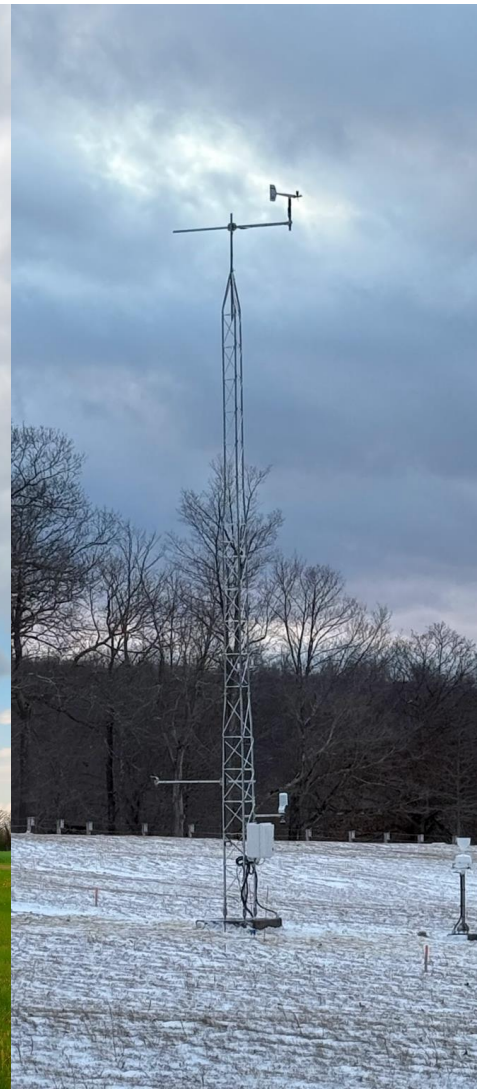
Thank you!

mesonet@umd.edu

(301) 405-5391

mesonet.umd.edu





UNIVERSITY OF MARYLAND FEARLESSLY FORWARD

MARYLAND Department of Emergency Management