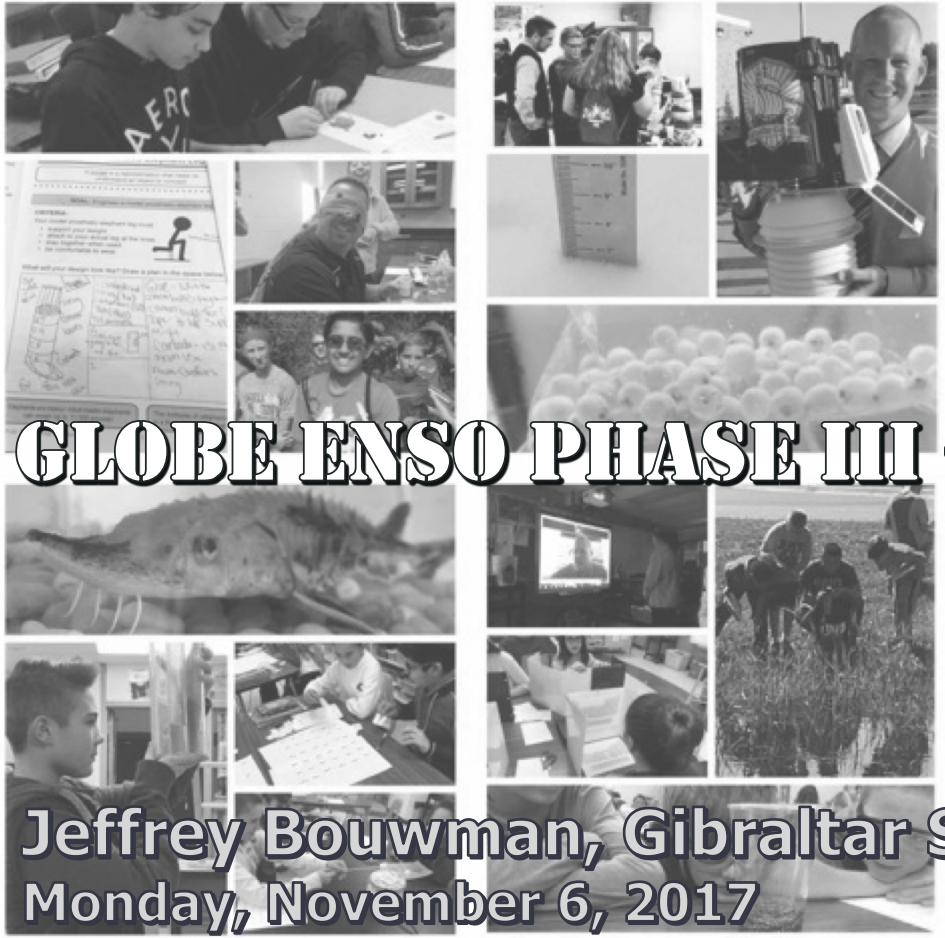
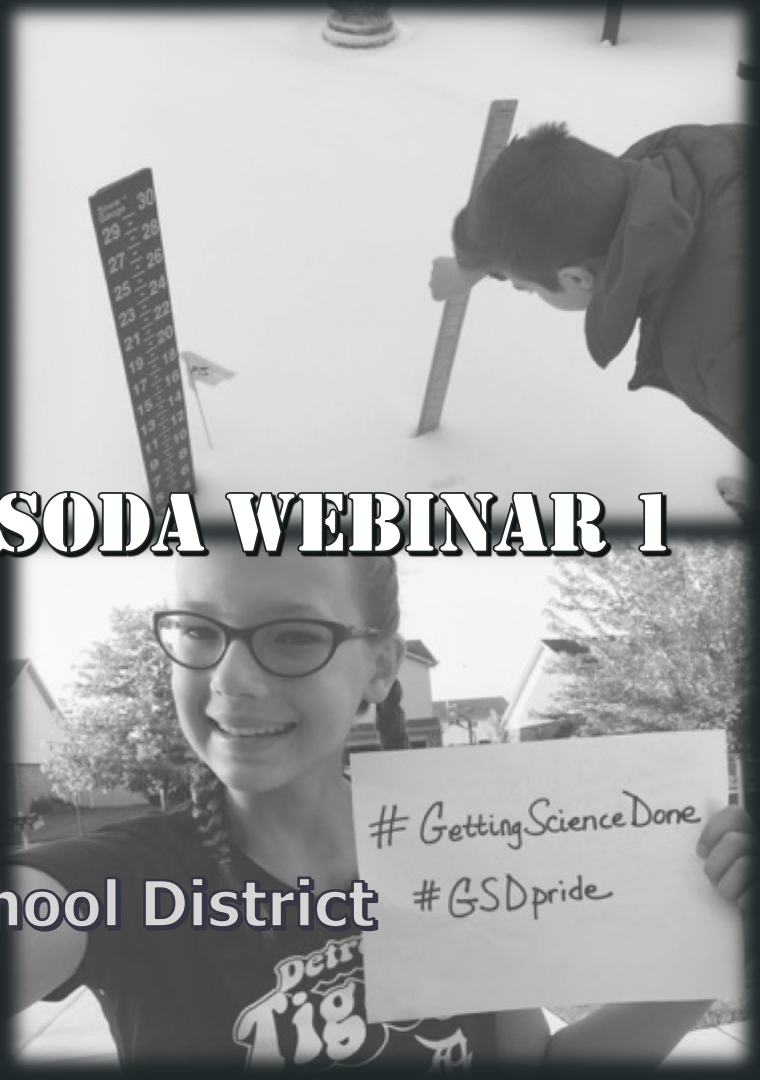
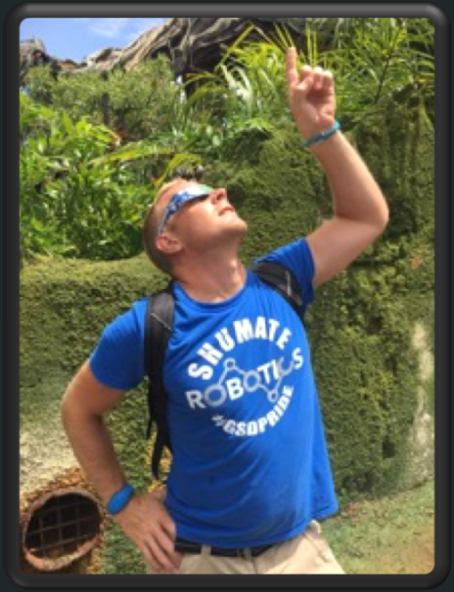
GLOBE ENSO PHASE III – SODA WEBINAR 1

Jeffrey Bouwman, Gibraltar School District

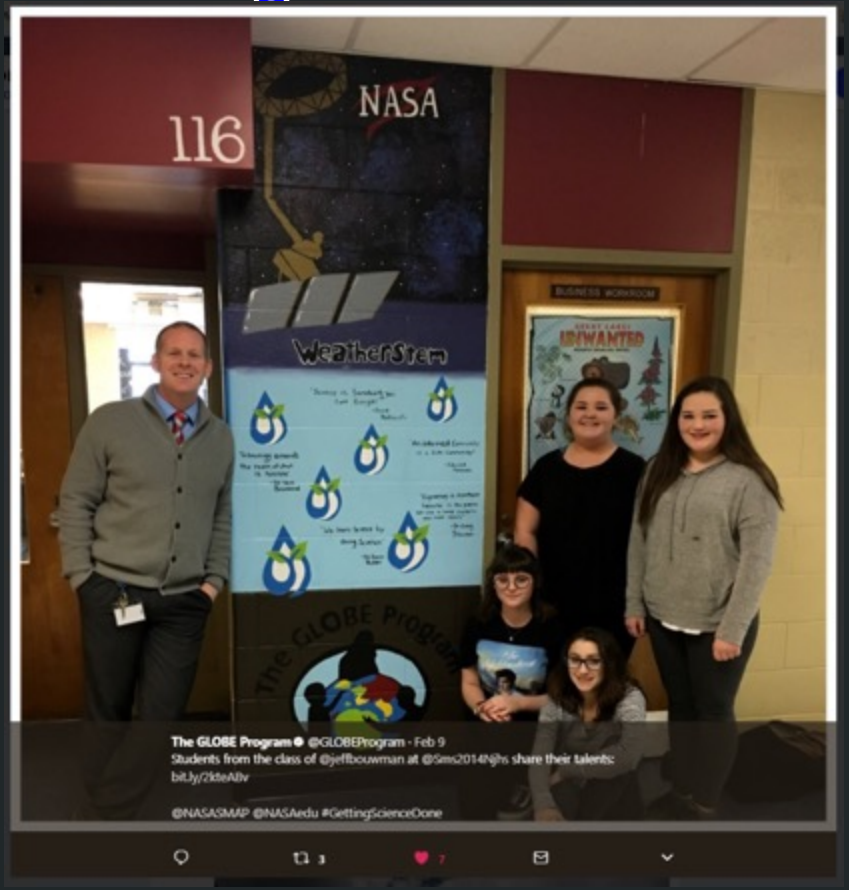
Monday, November 6, 2017







#GettingScienceDone



Jeffrey R. Bouwman

6th & 7th Grade Science Teacher
Shumate Middle School
Gibraltar School District

Adjunct Professor
Science Education & Educational Technology
University of Michigan - Dearborn

SHUMATE
MIDDLE SCHOOL

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Shumate Middle School/Carlson High School

Photo Taken via AEROKAT and High Definition Camera – AREN Project

GLOBE Protocols – Shumate Middle School

- Surface Temperature (Atmosphere) – 6th Grade
- Soil Temperature (Pedosphere) – 6th Grade
- Air Temperature (Atmosphere - WeatherSTEM)
- Precipitation (Atmosphere) – 7th Grade
- Soil Moisture (Pedosphere and SMAP Campaign) – 6th Grade
- Clouds (Atmosphere and GLOBE Observer) – 6th Grade
- Integrated Hydrology (pH and Nitrates) – 7th Grade
- Project AREN (Beginning Stages) – 6th Grade
- ICESat-2 Beta Testing (Coming Soon!) – 7th Grade

Jeff Bouwman
Science Teacher

Rachel Hoover
Teacher

John Kay
Science Teacher

School At A Glance – Shumate Middle School

SCHOOL AT A GLANCE

Participation

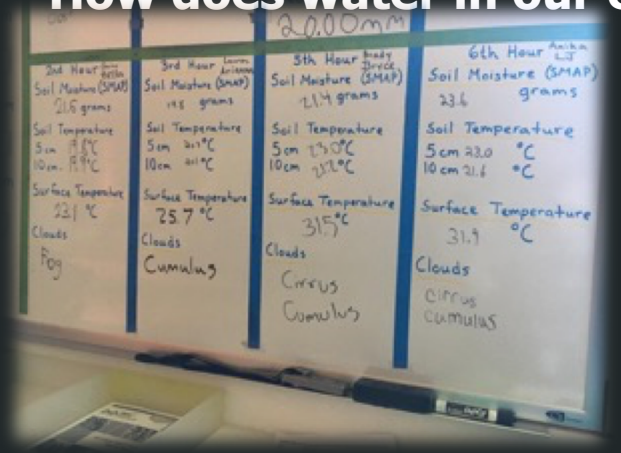
345	Students	65706	Data Entries
4	Teachers	1	School
0	Pre-service Teachers	6	Honor Rolls
0	GLOBE Observers		

GLOBE ENSO – Phase III Guiding Questions

"What is the quality of the water in our environment?"

"What impacts does water, above and below ground, have on our environment?"

"How does water in our environment impact living organisms?"



Grosse Ile
Grosse Ile Municipal Airport
Detroit River
Detroit River
Detroit River
Detroit River
Detroit River
Detroit River
Detroit River
Detroit River
United States
Canada
Gibraltar
Lake Erie Metropark
SMS/CHS Campus
Huron River
Pointe Mouillee State Game Area
Google
Google NOAA TerraMetrics

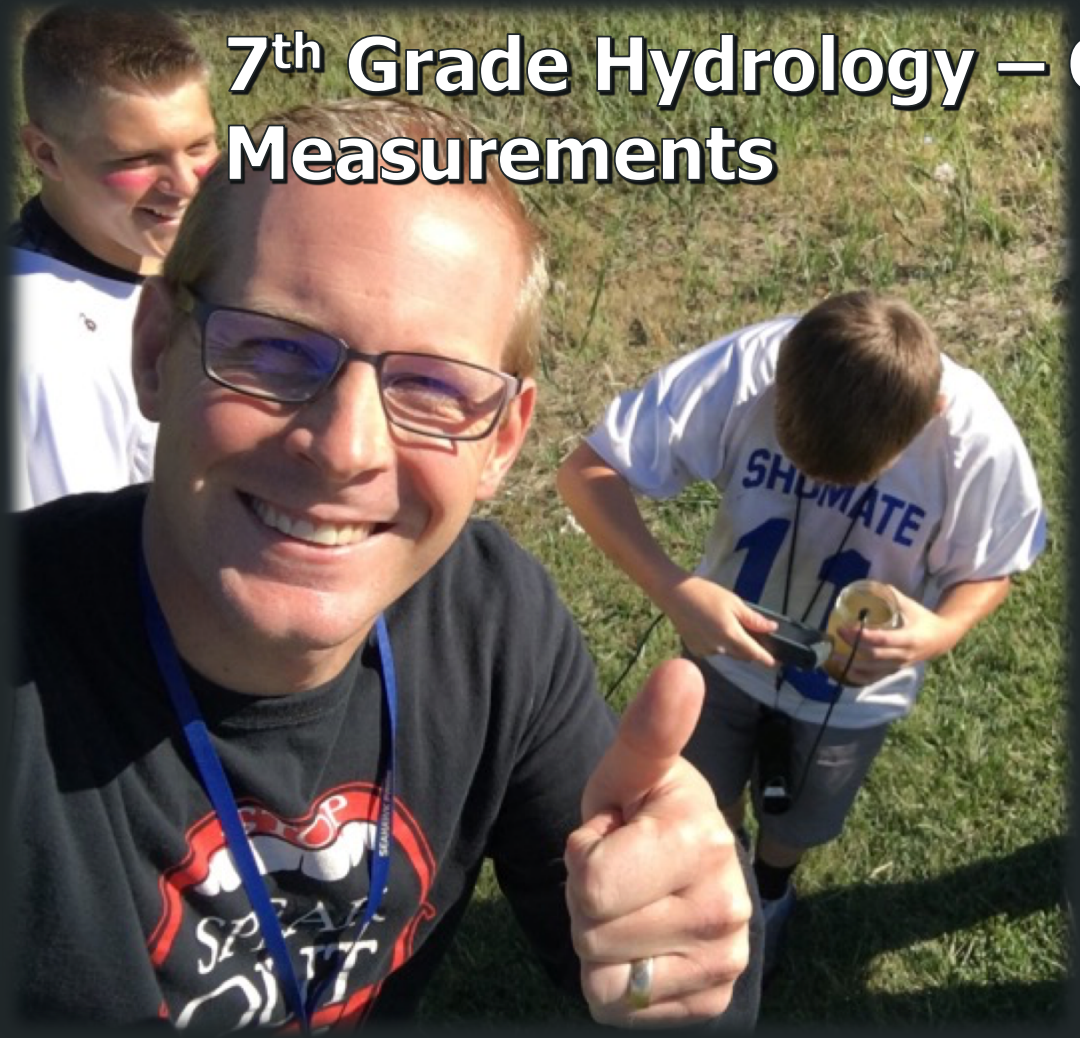
7th Grade – Integrated Hydrology Study

7th Grade Hydrology Team

Pond Site 1

Pond Site 2

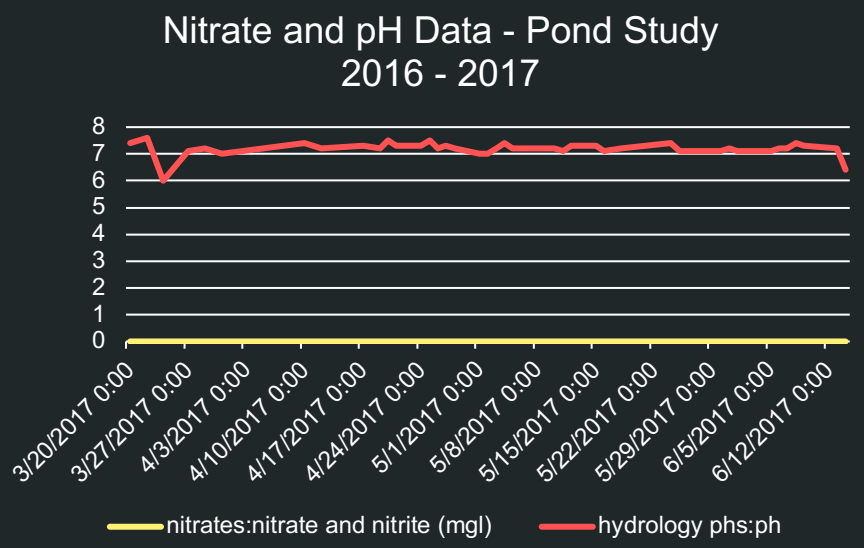
7th Grade Hydrology – Our Measurements



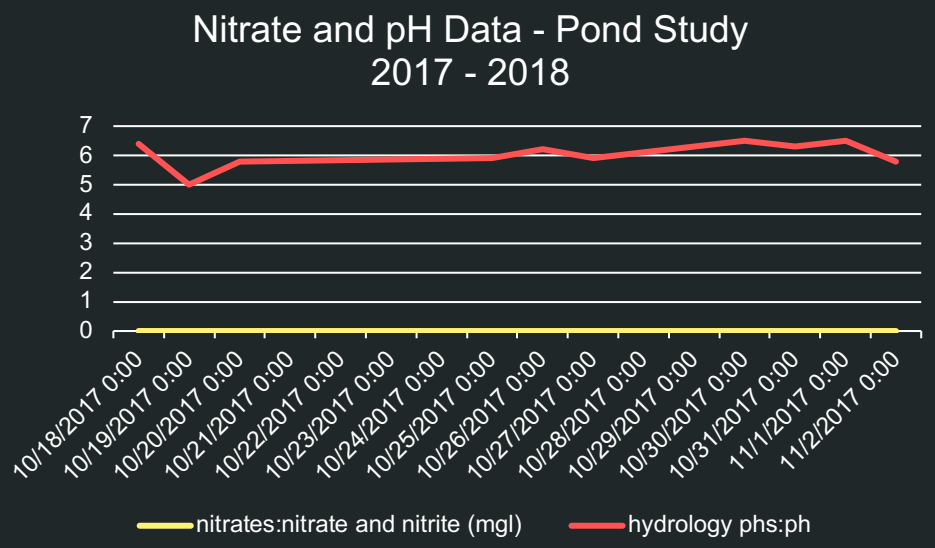
Measuring:

- Current Temperature
- Water Temperature
- pH
- Nitrate
- Dissolved Oxygen
- Conductivity
- Salinity

Nitrate and pH Comparison – Pond 1

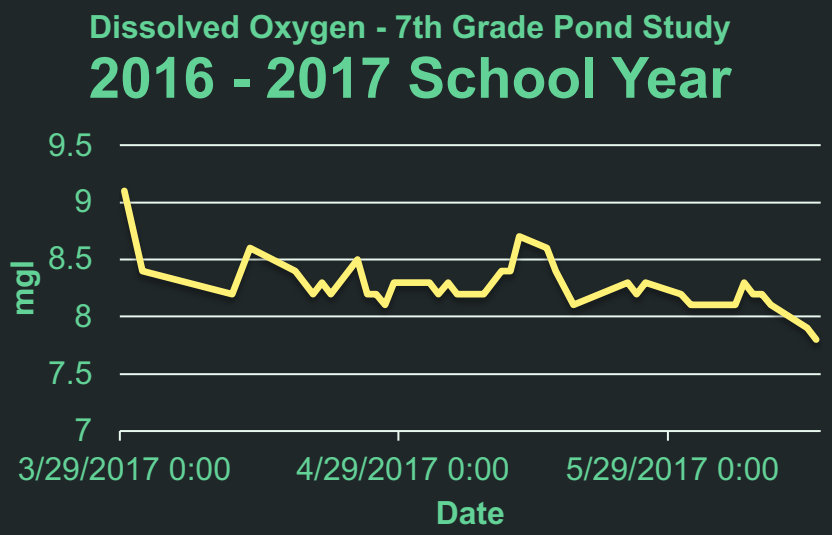


Average Nitrate: 0
Average pH: 7.18

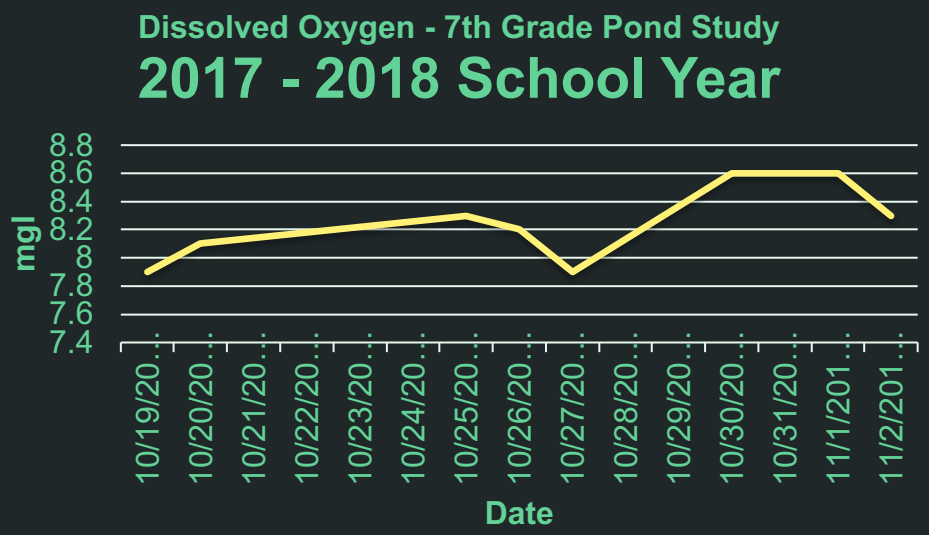


Average Nitrate: 0
Average pH: 6.03

Dissolved Oxygen – Pond 1



Average Dissolved Oxygen: 8.28 mgl



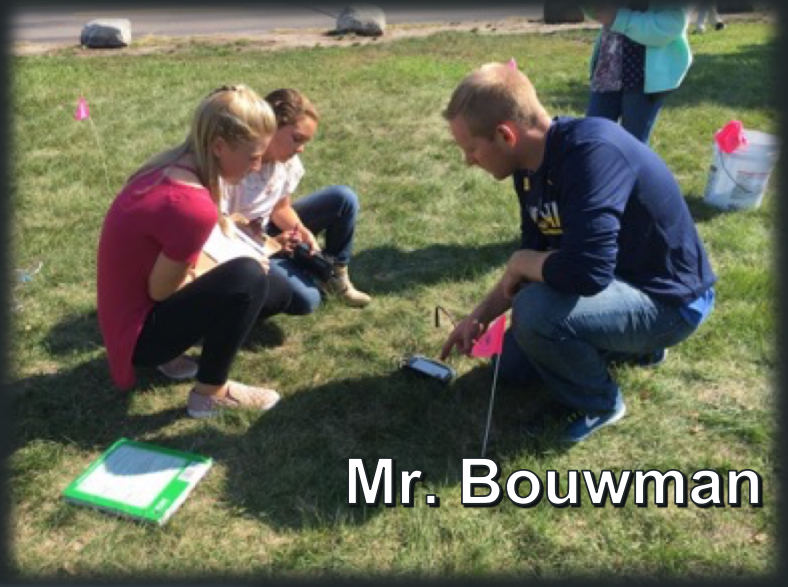
Average Dissolved Oxygen: 8.28 mgl

Feedback from the Hydrology Team

- "This water is pretty dirty. I'm guessing that our parking lots probably have something to do with this."
- "Why is Pond 1 drying up? Does this have to do with the lack of rain this summer?"
- "Look what the rain did. The water level in Pond 1 is starting to come back up."
- "Do these ponds connect with the creek next to West Jefferson?"
- "Is this water clean enough for the ducks and deer?"
- "What do these numbers truly mean? Is there anything that can be done to change the bad numbers?"

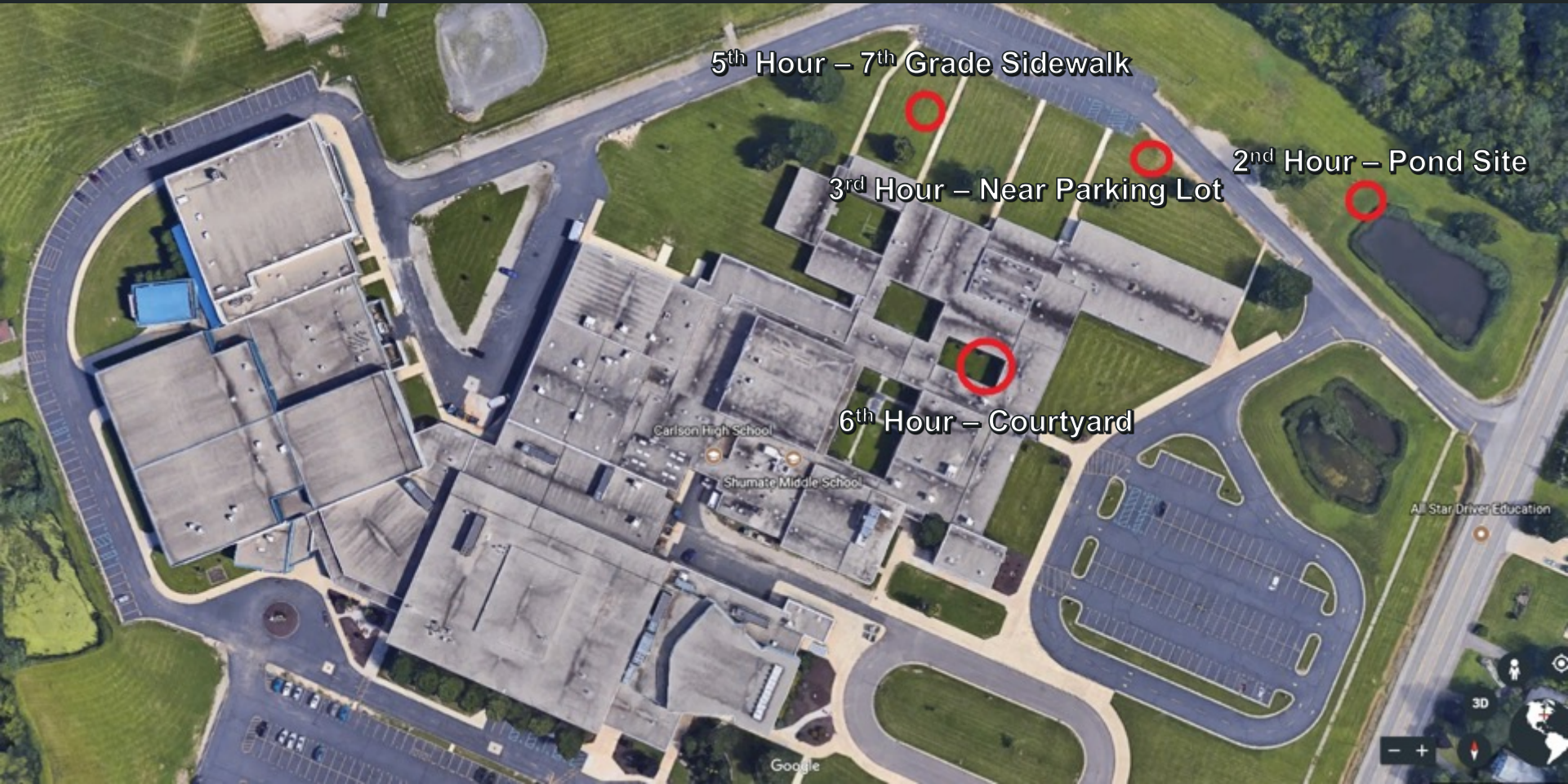
Lessons Learned Measuring Hydrology

- Don’t throw the bucket in the pond without a rope attached!
- Take the time to model correct procedures with your students so the data collected is accurate.
- Take time to get to know your protocols and equipment. We had to watch a few YouTube videos on our Vernier Lab Quest devices.
- Find a way to store all of the hydrology tools for easy access.



6th Grade - GLOBE Site Launch – 2017 - 2018

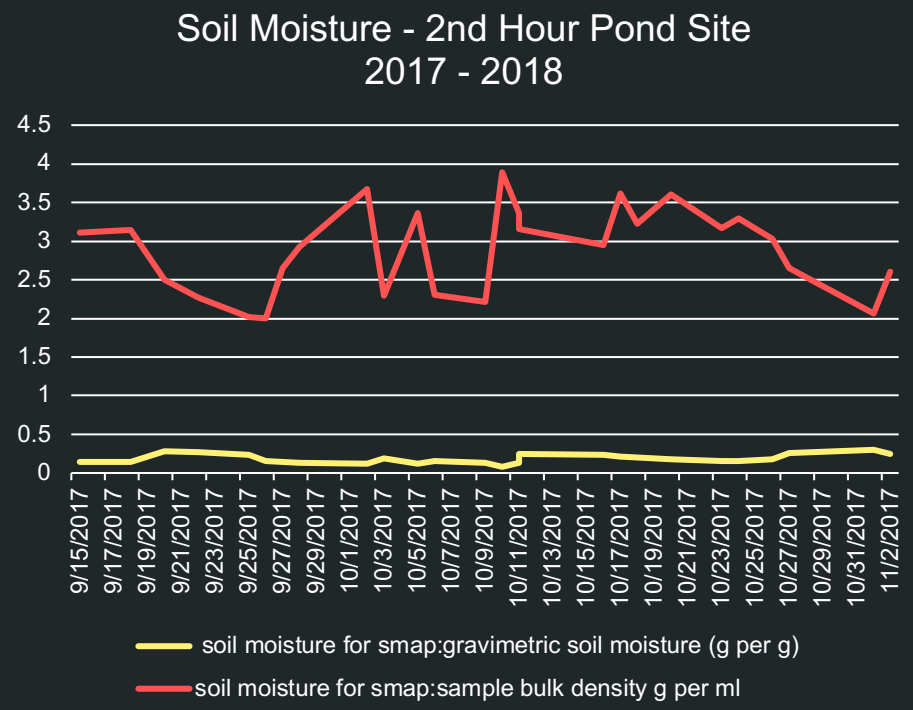
6th Grade – GLOBE Sites

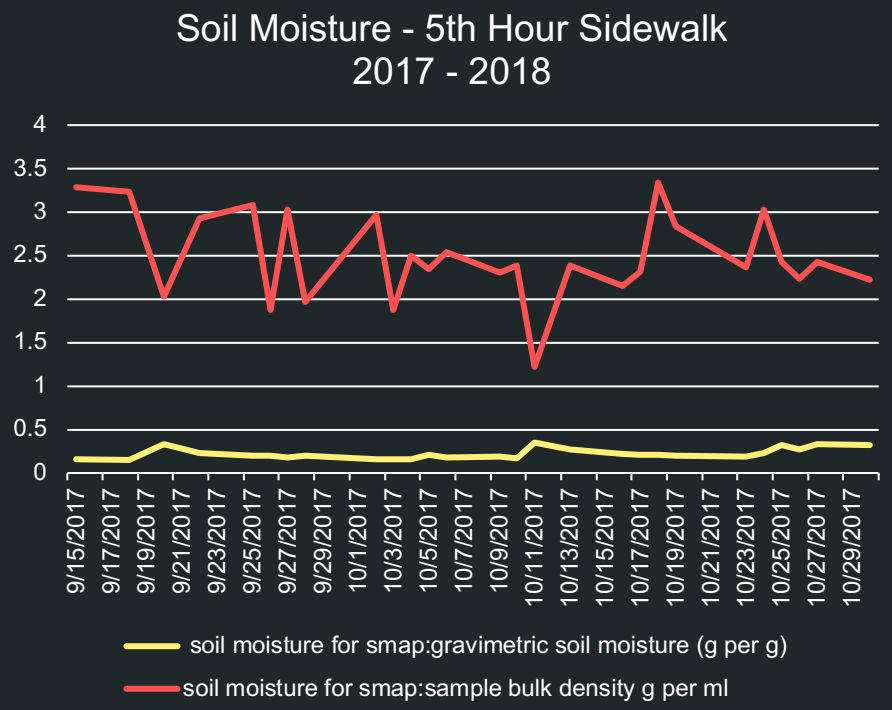


Train the Trainers – Student Leaders

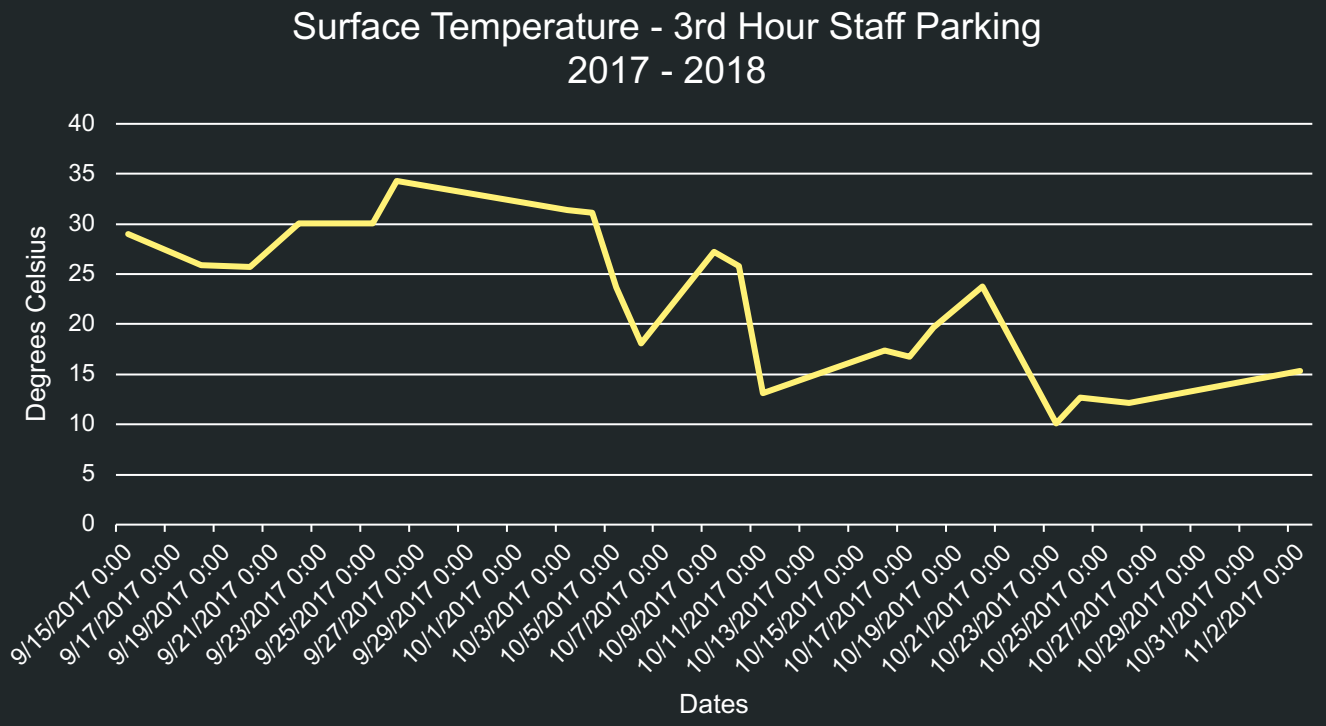
Measuring Precipitation – Citizen Science 101

Soil Moisture Graphs – 2nd & 5th Hour Sites



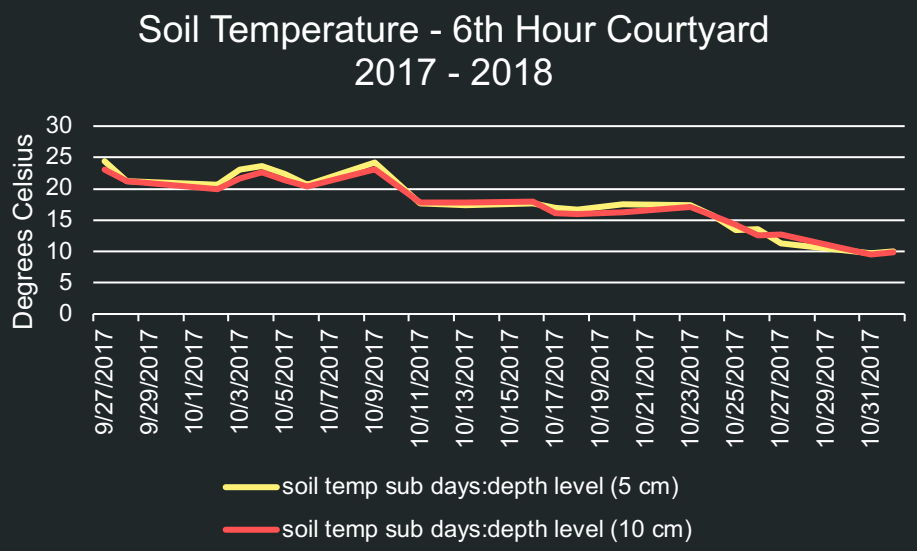


Surface Temperature – 3rd Hour Site



Average Surface Temperature: 22.5 Degrees Celsius

Soil Temperature – 6th Hour Site



Average Soil Temperature (5cm): 17.9 Degrees Celsius
Average Soil Temperature (10 cm): 17.5 Degrees Celsius

Measuring Clouds – GLOBE Observer App

Students measure clouds daily via:

- **GLOBE Observer App and an iPad.**
- **Using a cloud chart while taking surface temperature measurements.**

Best Practice – Sign Up Genius

Shumate Science - Sixth Grade

GLOBE Sign Up - 5th Hour

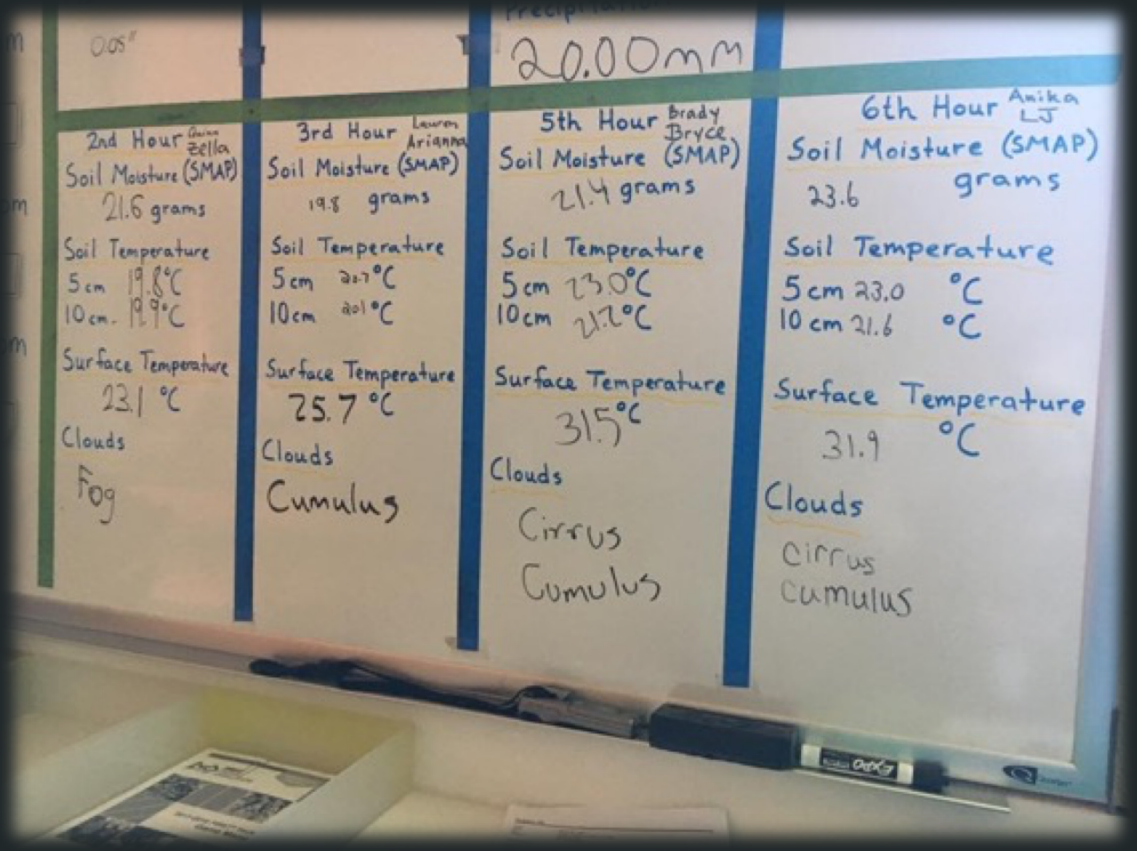
This year we will be measuring soil moisture, surface and soil temperature, and clouds for The GLOBE Program. Please sign up for no more than five (5) dates to participate in GLOBE measurements.

Location: 5th Hour GLOBE Site

Created by: Jeffrey Bouwman

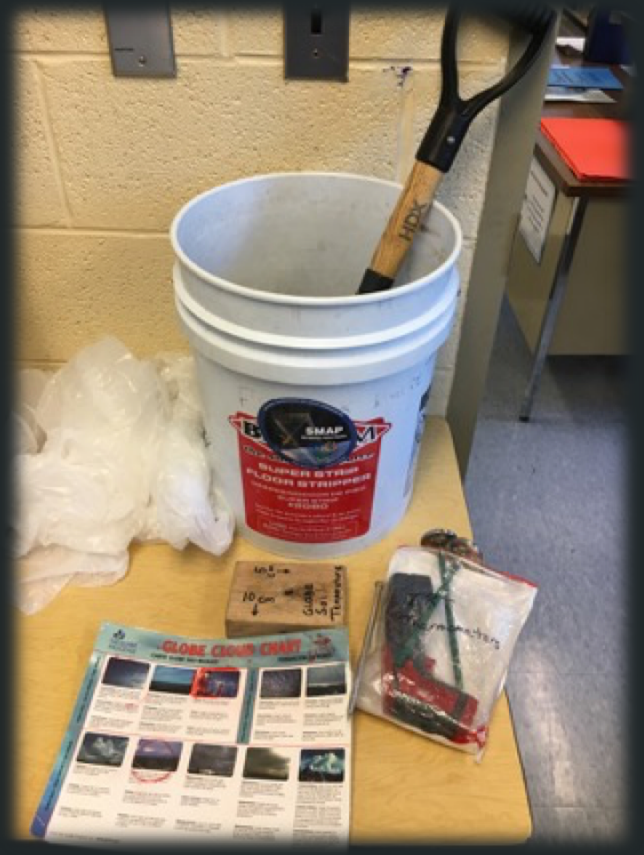
Date (mm/dd/yyyy EST)	Available Slot	Calendar View
10/16/2017 (Mon. 1:30pm - 1:45pm)	GLOBE Scientist Mr. Bouwman / Ms. Turley	JP Jack F[redacted]
	GLOBE Scientist Mr. Kay	TM Tommy M[redacted]
10/17/2017 (Tue. 1:30pm - 1:45pm)	GLOBE Scientist Mr. Bouwman / Ms. Turley	TG tavia[redacted]
	GLOBE Scientist Mr. Kay	TM Tommy [redacted]n
10/18/2017 (Wed. 1:30pm - 1:45pm)	GLOBE Scientist Mr. Bouwman / Ms. Turley	AD Angel D[redacted]a
	GLOBE Scientist Mr. Kay	AF Angus [redacted]

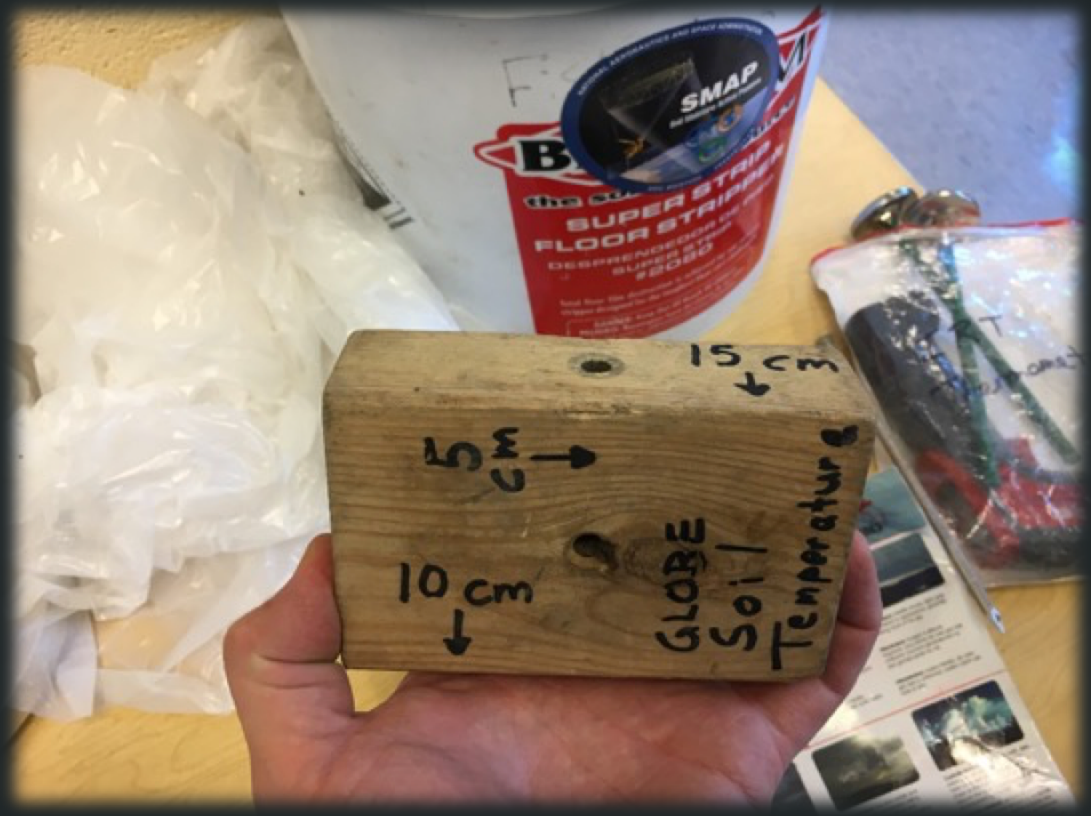
Best Practice – Data Board



Get an Organized Work Space

Have Your Tools Ready to Go



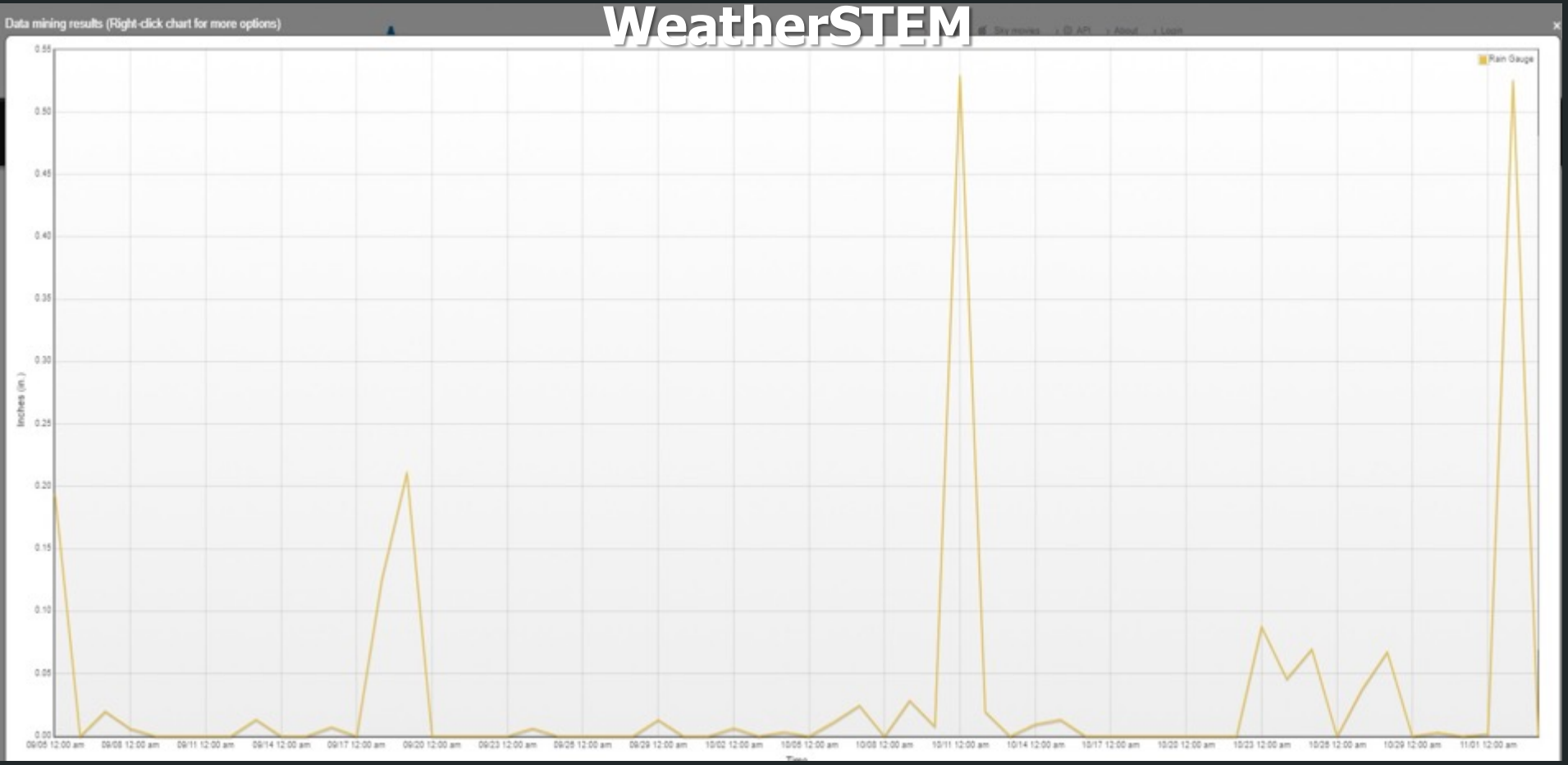


Gibraltar School District WeatherSTEM

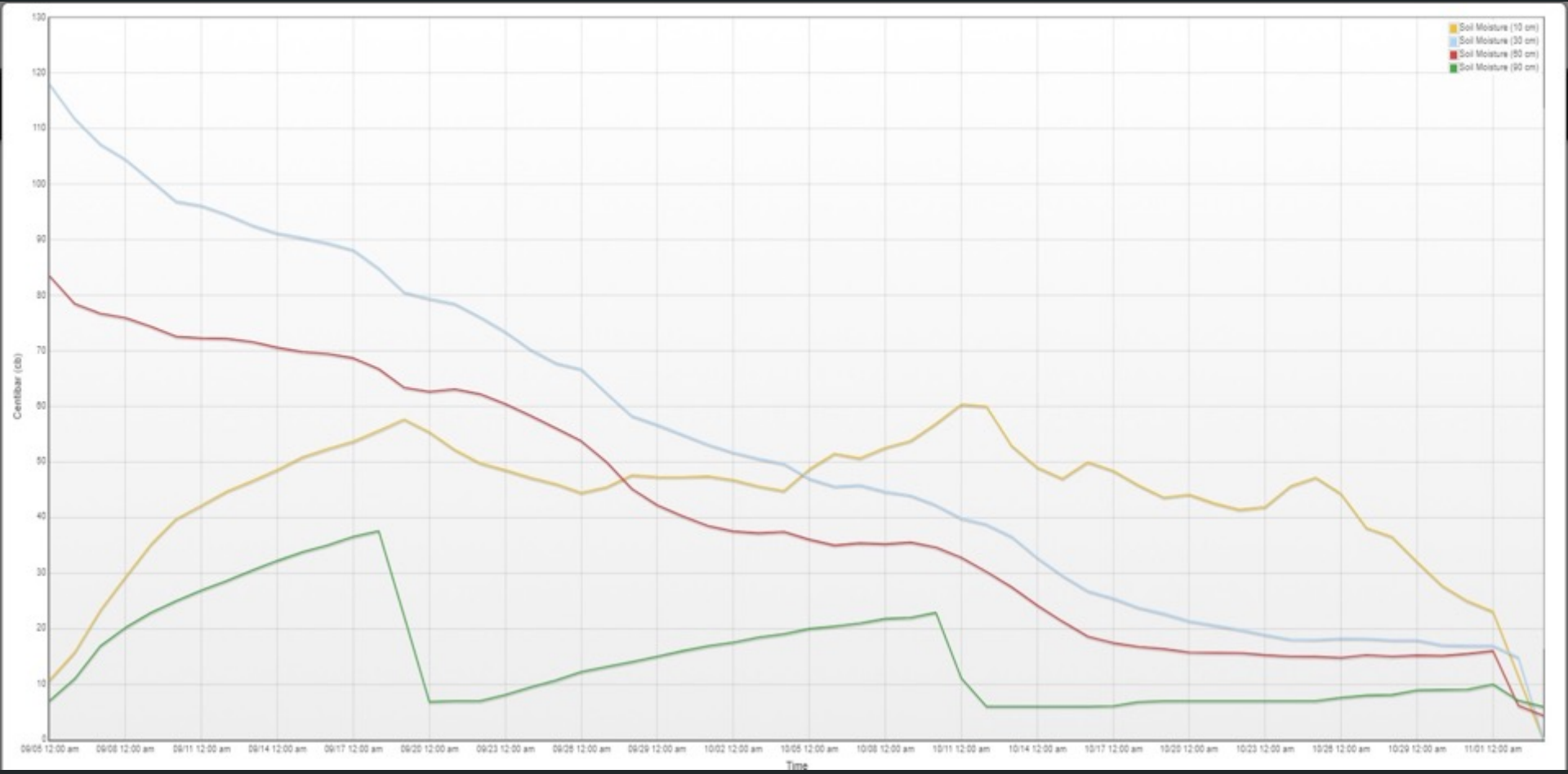
Gibraltar School District WeatherSTEM – Cloud Camera

Precipitation Totals – Gibraltar School District

WeatherSTEM



Soil Moisture – Gibraltar School District WeatherSTEM



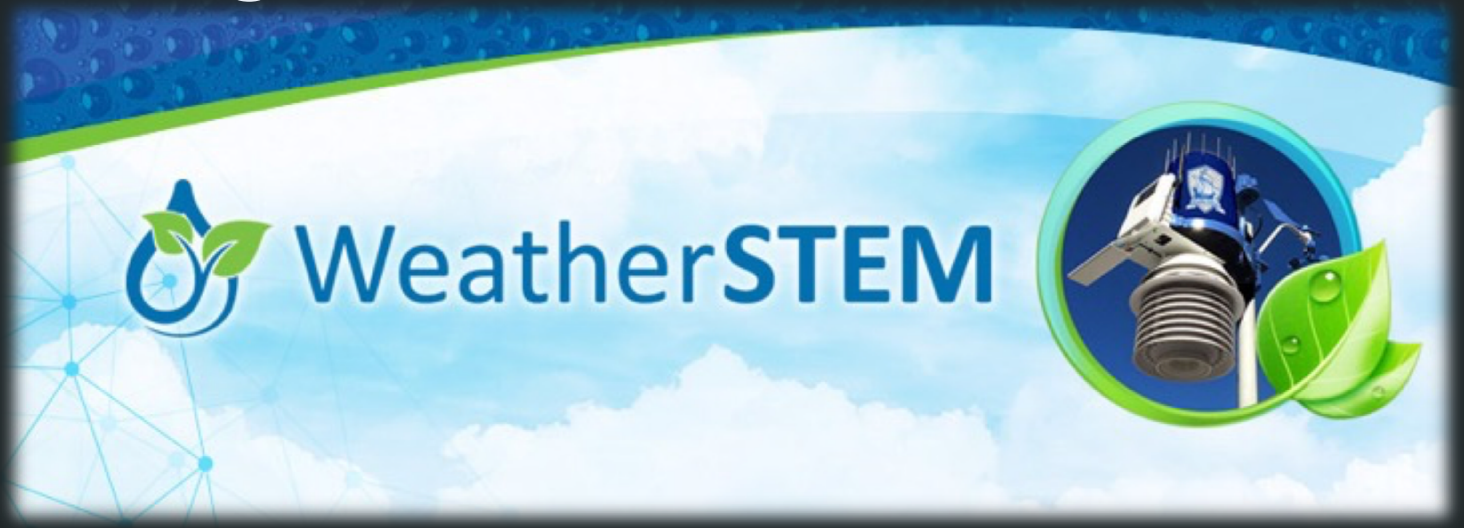
Gibrlatar School District WeatherSTEM

Check out our WeatherSTEM! *Thank you Dr. Butler & YLACES!*

Website - wayne.weatherstem.com/gibraltar

Facebook – Gibraltar School District Weatherstem

Twitter - @GibraltarWX



Thank You!