



# **The ENSO Field Measurement Campaign Phase III:** Water in Our Environment

WEBINAR #8- April 12<sup>th</sup>, 2018 Greetings from (OHIO, U.S.A.) **(TOLEDO NATURAL SCIENCE TECHNOLOGY CENTER)** 











### Natural Science Technology Center – Toledo, Ohio, USA







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Natural Science Technology Center

\*One of a kind

\*10 acres, 4 greenhouses, hundreds of animals \*11<sup>th</sup> and 12<sup>th</sup> graders interested in

environmental careers

\*Our program is "Wildlife & Sustainability" and

we keep our planet's

natural resources healthy for us and generations to come!











# Water in Our Environment

Hill Ditch Creek behind our school eventually flows into a Great Lake - Lake Erie. What we do to our schoolyard affects our very own drinking water, since our water source is Lake Erie! Our actions and research matter!





#### Filtering Water Through Back-Country Equipment

#### **Purpose & Hypothesis**

- We wanted to test our school's creek water to see if we could filter it, and make this water safely drink-able.
- Maybe we could then use a back-country filter for our camping trip!
- Will the water be healthy enough to drink without getting sick?
- Which filtration method would people prefer the taste of the most?
- We predicted that the lifestraw 2.0 would taste the best.









#### **METHODS**

- Use GLOBE protocols to collect water from our school's creek.
- Test the water before you purify the water for readings of:
- ph, alkalinity, nitrates, temperature, and ecoli.
- Enter ph, alkalinity, and nitrate data into globe.gov
- Purify buckets of water using: lifestraw 2.0 (family size), tablets, sawyer filter, and droplets.
- Again, Test the purified creek water for ph, alkalinity, nitrates, temperature, and ecoli.
- Check the petrifilms from each purified sample and give water samples to people.
- Have people complete a survey on water taste test



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epa standard, sawyer, lifestraw, tablets and droplets

All filtered results fell within EPA drinking water standards!

Results





	No way	Sort of	Maybe	Almost	Yes/grea t
1.How was the quality of the water?	ο	0	ο	ο	ο
2.Do you think the water would cause you to get sick?	ο	ο	ο	ο	o
3.Does our purified water taste similar to drinking water at home?	ο	ο	ο	ο	0
4.Does our purified water taste similar to drinking water at home?	0	0	ο	ο	0
5.Did you taste chemicals in the water?	ο	ο	ο	ο	ο
6.Do you think this water filtration would help around the world?	0	0	0	ο	0

#### Here are the questions that we asked in our taste test survey









#### Conclusions

- People appreciated that there weren't any bacteria.
- Yes our hypothesis is correct, we found out the water is safe to drink.
- We guessed the droplets would give the best survey results, but the Chlorine tablets gave us the most positive feedback during the taste surveys.









- Our water testing results and methods can help around the world.
- We've already presented this Bowling Green State University's Research Symposium
- We'll present it again next month at the regional GLOBE Science Research Symposium at Wayne State University
- THANK YOU!











#### Does air pollution affect the acidity of creek and rain?

Our hypothesis was that air pollution has an effect on water pollution. It is important to study this because, aerosols reduce visibility from the sun and they can have negative effects on the climate of an area, and human health.

**Objective**: To test for a relationship between air pollution and water pollution.











#### Methods

• Using GLOBE protocols, collect aerosol data with a sun photometer



- Go to rain gauge. Go to the creek.
- Measure the potential hydrogen (ph) from the rain gauge and from the creek using a ph probe.
- Enter into the Globe Website











**RESULTS:** The AQI (Air Quality Index) decreased, the potential hydrogen of the river increased but the ph of the rain water decreased. As the river potential hydrogen increased and became more basic, the rain ph decreased and became more acidic.





- We've already presented this Bowling Green State University's Research Symposium
- We'll present it again next month at the regional GLOBE Science Research Symposium at Wayne State University
- The next step would be to record more data to see if there is a more accurate relationship between air pollution and water pollution.
- THANK YOU!



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### Please visit the H2you Project at:

### www.h2youproject.com

Read others' water stories

Share your GLOBE water story too!

Here's ours...









#### Our water story:

While we were working outdoors in the water, we got to work in the water and got the job done. Deejays waders had a hole in it and it started to leak through his pants and socks got wet. We tested the water and made sure it was safe to drink. We had people from around our school taste test the water after filtration from different methods and complete a survey. Some people said that the water looked like pee and was yellow. We collected GLOBE data on the water before filtering it. It was a very fun experience while working in the creek behind our school. We didn't see much wildlife in the cold but shallow water. The water started to freeze and developed ice and we stepped on it and Deejay almost fell in. We collected GLOBE hydrology data in the wind, rain, sleet and snow! We presented our research project at BGSU and made a difference in front of judges.



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### Names of GLOBE Teacher and all students

#### Thanks from Mrs. Laura Kubiak and her class

Presenters were: Keshuan Preston & Dajour Walker Sydney McLaney & Royce Hutchinson Nate Jones





