

Conducting Field Investigations

October 24, 2017

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Student Research Symposia
Open Office Hours/Webinar

Webinars/Open Office Hours (7- 8pm EST)

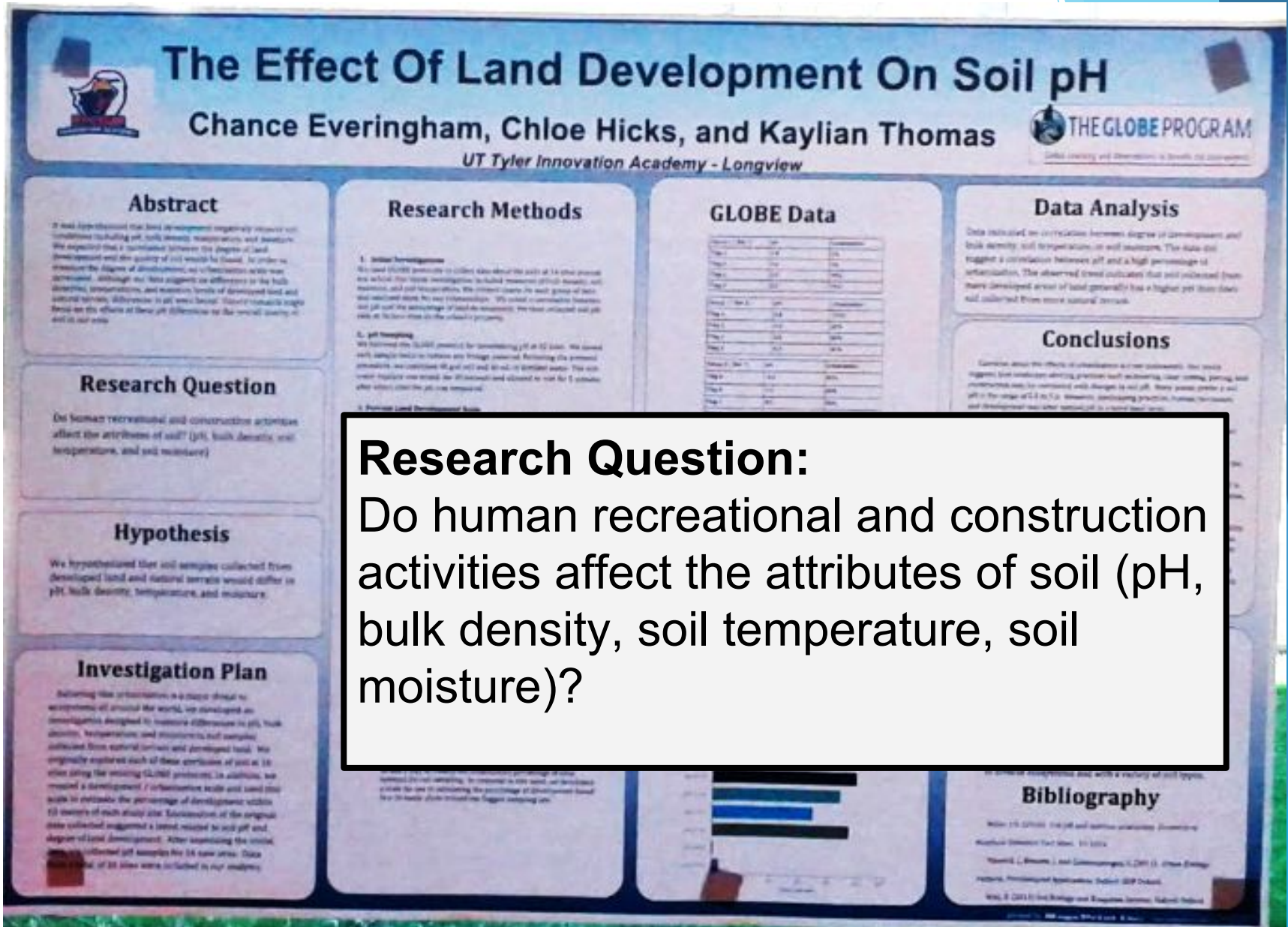
Each webinar will begin with a short presentation on the topic with student examples from past SRS or IVSS. The remaining time will be open office hours for questions on the topic, or other SRS questions. Pre-recorded webinars on each topic are available on the website.

Date	Topic
Tuesday, October 24	Conducting Field Investigations
Monday, November 13	Developing Good Research Questions
Wednesday, December 13	Analyzing Data
Thursday, January 25	Writing Conclusions
Tuesday, February 13	Making a Science Poster
Monday, March 5	Giving a Poster Presentation

2018 SRS Locations

Region	Location
Midwest	Wayne State University, Detroit, MI
Northeast/Mid-Atlantic	State University of New York, Fredonia, NY
Northwest	Montana State University, Bozeman, MT
Pacific	NASA Ames, Mountain View, CA
Southeast	University of North Carolina, Charlotte, NC
Southwest	Metropolitan State University, Denver, CO

SRS Poster Example



SRS Poster Example

Carbon Dioxide Sequestration by Trees:
An Evaluation of the Woody Biomass on the MBS Campus

GLOBE Northeast & Mid-Atlantic Regional Student Research Symposium
May 19-21 2017, Palmyra Cove Nature Center, Palmyra Cove, NJ

Morristown-Beard School
THE GLOBE PROGRAM

Research Question

Does the amount of carbon dioxide annually absorbed by the trees on campus by photosynthesis offset the carbon dioxide that is added to the atmosphere through the running of our school?

Research Methods

1. Locate, tag and identify all of the trees on our campus.
2. Find the longitude and latitude of each tree using Google Earth.
3. Measure the circumference of each tree to determine the diameter at breast height (DBH, 1.35m).
4. Calculate biomass using the allometric equation $\ln m = \text{Exp}(b_0 + b_1 \ln dbh)$.
5. Convert biomass into carbon mass.
 - hardwood contains 32.1% carbon
 - softwood contains 49.8% carbon
6. Convert mass of carbon into carbon dioxide absorbed. (The weight ratio of CO₂ to elemental C is 3.67.)

Discussion



Over the combined lifespan of the trees on campus, we measured approximately 240 metric tons of CO₂ has been absorbed from the atmosphere by the trees at our school. This represents approximately one tenth of the annual CO₂ produced by the school which was derived from a 2016 study analyzing the school's carbon footprint. They concluded that approximately 2440 metric tons of CO₂ are annually produced on campus from the everyday running of the school.

What's Next

Our study currently only measures the total CO₂ absorption for the lifetime of the trees. We plan to continue collecting allometric data for all the trees on campus to determine the annual absorption of CO₂ to determine current data and the difference between annual CO₂ production and absorption.

Challenges we needed to overcome:

Once we tagged the trees with their identifying numbers we noticed over time, with poor weather and various students some of the tags were missing.



Research Question: Does the amount of carbon annual absorbed by the trees on campus by photosynthesis offset the carbon dioxide that is added to the atmosphere through the running of our school?

IVSS Report Example

How do the species of macroinvertebrates in the Boulder Creek compare with the water chemistry of the stream?

Organization: Alexander Dawson School

Student(s): Lindsey Bartoletta Breck Dunbar

Grade Level: Middle (6-8)

GLOBE Teacher: \$user.getFullName() (inactive)

Contributors:

Presentation: [View Document](#)

Optional Badges: Community Impact, Exploring STEM Careers, Interscholastic Connection

Date Submitted: 04/03/2017



[View Research Report](#)

This science project was done to learn more about the macroinvertebrates in the Boulder Creek, and how the numbers and species fluctuate according to alkalinity, temperature, dissolved oxygen (D.O.) and pH. Before collecting data, we hypothesized that the warmer the water got, the more pollution tolerant species would be present. This is because if the water was warmer, it would mean that the atmosphere outside was warmer, which would lead to snow melt. The snow would pick up the dirt and debris it passes on its way to the creek, therefore, polluting the water. Almost every Monday, we went down to the creek and collected macroinvertebrates using the kick and pick protocol. Our conclusions were that since the stream's water chemistry stayed healthy and balanced, there was little change in the macroinvertebrates numbers and species. The only change was between the spike in stoneflies and drop in the mayflies during the fall.

RESOURCES FOR STUDENTS AND TEACHERS



NEW this year! Teacher Hotline!

Have a question about the research process or the 2018 SRS?

Fill out [a short google form](#) and you will be connected with an experienced GLOBE teacher who can discuss your question over a brief phone call.

Google form is available from the SRS website:

<https://www.globe.gov/web/united-states-of-america/home/student-research-symposia>

If you are an experienced teacher who would like to join the SRS Hotline team, please contact Haley Wicklein (hwicklein@gmail.com).

SRS Teacher Listserve

**If you aren't already on the list,
SIGN UP!**

- Stay updated on SRS information and deadlines.
- Find out about webinars and events.
- Direct links to new and exciting teaching resources for student research.

*Sign up link
available on
the SRS
webpage.*



Hello GLOBE Teachers!

The Pacific and Northwest Symposia begin this week! See below for info about all [GLOBE Student Research Symposia](#) (new items in red).

If you are attending the PACIFIC or NORTHWEST Symposia:

- Keep an eye out for the logistics email early this week.
- Please remind parents to return the evaluation opt-out form if they

U.S. Regional SRS Webpage:

<https://www.globe.gov/web/united-states-of-america/home/student-research-symposia>

Open for Q&A

Please use the “raise your hand” or use the chat window to ask your questions.