Forest Air Watch: Student Led Air Quality Study

The Avery Coonley School

Our team consists of middle school students 5th, 6th, 7th and 8th grade.

Dilan, Muhammad, Lucas, Dean, Henry, Niam, Sierra, and Zayd

ACS STEAM CLUB

- School Name: Avery Coonley School
- Project Title: **Forest Air Watch: Student Led Air Quality Study**
- Advisor's Name: Mr. Bae and Mrs. Garetto
- Summary of the Project:

The Avery Coonley School (ACS) STEAM (Science, Technology, Engineering, Arts, and Math) Green Club has designed, built, and deployed a weather station to support weather and climate research on Maple Grove Forest Preserve, an endangered forest ecosystem located on the school's grounds. This student-led initiative collects real-time meteorological data—temperature, humidity, precipitation, and wind speed—to track climate patterns, analyze environmental changes, and contribute to conservation efforts through data records.

Our roles

Muhammad and Henry — Project Manager and Presenter of Information

Siona — Assistant Engineer and PR

Lucas — Data Analyst/Electronics Specialist

Niam — Researcher/Electronics Specialist

Dilan — Presentation Manager/Research Development Specialist

Zayd — Budget Coordinator

Sierra — Engineer and guidance coordinator

Goal #1: To increase student awareness of climate change and air pollution on our local forest preserve.

We reached out two experts in climate research to come and share their knowledge about air pollution and how it can impact our forest.

We participated in hands on activities from the NEED Energy Infobooks.

We were invited to a third grade class to talk about weather, air pollution and climate change. Third and fifth grade classes came to our class to talk to us about energy.

Resources

Dr. Dieter Gruen

Dr. Don Wuebbles

Evaluation

Student interest and participation

Class discussions on climate and weather

Goal #1: To increase student awareness of climate change and air pollution on our local forest preserve.

Students learning about climate change with Dr. Don Wuebbles

ACS students building the weather station.

Group Picture with Don Wuebbles and Dieter Gruen

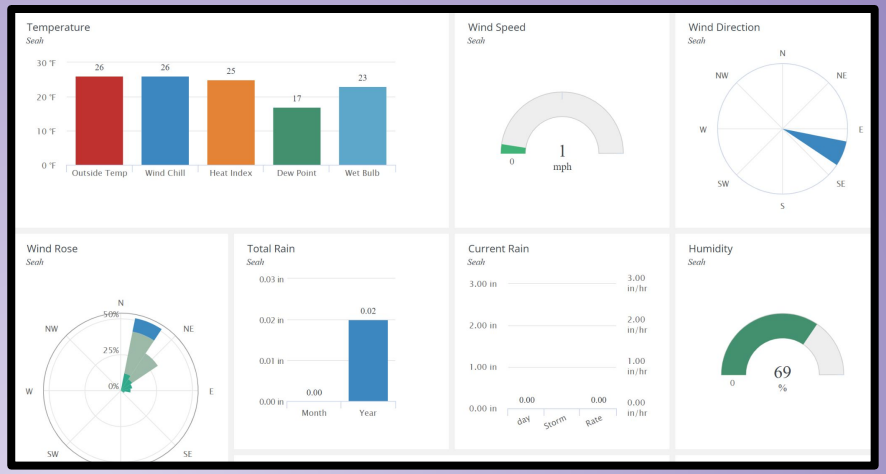
Testing weather station by our swimming pool deck.

Goal #2 We are using this weather station in order to track air pollution and AQI (air quality index) patterns, and predict air pollution.

Maple Grove is an endangered forest preserve, we're trying to protect.

Overview

- School-sponsored initiative for air pollution control and awareness.



- Data from the website shows a detailed description of the effects of our schools carbon footprint on the endangered forest we share land with.

Discuss your plan:

We are focusing on protecting and preserving our endangered Maple Grove forests. Monitoring the air quality is a key first step in taking action to help stop the effect of poor air quality and climate on our endangered forests.

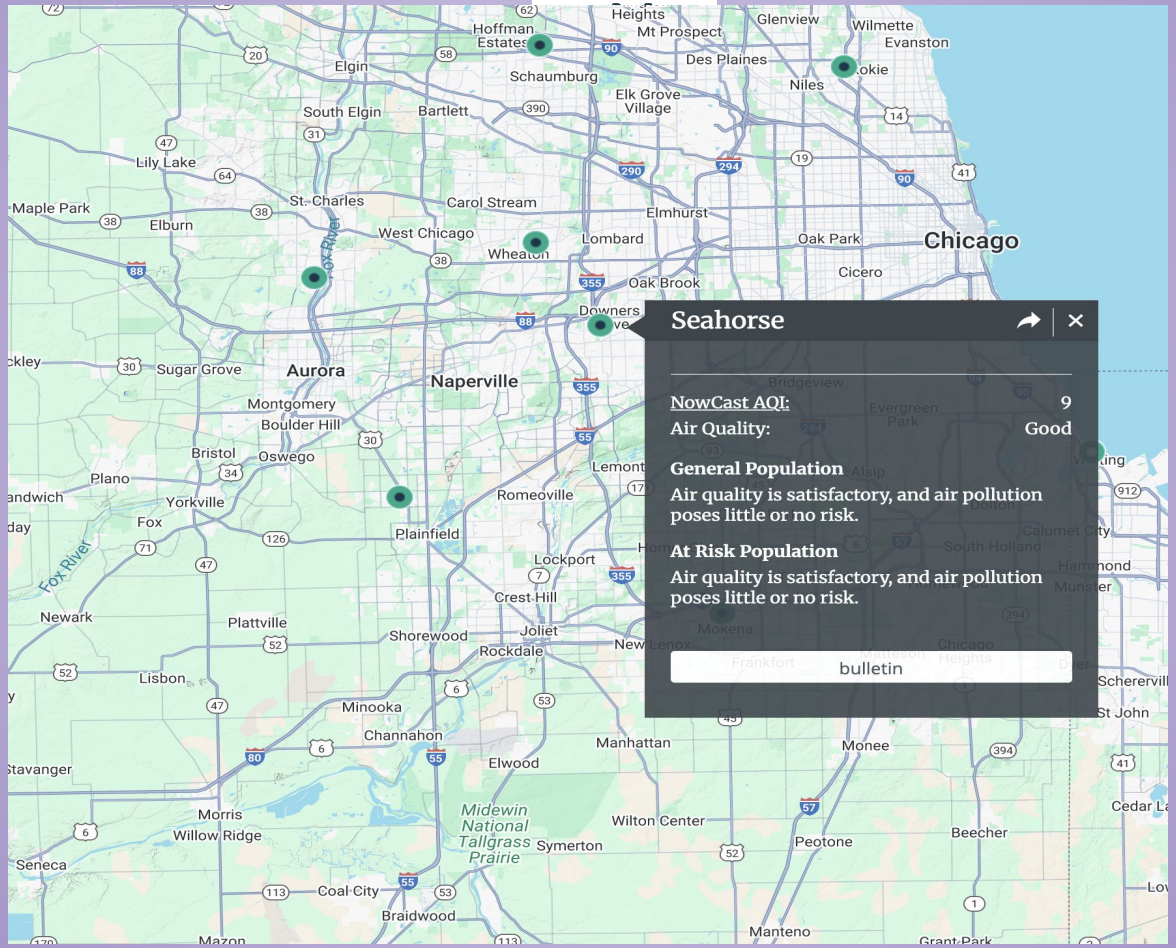
The Maple Grove Forest, in Downers Grove, IL.

How are you going to implement it?

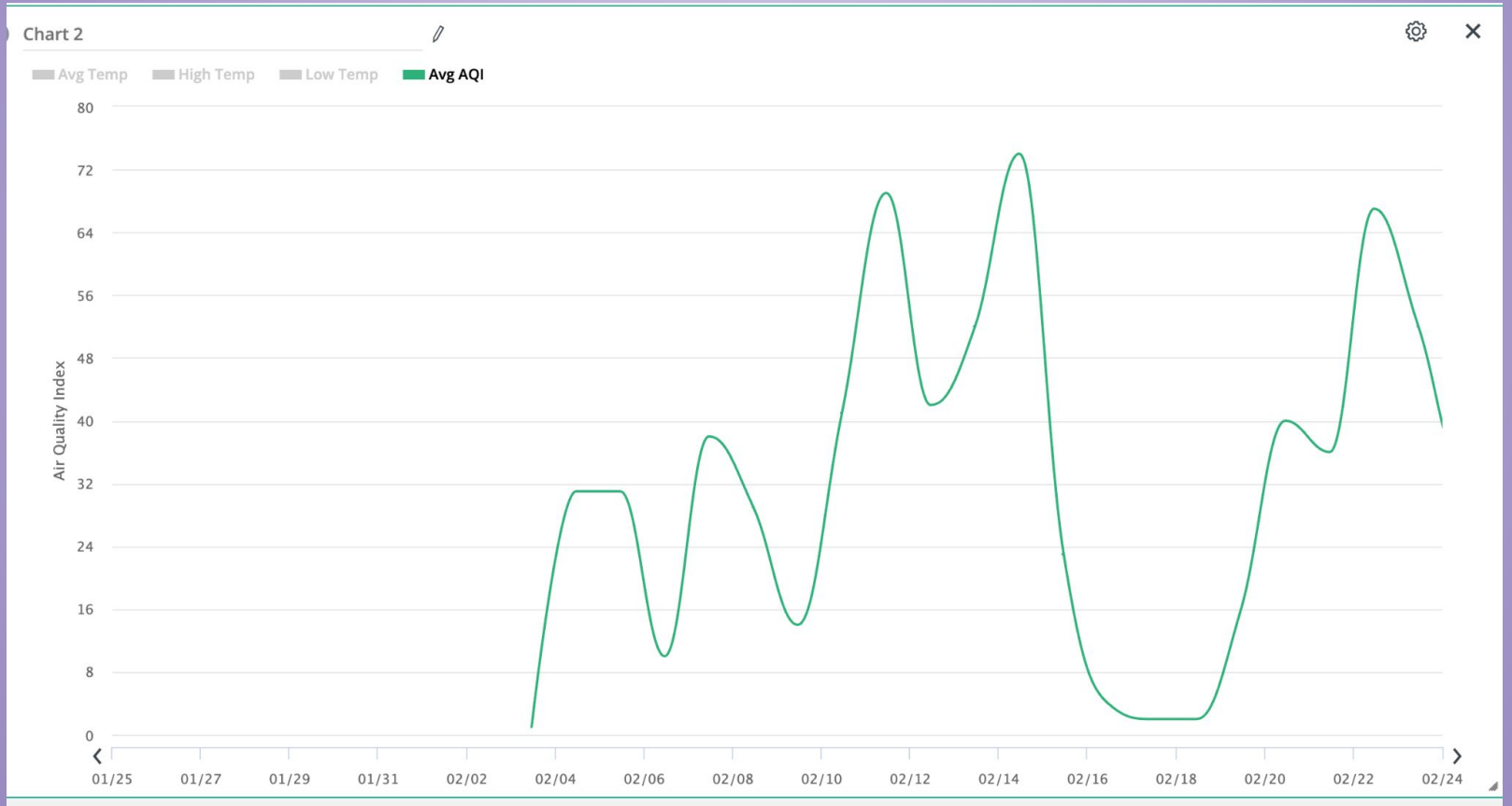
We plan to implement our weather station on the roof our school to get a good reading. This will enable us to use the data to take action to protect and preserve the forest. Measuring factors such as air quality and humidity will help us figure out how to do this.

ACS students built Weather Station Prototype

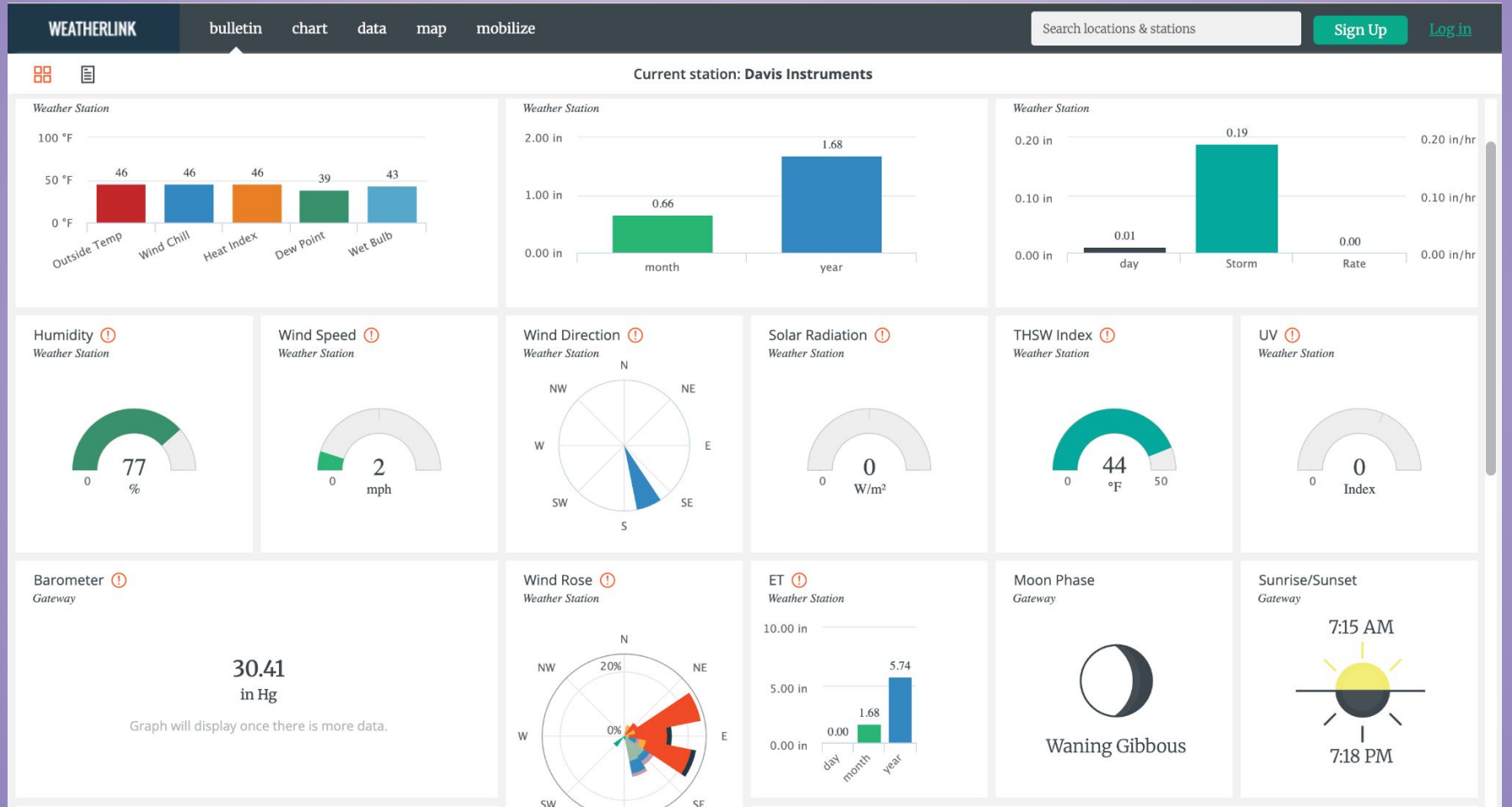
Avery Coonley School (ACS) Seahorse Weather Station Location



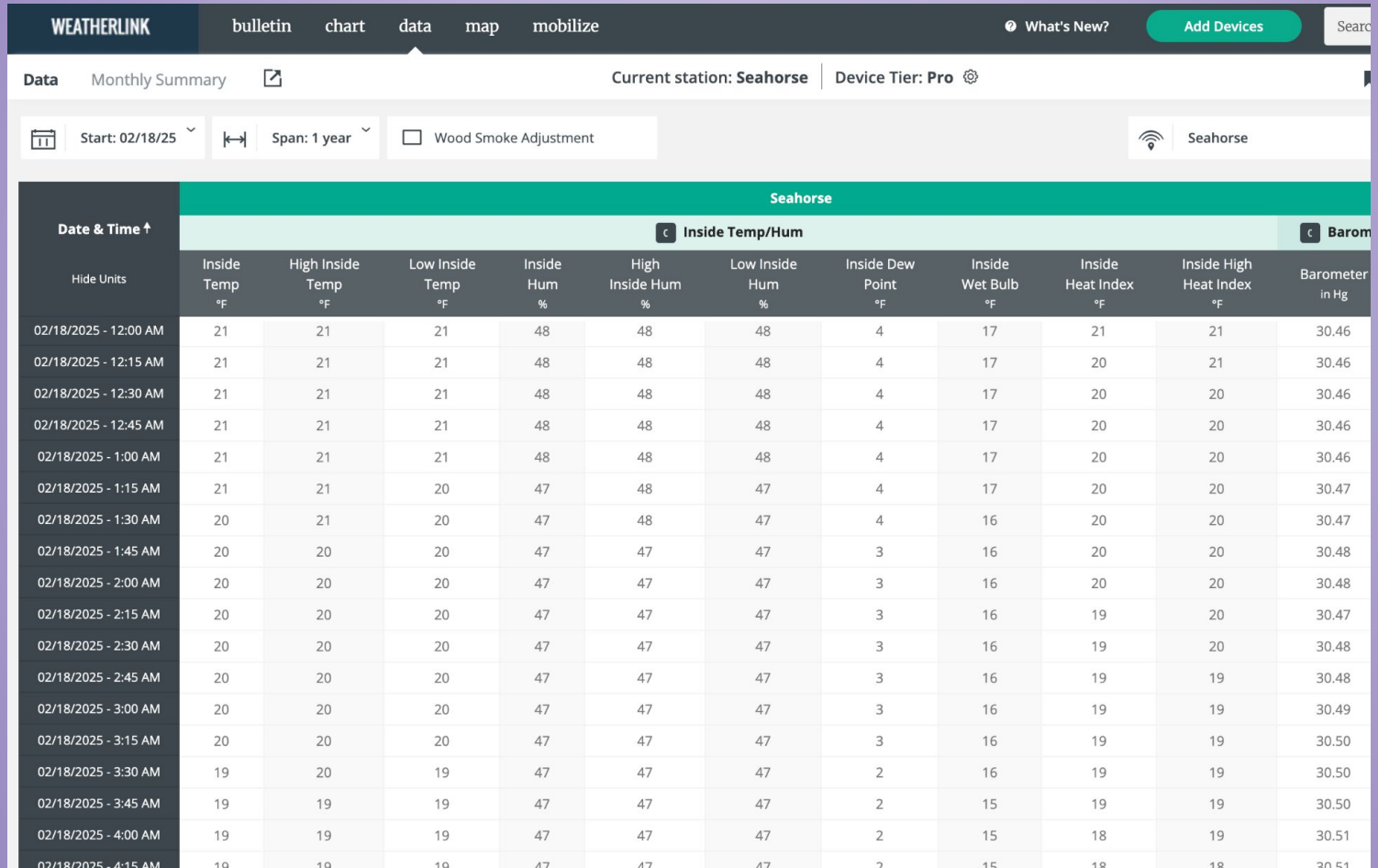
Seahorse Weather Station Data Output AQI at the Maple Grove Forest Preserve for 2025



ACS Weather Station Dashboard Data Information



ACS Weather Station Data Set Sample



WEATHERLINK bulletin chart data map mobilize What's New? Add Devices Searc

Data Monthly Summary Current station: Seahorse | Device Tier: Pro

Start: 02/18/25 Span: 1 year Wood Smoke Adjustment Seahorse

Date & Time	Seahorse										
	Inside Temp/Hum										Barom
Hide Units	Inside Temp °F	High Inside Temp °F	Low Inside Temp °F	Inside Hum %	High Inside Hum %	Low Inside Hum %	Inside Dew Point °F	Inside Wet Bulb °F	Inside Heat Index °F	Inside High Heat Index °F	Barometer in Hg
02/18/2025 - 12:00 AM	21	21	21	48	48	48	4	17	21	21	30.46
02/18/2025 - 12:15 AM	21	21	21	48	48	48	4	17	20	21	30.46
02/18/2025 - 12:30 AM	21	21	21	48	48	48	4	17	20	20	30.46
02/18/2025 - 12:45 AM	21	21	21	48	48	48	4	17	20	20	30.46
02/18/2025 - 1:00 AM	21	21	21	48	48	48	4	17	20	20	30.46
02/18/2025 - 1:15 AM	21	21	20	47	48	47	4	17	20	20	30.47
02/18/2025 - 1:30 AM	20	21	20	47	48	47	4	16	20	20	30.47
02/18/2025 - 1:45 AM	20	20	20	47	47	47	3	16	20	20	30.48
02/18/2025 - 2:00 AM	20	20	20	47	47	47	3	16	20	20	30.48
02/18/2025 - 2:15 AM	20	20	20	47	47	47	3	16	19	20	30.47
02/18/2025 - 2:30 AM	20	20	20	47	47	47	3	16	19	20	30.48
02/18/2025 - 2:45 AM	20	20	20	47	47	47	3	16	19	19	30.48
02/18/2025 - 3:00 AM	20	20	20	47	47	47	3	16	19	19	30.49
02/18/2025 - 3:15 AM	20	20	20	47	47	47	3	16	19	19	30.50
02/18/2025 - 3:30 AM	19	20	19	47	47	47	2	16	19	19	30.50
02/18/2025 - 3:45 AM	19	19	19	47	47	47	2	15	19	19	30.50
02/18/2025 - 4:00 AM	19	19	19	47	47	47	2	15	18	19	30.51
02/18/2025 - 4:15 AM	19	19	19	47	47	47	2	15	18	18	30.51