THE GLOBE PROGRAM

Webinar Logistics

Call-in Info for US and Canada:
U.S. & Canada: 1.866.740.1260
Access Code: 4972649#

Call-in Info for International:
https://www.readytalk.com/rt/an.php?tfnum=8667401260
Access Code: 4972649#

Please type in the chat window if you need assistance finding your access phone number!

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THE GLOBE PROGRAM

ReadyTalk Conference Controls - Preparing for the 2016 GLOBE International Virtual Science Fair: An Overview of Resources and the Rubrics

Participants

Web: 1 Hands Raised: 0

Chairperson (Presenter)

Stop Meeting | Record Meeting | Share | Grant Control | Enable Webcams | Options | Help

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Start My Audio Meeting

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Chat

Chat | Questions | Answered

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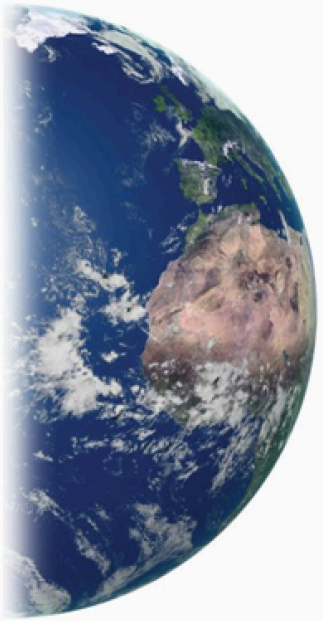

GLOBE International Virtual Science Fair

2016

www.globe.gov

http://www.globe.gov/science-fair

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Overview of the Science Fair

Julie Malmberg, PhD

Education, Outreach, and Technology Specialist

GLOBE Implementation Office

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GLOBE International Virtual Science Fair - 2016

- Online space for students to share and discuss GLOBE research
- Open to **all** GLOBE students K-12
  - Rubrics by grade level

Sponsored by: NASA NSF Supported by: NOAA Implemented by: UCAR

THE GLOBE PROGRAM

New for 2016!

- Merit based
- Badges
- Drawing for stipend ($2k for two international groups, $1k for two US groups)
- Increased support for K-5

Merit Based Student Research Badge

- Students **earn** points from 1 to 4
- No limit to projects that earn top ranking
- More positive approach

Badges

- Possible for students to earn up to 5 additional badges
  - Collaboration
  - Community Impact
  - Connection to a Scientist
  - Interscholastic Connection
  - Engineering Solution

Drawing

- Earn 4 star Student Research Badge AND at least two additional badges at the 4 star level → entered into a drawing
- Projects drawn will receive funds to help offset the cost of attendance at the 20th GLOBE Annual Meeting
- 4 projects will be drawn: 2 international ($2,000 each), 2 US ($1,000 each)

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How to Enter

- Entries include:
  - Abstract
  - Research Report
  - Narrative on each badge completed
  - Presentation
    - Narrated Power Point
    - Video
    - Scientific Poster
  - Photo Releases

Ozone in Our School Zone

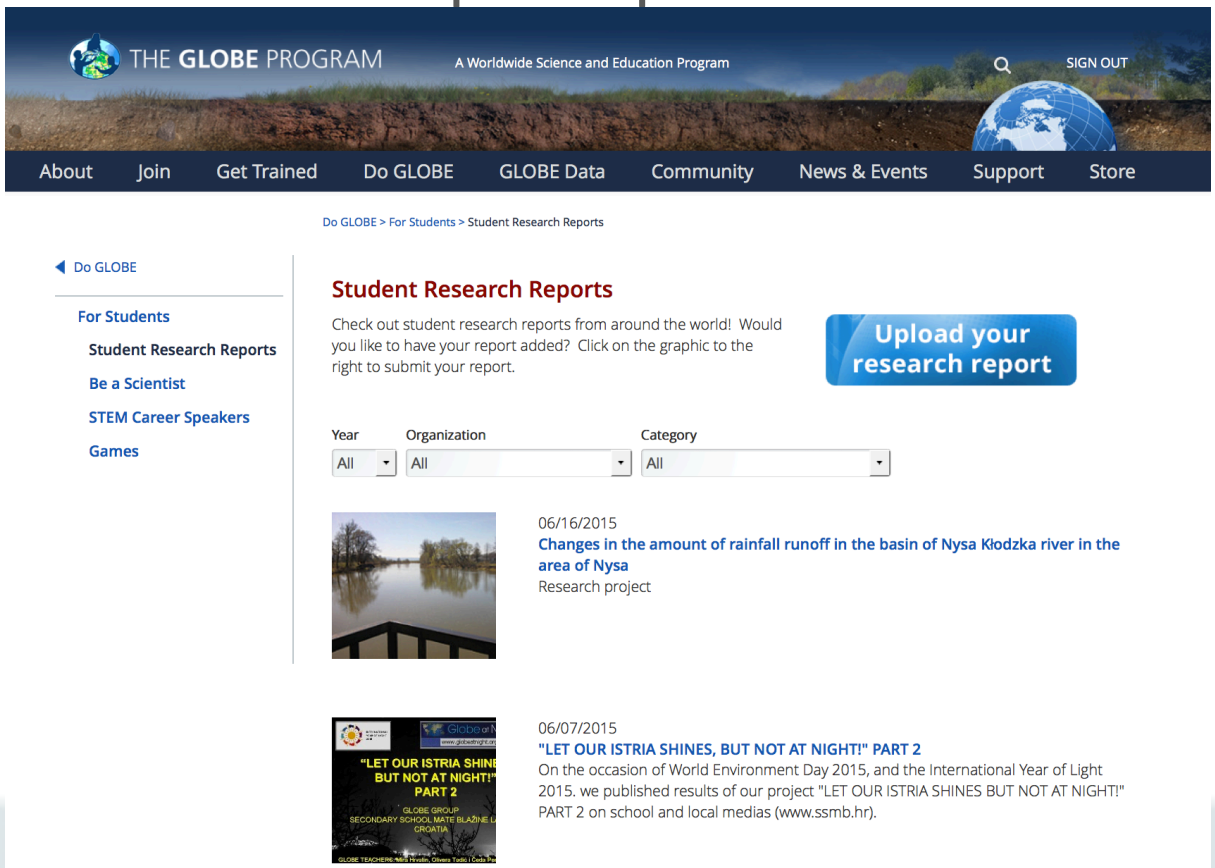
Organization: Sherrard Middle School
Author(s): Katyn Seidler, Kaylee McMullen, Abby Mason, Faith Grimm, Hannah Hill, Lori Johnson, Abbey Bauer, Bryanna Brookover, Trey Miller, Jacob Nelson
Grade Level: secondary
Project Type: Research Reports
GLOBE Teacher: Kelly Carter
Contributors:
Date Submitted: 05/31/2013

View Document

After observing a marked increase in natural gas drilling in our area, we decided to research the effects of natural gas drilling on the ozone at our school. The most noticeable impact of the drilling is an increase in natural gas related traffic. We decided to count number of gas related vehicles driving by our school and compare them with the surface ozone levels at our school. To prepare we researched hydrofracking, atmosphere and ozone, and and discussed ways they could be related and effects on health and the environment. We found a study that is run by a local health department that is sending atmospheric data to West Virginia University and they are studying the health effects of fracking wells on local health. We invited the Doctor to speak to our class and learned more about the possible health effects. We made ozone detection strips and designed a procedure and data sheets to get data on numbers and ozone levels. We didn't notice any difference in our ozone strips so we were unable to make a conclusion about the effects of the traffic on surface ozone levels. Also as we were researching we found an article that said that vehicles don't actually give off surface ozone but they give off other chemicals that cause the creation of surface ozone so we found that our original hypothesis was flawed from the onset. We became curious about the percentage of traffic that was gas related so we counted all the vehicles for a couple of days. We found that the percentage was much less than we predicted. We predicted 25-40% but our actual results were 9 and 13% Still we thought that was a significant increase in general traffic in our area and the roads are showing the wear and tear. We were very surprised at the number of natural gas related vehicles that were passing our rural school everyday. .07 trucks per minute.

How to Enter

- Report upload tool available online early 2016
- Similar to current report upload tool



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Student Reseach Reports

* Required Fields

School / Organization * Select Add Another Organization/Teacher

GLOBE Teacher * Select

Student(s) *

Additional Contributors *

Grade Level *

Lower Primary (K-2)

Report Title *

Report Description *

Report Date *

mm/dd/yyyy

Abstract or Summary *

Upload Research Report *

Select a new file

Browse... No file selected

Upload Report Thumbnail Image *

Select a new file

Thumbnail Alt Tag

Type of Student Research Report *

- Standard Research Report
- International Virtual Science Fair Report

Presentation

Link to Video URL:

or

Upload Poster Presentation

Select a new file

Browse... No file selected

Photo Releases

Select a new file

Browse... No file selected

Optional Badges

- Collaboration
- Community Impact
- Connection to a Scientist
- Interscholastic Connection
- Enginerring Solution

Submit Report Cancel

Note: Reports are subject to review before being posted on the website.

Presentations

Important to communicate science!

- Poster
- Narrated PowerPoint (or similar)
- Video

THE GLOBE PROGRAM

Nitrate Concentration of the Cove River Biome During a Six Month Period

Abstract

The Cove River biome consists of a seven-kilometer river and a 35.28 acre open space park for public use, though it is mostly used for research and educational purposes, such as the GLOBE Program and archaeological digs. The Cove River biome is home to several animals, including foxes, large trees that produce high amounts of canopy cover and plant life found in the river and in the soil. This experiment is being performed to discover the nitrate concentration of the Cove River as a way to investigate the river's level of pollution and to determine if the nitrates have a negative effect on the biome. From October of 2011 to March of 2012, data was collected from water samples of the Cove River to determine the temperature of the river the pH of the river, the nitrate levels of the river and the dissolved oxygen levels of the river. Though the focus of this experiment is on the impact of nitrates on the Cove River, other variables were accounted for because the lab group wanted to check if other factors correlated with the levels of nitrate. Such correlation was seen in some form as shown by the graph and data, especially between the dissolved oxygen and nitrate levels on some testing dates. Overall, the data showed that the Cove River has nitrate levels that do not exceed or come close to the Maximum Contaminant Level set by the Environmental Protection Agency (EPA), which is 10 ppm or 10 mg/L. The Cove River biome is, currently, safe against pollution, but if runoff of nitrogen caused by heavy precipitation (which was a factor correlated with nitrate levels in the results) and by the waste of the surrounding civilization continues, then pollution of the biome is still a threat.

Problem Statement

This project is being conducted to test the effect of nitrates on the water of the Cove River over a period of six months from October of 2011 to March of 2012.

IV: Time (six months) of collection

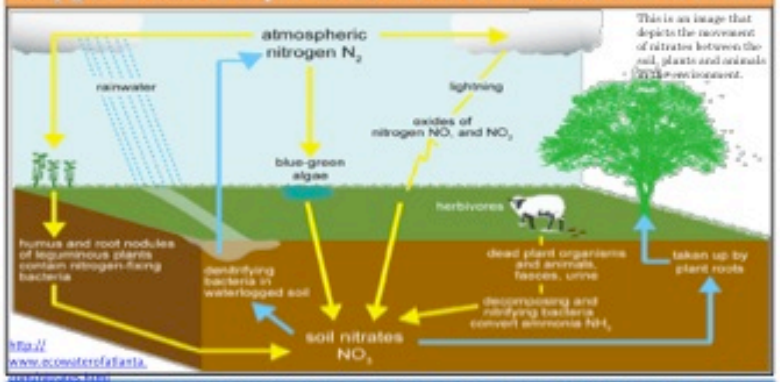
DV: Nitrate levels

Hypothesis: If the nitrate levels in the water exceed the standards permitted by the EPA, then Cove River is polluted and steps must be taken to prevent long-term consequences.

Method/Procedure

1. Collect a water sample in the bucket from the predetermined location at Cove River.
2. Use the Vernier Probe Ware to measure the dissolved oxygen level and temperature of the water sample immediately after collecting the water so that the results are not invalidated by exposure to the atmosphere.
3. Record dissolved oxygen levels and water temperature.
4. Bring sample back to the lab to test water pH and nitrate levels using the API® Aquarium Pharmaceuticals Testing Kit. Follow the instructions attached to the testing kit.
5. Record water pH and nitrate levels.
6. Dispose of chemical wastes appropriately.

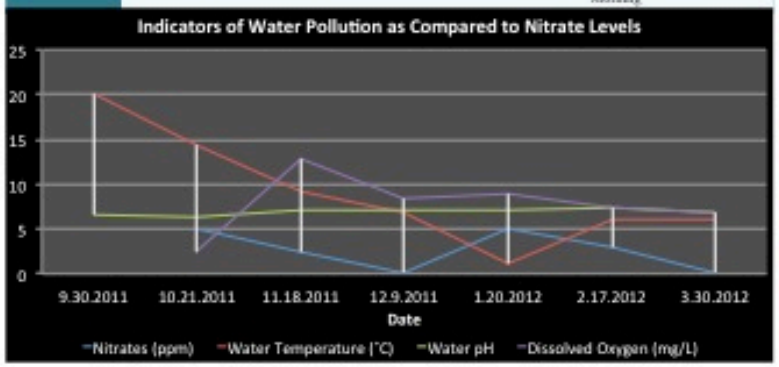
The Change of Nitrate Levels, Temperature, Dissolved Oxygen levels and pH of the Cove River Over Six Months



Indicators of Pollution as Compared to Nitrate Levels

Indicators of Water Pollution as Compared to Nitrate Levels

Date	9.30.11	10.21.11	11.18.11	12.9.11	1.30.12	2.17.12	3.30.12
Water Temperature (°C)	20.2	14.5	9.2	7.0	1.1	6.0	6.0
Water pH	6.5	6.3	7.1	7.2	7.1	7.4	6.8
Dissolved Oxygen (mg/L)	N/A	2.5	12.8	8.5	9.0	7.4	7.0
Nitrates (ppm)	N/A	5.0	2.5	0.0	5.0	3.0	0.0
Recent Precipitation	Yes; Heavy Rainfall on Previous Night	Yes; Constant Rainfall Throughout the Week	No	No	Yes; Snow on Previous Night	Yes; Rainfall on the Previous Night & Morning	Yes; Constant Rainfall Throughout the Week



Conclusions

The purpose of this experiment was to determine if the water quality of Cover River was affected by the amount of nitrates in the water. Analysis of nitrate levels shows that:

1. The nearby school, busy street, and gas station with a leaking septic tank make Cove River particularly susceptible to pollution.
2. The increase in nitrate levels after a period of rainfall indicates that runoff from nearby establishments reaches Cove River.
3. As the dissolved oxygen levels increase, the nitrate levels decrease.
4. The data demonstrates no correlation between nitrate levels and season, water pH, or water temperature. However, it is still important to note water pH because a high pH promote nitrate-producing bacteria growth. Moreover, because water pH and water temperature also affect dissolved oxygen levels, these factors must be taken into account before establishing a relationship between dissolved oxygen levels and nitrate levels.
5. The Cove River currently meets the EPA standards for healthy nitrate levels.

Future Directions

This experiment can be improved by testing multiples areas of Cove River and obtaining several samples from each area. Testing several spots of the river would produce a variety of results, thereby increasing the reliability of the experiment. Furthermore, more frequent testing would enhance the data by providing researchers with more information to determine what may cause a change in nitrate levels. It would also be beneficial to include a more detailed examination of each surrounde establishment near the testing location. If the nitrate levels are unusually high, then it would be easier to identify the source of any pollution or runoff.

Further experimentation extending outside the hydrosphere can be undertaken to increase one's understanding of the topic. In the future, there could be an additional focus nitrogen dioxide, a major air pollutant. Nitrogen dioxide that dissolves in the water could increase the nitrate level and thus a spike in nitrate levels could indicate an excess in air pollution.

References

"Basic Information about Nitrate in Drinking Water." *Epa.gov*. United States Environmental Protection Agency, 6 Mar. 2012. Web. 5 Apr. 2012. <http://water.epa.gov/drink/contaminants/basicinformation/nitrate.cfm>.

"Measuring Nitrates and Their Effects on Water Quality." *Nwrc.usda*. Web. 6 Apr. 2012. <http://www.nwrc.usda.gov/research/research_modules/water_quality/module_5/index.htm>.

"Nitrate and Nitrite." *Anl.gov*. Argonne National Laboratory, Aug. 2005. Web. 7 Apr. 2012. <http://www.evs.anl.gov/pub/doc/nitrate-fs.pdf>.

"Nitrate and Nitrite." *Delaware.gov*. Delaware Health and Social Services, Jan. 2010. Web. 5 Apr. 2012. <http://dhss.delaware.gov/dph/files/nitrateqa.pdf>.

Acknowledgements

We would like to thank Professor Scott Graves and Mr. Kevin Dickson for their guidance, support, and assistance.

Resources (available on the website)

- Mentor scientists
- The Scientific Process
- How to Create a Student Research Report
- Guide to Asking Questions
- Webinars – new ones this fall as well as archived
- GLOBE student reports and virtual conferences
- What else?

Virtual Science Fairs

2016 International Virtual Science Fair

Rubrics

Resources

FAQs

Scientist Participation

Mentor Scientists

2016 GLOBE International Virtual Science Fair

The GLOBE Program is pleased to announce the 2016 GLOBE International Virtual Science Fair for students around the world. With GLOBE, students learn the practices of science through hands-on investigations in their own communities, sparking their curiosity and interest in science. This often leads to inquiries that help solve real-world problems and further understanding of our global environment. Now it's time for your students to show the world what they've learned!

Webinar announcement:

"Preparing for the 2016 GLOBE International Virtual Science Fair: An Overview of Resources and the Rubrics"

Join Dr. Julie Malmberg, Education, Outreach, and Technology Specialist at the GLOBE Implementation Office, and Matt Silberglitt, Senior Research Associate in the STEM Program at WestEd, for a webinar on 16 December 2015 at 20:00 UTC (1:00 p.m. MST/3:00 p.m. EST). The goal of this webinar is to help teachers and students prepare for the 2016 GLOBE International Virtual Science Fair. The webinar will provide an overview of available resources for teachers and students and cover the details of the scoring rubrics. There will be time for community questions and a recording will be provided after the webinar. Register here: http://cc.readytalk.com/r/8gke6exczedd

Overview:

The 2016 GLOBE International Virtual Science Fair takes place online, and students from any GLOBE country may participate. GLOBE students should use the GLOBE data they entered into the database and should collaborate with scientists, including scientists who are part of the GLOBE International Scientists' Network (GISN). This is a great

Virtual Science Fairs LEFT NAVIGATION

2016 International Virtual Science Fair

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International Virtual Science Fair - Rubrics

WEB CONTENT DISPLAY

To score the International Virtual Science Fair projects, a team of scientists will use the rubrics attached on this page. Note that rubrics are listed by grade level.

Rubrics

Kindergarten - 2nd Grades (Lower Primary)
3rd - 5th Grades (Upper Primary)
6th - 8th Grades (Middle School)
9th - 12th Grades (High School)

Edit Select Web Content Date Modified: 12/11/2015

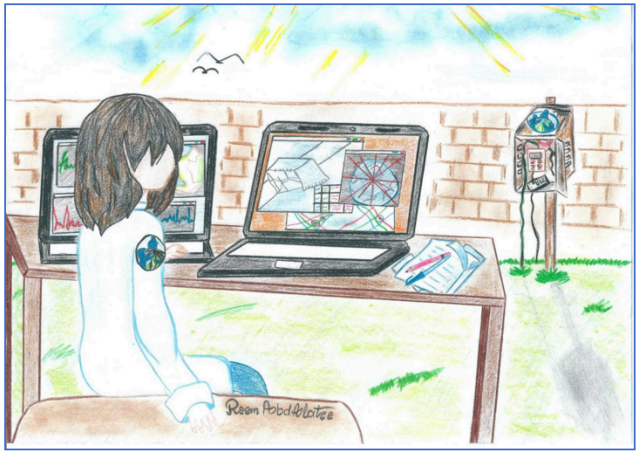
2016 International Virtual Science Fair

Resources

Guide to Asking Questions

International Virtual Science Fair - Resources

Below are resources to help in the completion of your student research report. If you need any additional resources, please contact the Community Support Team at help@globe.gov.



Previous Virtual Conferences

2012
2013

Creating a Research Project

Steps in the Scientific Process
Worksheet to Evaluate Possible Research Questions
How to Create a Student Research Report
Sample Research Report

Tips for preparing a presentation:

- SCRC Webinar - Scientist Skills: Presenting your Results
- Ten Secrets to Giving a Good Scientific Talk

Webinars

16 December 2015 at 20:00 UTC (1:00 p.m. MST/3:00 p.m. PST): Preparing for the 2016 GLOBE International Virtual Science Fair: An Overview of Resources and the Rubrics (registration)

Webinars presented for the United States Regional Science Fairs, all invited to attend.

5 November 2015: Conducting Field Investigations (recording)

Archived webinar are available here.

2016 International Virtual Science Fair

Resources

Guide to Asking Questions

Guide to Asking Questions

In order to learn more about a research project, judges and the GLOBE community are encouraged to ask questions that continue the scientific conversation. Each individual student report has an area for comments. This is the place to ask (and answer) questions. Listed below are a few examples of questions to ask about research reports. This is not intended to be a comprehensive list -- feel free to ask other questions.

- How did you become interested in this project?
- What did you learn?
- What would you change if you did this project again?
- What was the most challenging part?
- What was the most surprising part?
- How could you continue this research?
- What were the limitations of your data?
- Why is this research important?
- What is the most interesting part of your research?
- What outside resources helped you with your project?
- Who helped you with this project?

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Frequently Asked Questions - 2016 GLOBE International Virtual Science Fair

Q. Can I submit my project in a language that is not English?
A. Yes! However, it will not be scored. We are only able to score projects submitted in English.

Q. Can I use Google Translate or another translating program to translate my project?
A. Yes, the judges will then be able to score your project. However, keep in mind that Google Translate often makes mistakes. If possible, have someone familiar with English read over the translation.

Q. I'm a scientist. How can I be involved?
A. If you are part of the GLOBE International Scientists' Network (GISN), we would love for you to help score the projects. If not, think about applying to be part of the network! If you are interested in scoring or mentoring projects, fill out the interest form. If you are interested in being part of the GISN, send an email to help@globe.gov.

Q. What if the scientist I want to work with is not part of the GLOBE International Scientists' Network (GISN)?
A. That's fine! But, encourage the scientist to join the GISN.

Q. I teach 1st grade. Can my students also submit a project?
A. Yes! We have customized the scoring rubrics by grade level. Younger students will be scored differently than older students.

Q. How do the badges work?
A. All students who submit a project will receive a virtual Student Research Badge. Scored projects will receive between 1 and 4 stars. Additionally, students can elect to be scored for five more optional badges. These badges, which are described in the rubrics, are collaboration, community impact, connection to a local or network scientist, international connection, and engineering solutions.

Q. Can I still get a badge if my project is not in English?
A. Yes! All student projects will receive a Student Research Badge, however only scored projects (those in English) will receive stars on their badges.

Q. Do I have to use GLOBE data in my project?
A. Yes, students must use GLOBE data and enter data into the GLOBE database.

Q. How do I come up with ideas for my research project?
A. To get some ideas, we encourage you to look at previously submitted Student Research Reports, active Field

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Scientist Participation

GISN Interest Form: 2016 GLOBE International Virtual Science Fair

The 2016 GLOBE International Virtual Science Fair will showcase student research projects from around the world. Student projects are due on 11 March 2016 and judging will take place 3-16 April 2016.

There are two volunteer opportunities for GISN scientists to be involved with this exciting event. First, you can volunteer to work as a research mentor for student groups. While volunteering does not guarantee that you will be contacted, groups are looking for science mentors. Second, you can volunteer to help judge the student projects in 2016. If you are interested in working as a mentor and judging, feel free to check both boxes.

We appreciate your interest in helping with the Science Fair! If you have any questions, please contact help@globe.gov or see the Science Fair webpage at http://www.globe.gov/news-events/globe-events/virtual-conferences/2016-international-virtual-science-fair.

Your Name

Your Location

Include city, state (if applicable), country

Virtual Science Fairs

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Mentor Scientists

Mentors

Looking for a mentoring scientist? These scientists have volunteered to help! Are you a scientist and want to mentor students? Fill out the form on our Scientist Participation page.

Africa | Asia & Pacific | Europe & Eurasia | Latin America & Caribbean | Near East & North Africa | North America

Africa Region

Ylliass Destin Lawani, Cotonou, Benin Republic, ylliass AT gmail.com, Atmosphere - climate change, English, French

Dominique Mvunabandi, Musanze, Northern Province, Rwanda, dmvunabandi2020 AT gmail.com, Atmosphere, Biosphere - Geo-information Sciences and Earth Observation for Natural Resources Management (Forestry, Sustainable agriculture, Environment ecology and Carbon studies), English

Olawale Oluwafemi, Jos, Plateau State, Nigeria, walefemi007AT yahoo.com, Atmosphere, Hydrosphere, Pedosphere - Remote Sensing and GIS, Environmetal Geomorphology, Geodynamics, Satellite Education, English Language, Yoruba Language

Victor Ongoma, Kenya, victor.ongoma AT gmail.com, Atmosphere, Pedosphere - Climate Change, Urban Meteorology, Mircrometeorology and Atmospheric Pollution, English

Asia and Pacific Region

Dr. K.C.Siva Balan, Chennai, India, shiv_balan AT yahoo.com, Atmosphere, Biosphere, Agriculture - climate change and evaluation of resources, English and Hindi

Muhammad Ariful Haque, Dhaka, Bangladesh, kamfisht AT gmail.com, Pedosphere - GIS, English

Krisanadej Jaroensutasinee, Nakhonsithammarat, Thailand, k.jaroensutasinee AT gmail.com, Atmosphere, Biosphere - Ecoinformatics, English and Thai

Mullica Jaroensutasinee, Nakhonsithammarat, Thailand, mullica.jn AT gmail.com, Atmosphere, Biosphere, Hydrosphere - Ecology, English and Thai

Europe and Eurasia Region

Timeline

- Entries accepted starting in early 2016 (look for announcements)
- Projects Due: 11 March 2016
- Respond to judges and peers: 3-9 April 2016
- Badges Announced: 22 April 2016
- Live Drawing: 22 April 2016
- GLOBE Annual Meeting, Estes Park, Colorado, USA: 17-22 July 2016

THE GLOBE PROGRAM

Rubrics

Matt Silberglitt

Senior Research Associate

WestEd STEM Program

Sponsored by: NASA NSF Supported by: NOAA Implemented by: UCAR

Rubric Levels

Criteria

GLOBE INTERNATIONAL SCIENCE FAIR—JUDGING RUBRIC AND BADGES FOR HS SCIENCE PROJECTS

Level / Element	Superior - 4	Good – 3	Progressing – 2	Basic – 1	Score
1. Abstract	A **well-written, complete** abstract that summarizes the report is present that includes all of the components required at level 3	A **complete** abstract that summarizes the report is present. The abstract includes: • The problem, • Questions asked, • Objectives set, • Conclusions made, and • Recommendations for a way forward. Abstract follows designated format and does not exceed 200 words.	A **partially complete** abstract is present.	An abstract is present.	
2. Research question(s) (required for acceptance)	**Clear, creative**, and student-led research question(s) include all of the components at level 3, and: • Include a well-written description of background information, • Provide significant insight into both the topic of investigation and the research process, and • Answering them requires an advanced understanding of the subject matter.	**Original**, student-led research question(s) include all of the components at level 2, and: • Include why they are important, • Require a thoughtful research plan, and • Are of scientific interest.	Student-led research question(s) are asked, **explained**, and: • Concern some aspect of Earth's environment, • Include a brief description of background information, and • Are answerable through scientific research appropriate to the scope of the report.	Student-led research question(s) are **asked**; questions may be simple enough to answer without research or are beyond the scope of a GLOBE project report.	

Project Elements

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GLOBE INTERNATIONAL SCIENCE FAIR BADGE (ALL PROJECTS—OVERALL REPORT)

★★★★	★★★	★★	★
Report contains **all 12** of the elements listed above, is well organized, neat and well presented. **All** of the elements are scored at the 3-point level or above. Most are scored at the 4-point level. The writing is **clear and concise**	Report contains **all 12** of the elements listed above, is organized and well presented. **Most** of the elements are scored at the 3-point level or above. Most of the writing is **clear**.	Report contains **most** of the elements listed, and is organized and well-presented.	Report contains the **five** elements required for acceptance, clearly labeled. (2, 5, 6, 7 & 9)

Level / Badge	★★★★	★★★	★★	★
B1. Collaboration	All team members are listed, along with **clearly** defined roles, how these roles support one another, and descriptions of each student's contribution. The descriptions **clearly** indicate the advantages of the collaboration.	All team members are listed, along with **clearly** defined roles, how these roles support one another, and descriptions of each student's contribution.	All team members are listed, along with a **clear** description of each student's contribution and **some** indication of how students supported one another.	All team members are listed, along with some examples of contributions from each.
B2. Community impact	The report clearly describes how a local issue **led** to the research questions and **makes connections** between local and global impacts.	The report describes how a local or global issue **led** to the research questions, and describes **possible** impacts of the results for addressing the issue.	The report describes how a local or global issue **motivated** the research.	The report includes a description of a local or global issue and how it is **related** to the research.
B3. Connection to local or network scientist	The report clearly describes collaboration with a scientist that **enhanced** the research methods, **contributed** to improved precision, and **supported** more sophisticated analyses and interpretations of results.	The report describes collaboration with a scientist that **enhanced** the research methods and **extended** students' understanding of the results.	The report describes how input from a scientist **extended** students' understanding of the project.	The report includes a description of input from a scientist.
B4. Interscholastic connection	The report describes a **carefully planned** interscholastic or international collaboration that describes **rationales** for data collection in different regions and the **advantages** of comparing results.	The report describes an interscholastic or international collaboration, including **planning** for data collection and comparing results.	The report **includes** GLOBE data from at least two different schools, regions or countries, and describes efforts to **coordinate** data collection. Data from the student expedition to Mt. Kilimanjaro may be included as part of this badge.	The report **includes** GLOBE data from at least two different schools.
B5. Engineering solution	The report includes all of the components for level 3, and: • Describes the relative priority of the criteria for solving the problem, and • Describes tradeoffs considered in designing the solution.	The report includes all of the components for level 2, and: • Applies scientific ideas to the design cycle, • Describes how the design meets criteria defined in the context of the problem, and • Describes how constraints limit the design.	The report includes all of the components for level 1, and: Describes the potential impact of the solution on the environment.	The report describes an engineering solution to a real-world problem, based on student-generated sources of evidence.

GLOBE INTERNATIONAL SCIENCE FAIR—JUDGING RUBRIC AND BADGES FOR HS SCIENCE PROJECTS

Level / Element	Superior - 4	Good – 3	Progressing – 2	Basic – 1	Score
1. Abstract	A **well-written, complete** abstract that summarizes the report is present that includes all of the components required at level 3.	A **complete** abstract that summarizes the report is present. The abstract includes: • The problem, • Questions asked, • Objectives set, • Conclusions made, and • Recommendations for a way forward. Abstract follows designated format and does not exceed 200 words.	A **partially complete** abstract is present.	An abstract is present.	
2. Research question(s) (required for acceptance)	**Clear, creative**, and student-led research question(s) include all of the components at level 3, and: • Include a well-written description of background information, • Provide significant insight into both the topic of investigation and the research process, and • Answering them requires an advanced understanding of the subject matter.	**Original**, student-led research question(s) include all of the components at level 2, and: • Include why they are important, • Require a thoughtful research plan, and • Are of scientific interest.	Student-led research question(s) are asked, **explained**, and: • Concern some aspect of Earth's environment, • Include a brief description of background information, and • Are answerable through scientific research appropriate to the scope of the report.	Student-led research question(s) are **asked**; questions may be simple enough to answer without research or are beyond the scope of a GLOBE project report.	

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Project elements for 6–8 and HS (bold=required)

1. Abstract or Summary
2. **Research Question(s)**
3. Hypothesis
4. Student-led Investigation Plan
5. **Research Methods (including GLOBE protocols)**
6. **GLOBE data and data entry**
7. **Data summary – tables and/or graphics**
8. Data analysis
9. **Conclusions**
10. Discussion of limitations
11. Bibliography/Citations
12. Responses to judges' comments

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Project elements for 3–5 (bold=required)

1. Abstract or Summary
2. **Research Question(s)**
3. Student-led Investigation Plan
4. **Research Methods (including GLOBE protocols)**
5. **GLOBE data and data entry**
6. **Data summary – tables and/or graphics**
7. **Conclusion**
8. Bibliography
9. Responses to judges' comments

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Project elements for K–2 (bold=required)

1. Abstract or Summary
2. **Research Question(s)**
3. Student-led Investigation Plan
4. **Research Methods (including GLOBE protocols)**
5. **GLOBE data and data entry**
6. **Data summary – tables and/or graphics**
7. **Conclusion**
8. Responses to judges' comments

Sarah Tessendorf

Thank you so much for the very nice project! I'm very impressed with your analysis, and the creative and thorough approaches you took to create and answer you research question! Great job! A few questions:

1) Did you consider collecting your own precipitation data to compare with the measurements?
2) Do you know how the water runs off across the business district (i.e. would you expect more of an impact at one of your measurements sites versus the other)?
3) Are there any other water quality variables that you think might have been impacted by the city runoff that you were unable to test?

Posted on 5/20/13 2:44 PM.

Post Reply | Top | Edit | Delete

Marcy Burns

We did not consider collecting our own precipitation data because we do not have a good place at our school for a rain gauge. We do measure snow depth (when we get it).
We expected the water quality of the West Elm Street site to have poor quality because it is after the business district. The conductivity was a lot higher after the roads were salted after the creek passed through the business district.
We could also look at how much salt is in the water, turbidity, and how fast the water is flowing.

Posted on 5/29/13 11:00 AM in reply to Sarah Tessendorf.

Post Reply | Top | Edit | Delete

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GLOBE INTERNATIONAL SCIENCE FAIR BADGE (ALL PROJECTS—OVERALL REPORT)

★★★★	★★★	★★	★
Report contains **all 12** of the elements listed above, is well organized, neat and well presented. **All** of the elements are scored at the 3-point level or above. Most are scored at the 4-point level. The writing is **clear and concise**	Report contains **all 12** of the elements listed above, is organized and well presented. **Most** of the elements are scored at the 3-point level or above. Most of the writing is **clear**.	Report contains **most** of the elements listed, and is organized and well-presented.	Report contains the **five** elements required for acceptance, clearly labeled. (2, 5, 6, 7 & 9)

Level / Badge	★★★★	★★★	★★	★
B1. Collaboration	All team members are listed, along with **clearly** defined roles, how these roles support one another, and descriptions of each student's contribution. The descriptions **clearly** indicate the advantages of the collaboration.	All team members are listed, along with **clearly** defined roles, how these roles support one another, and descriptions of each student's contribution.	All team members are listed, along with a **clear** description of each student's contribution and **some** indication of how students supported one another.	All team members are listed, along with some examples of contributions from each.
B2. Community impact	The report clearly describes how a local issue **led** to the research questions and **makes connections** between local and global impacts.	The report describes how a local or global issue **led** to the research questions, and describes **possible** impacts of the results for addressing the issue.	The report describes how a local or global issue **motivated** the research.	The report includes a description of a local or global issue and how it is **related** to the research.
B3. Connection to local or network scientist	The report clearly describes collaboration with a scientist that **enhanced** the research methods, **contributed** to improved precision, and **supported** more sophisticated analyses and interpretations of results.	The report describes collaboration with a scientist that **enhanced** the research methods and **extended** students' understanding of the results.	The report describes how input from a scientist **extended** students' understanding of the project.	The report includes a description of input from a scientist.
B4. Interscholastic connection	The report describes a **carefully planned** interscholastic or international collaboration that describes **rationales** for data collection in different regions and the **advantages** of comparing results.	The report describes an interscholastic or international collaboration, including **planning** for data collection and comparing results.	The report **includes** GLOBE data from at least two different schools, regions or countries, and describes efforts to **coordinate** data collection. Data from the student expedition to Mt. Kilimanjaro may be included as part of this badge.	The report **includes** GLOBE data from at least two different schools.
B5. Engineering solution	The report includes all of the components for level 3, and: • Describes the relative priority of the criteria for solving the problem, and • Describes tradeoffs considered in designing the solution.	The report includes all of the components for level 2, and: • Applies scientific ideas to the design cycle, • Describes how the design meets criteria defined in the context of the problem, and • Describes how constraints limit the design.	The report includes all of the components for level 1, and: Describes the potential impact of the solution on the environment.	The report describes an engineering solution to a real-world problem, based on student-generated sources of evidence.

4. Student-led investigation plan	A **clear** and **complete** investigation plan is present that includes the components at level 3, and: • Clearly outlines the steps to complete project, and • Describes the collaboration process.

Collaboration in a project element

Badge \ Level	★★★★
B1. Collaboration	All team members are listed, along with **clearly** defined roles, how these roles support one another, and descriptions of each student's contribution. The descriptions **clearly** indicate the advantages of the collaboration.

Optional collaboration badge

Level / Badge	★★★★	★★★	★★	★
B5. Engineering solution	The report includes all of the components for level 3, and: • Describes the relative priority of the criteria for solving the problem, and • Describes tradeoffs considered in designing the solution.	The report includes all of the components for level 2, and: • Applies scientific ideas to the design cycle, • Describes how the design meets criteria defined in the context of the problem, and • Describes how constraints limit the design.	The report includes all of the components for level 1, and: Describes the potential impact of the solution on the environment.	The report describes an engineering solution to a real-world problem, based on student-generated sources of evidence.

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GLOBE INTERNATIONAL SCIENCE FAIR—JUDGING RUBRIC AND BADGES FOR HS SCIENCE PROJECTS

Level / Element	Superior - 4	Good – 3	Progressing – 2	Basic – 1	Score
1. Abstract	A **well-written, complete** abstract that summarizes the report is present that includes all of the components required at level 3.	A **complete** abstract that summarizes the report is present. The abstract includes: • The problem, • Questions asked, • Objectives set, • Conclusions made, and • Recommendations for a way forward. Abstract follows designated format and does not exceed 200 words.	A **partially complete** abstract is present.	An abstract is present.	
2. Research question(s) (required for acceptance)	**Clear, creative**, and student-led research question(s) include all of the components at level 3, and: • Include a well-written description of background information, • Provide significant insight into both the topic of investigation and the research process, and • Answering them requires an advanced understanding of the subject matter.	**Original**, student-led research question(s) include all of the components at level 2, and: • Include why they are important, • Require a thoughtful research plan, and • Are of scientific interest.	Student-led research question(s) are asked, **explained**, and: • Concern some aspect of Earth's environment, • Include a brief description of background information, and • Are answerable through scientific research appropriate to the scope of the report.	Student-led research question(s) are **asked**; questions may be simple enough to answer without research or are beyond the scope of a GLOBE project report.	

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GLOBE Distinguished Educator Fellowship

http://www.globe.gov/news-events/globe-events/competitions/fellowships

- Fellowship for GLOBE educators
- Create a resource for the GLOBE community
- Two international, one US Fellow
- Stipend of $650 USD for educator and collaborating scientist
- Due date is 5 January 2016

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Questions? Comments?

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