Webinar Logistics

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U.S. & Canada: 1.866.740.1260
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GLOBE International Virtual Science Fair

2016

www.globe.gov

http://www.globe.gov/science-fair
Overview of the Science Fair

Julie Malmberg, PhD
Education, Outreach, and Technology Specialist
GLOBE Implementation Office
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
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)
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): Katy 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 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
Presentations

Important to communicate science!

- Poster
- Narrated PowerPoint (or similar)
- Video
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 15.28 square kilometer area of public use. It is mostly used for research and educational purposes, such as the GLOBE Program and archaeological digs. This program is focused on several areas, including those large trees that produce high amounts of oxygen and plants that thrive in it. This study is being performed to discover the nitrate concentration of the Cove River to see if it affects the area. To observe the area, a total of six months from October 2011 to March 2012. Data was collected from various sites of the Cove River to determine the temperature of the river, the pH of the water, the nitrate levels of the River, and the dissolved oxygen levels of the river. These three factors were measured and analyzed to see if they were affected by the proximity of the Cove River.

Conclusions
The purpose of this experiment was to determine the nitrate concentration of the Cove River Biome. The results show that the Cove River has a negative effect on the area. From October 2011 to March 2012, data was collected from various sites of the Cove River to determine the temperature of the river, the pH of the water, the nitrate levels of the River, and the dissolved oxygen levels of the river. These factors were measured and analyzed to see if the proximity of the Cove River had an effect on the area.

Problem Statement
This project is being conducted to test the effects on the area of the Cove River Biome. A period of six months from October 2011 to March 2012.

Method/Procedure
1. Collect a water sample in the bottom of the predetermined location of the Cove River.
2. Use a Niteo Probe to measure the dissolved oxygen levels and the temperature of the water sample immediately after collecting the water to make sure the readings are not affected by exposure to temperature.
3. Record the dissolved oxygen levels and water temperature.
4. Bring the probe to the lab to test water 
   pH and nitrate levels using the APHA Aquatic Plant Nutrient Assay Kit followed by the instructions attached to the testing kit.
5. Record water 
   pH and nitrate levels.
6. Dispose of chemical waste appropriately.

Indicators of Pollution as Compared to Nitrate Levels

<table>
<thead>
<tr>
<th>Date</th>
<th>Indicators of Water Pollution as Compared to Nitrate Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water pH</td>
<td>6.5 6.3 7.1 7.2 7.1 7.2 7.1 6.8</td>
</tr>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>N/A 2.5 12.8 8.5 9.0 7.4 7.0</td>
</tr>
<tr>
<td>Nitrites (ppm)</td>
<td>N/A 5.0 2.5 4.0 5.0 3.0 0.0</td>
</tr>
</tbody>
</table>

Future Directions
This experiment can be improved by testing multiple areas of Cove River and obtaining several samples from each area. Testing several areas of the river would produce a variety of results, directly increase the reliability of the experiment. Furthermore, more frequent testing would enhance the data by providing more accurate and useful information to determine what causes changes in nitrate levels. It is also beneficial to include a more detailed examination of each individual area as increase as the establishment of the testing location.

References

Acknowledgements
We would like to thank Professor Scott Grimes and Mr. Kevin Delman for their assistance and support.
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?
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/rr8gke6exzedd

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 (GISM). This is a great...
International Virtual Science Fair - Rubrics

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)
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.
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?
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
Scientists 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
---
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


**Victor Ongoma**, Kenya, victor.ongoma AT gmail.com, Atmosphere, Pedosphere - Climate Change, Urban Meteorology, Micrometeorology 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 Jaroenutsasinee**, Nakhonsithammarat, Thailand, k.jaroenutsasinee AT gmail.com, Atmosphere, Biosphere - Ecoinformatics, English and Thai

**Mullica Jaroenutsasinee**, 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
Rubrics

Matt Silberglitt
Senior Research Associate
WestEd STEM Program
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Rubric Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GLOBE INTERNATIONAL SCIENCE FAIR—JUDGING RUBRIC AND BADGES FOR HS SCIENCE PROJECTS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Element</strong></td>
<td><strong>Level</strong></td>
</tr>
<tr>
<td>1. Abstract</td>
<td>A <em>well-written, complete</em> abstract that summarizes the report is present that includes all of the components required at level 3.</td>
</tr>
<tr>
<td>2. Research question(s) (required for acceptance)</td>
<td>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.</td>
</tr>
</tbody>
</table>
### GLOBE INTERNATIONAL SCIENCE FAIR BADGE (ALL PROJECTS—OVERALL REPORT)

<table>
<thead>
<tr>
<th>★★★★</th>
<th>★★★</th>
<th>★★</th>
<th>★</th>
</tr>
</thead>
</table>

- **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)
<table>
<thead>
<tr>
<th>Badge</th>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1. Collaboration</td>
<td>★★★★★</td>
<td>All team members are listed, along with <strong>clearly</strong> defined roles, how these roles support one another, and descriptions of each student’s contribution. The descriptions <strong>clearly</strong> indicate the advantages of the collaboration.</td>
</tr>
<tr>
<td></td>
<td>★★★★</td>
<td>All team members are listed, along with a <strong>clear</strong> description of each student’s contribution and some indication of how students supported one another.</td>
</tr>
<tr>
<td></td>
<td>★★</td>
<td>All team members are listed, along with some examples of contributions from each.</td>
</tr>
<tr>
<td>B2. Community impact</td>
<td>★★★★★</td>
<td>The report clearly describes how a local issue <strong>led</strong> to the research questions and makes <strong>connections</strong> between local and global impacts.</td>
</tr>
<tr>
<td></td>
<td>★★★★</td>
<td>The report describes how a local or global issue <strong>led</strong> to the research questions, and describes <strong>possible</strong> impacts of the results for addressing the issue.</td>
</tr>
<tr>
<td></td>
<td>★★</td>
<td>The report describes how a local or global issue <strong>motivated</strong> the research.</td>
</tr>
<tr>
<td></td>
<td>★</td>
<td>The report includes a description of a local or global issue and how it is <strong>related</strong> to the research.</td>
</tr>
<tr>
<td>B3. Connection to local or network scientist</td>
<td>★★★★★</td>
<td>The report clearly describes collaboration with a scientist that <strong>enhanced</strong> the research methods, <strong>contributed</strong> to improved precision, and <strong>supported</strong> more sophisticated analyses and interpretations of results.</td>
</tr>
<tr>
<td></td>
<td>★★★★</td>
<td>The report describes collaboration with a scientist that <strong>enhanced</strong> the research methods and <strong>extended</strong> students’ understanding of the project.</td>
</tr>
<tr>
<td></td>
<td>★★</td>
<td>The report includes a description of input from a scientist.</td>
</tr>
<tr>
<td></td>
<td>★</td>
<td>The report includes a description of input from a scientist.</td>
</tr>
<tr>
<td>B4. Interscholastic connection</td>
<td>★★★★★</td>
<td>The report describes a <strong>carefully planned</strong> interscholastic or international collaboration that describes <strong>rationales</strong> for data collection in different regions and the <strong>advantages</strong> of comparing results.</td>
</tr>
<tr>
<td></td>
<td>★★★★</td>
<td>The report describes an interscholastic or international collaboration, including <strong>planning</strong> for data collection and comparing results.</td>
</tr>
<tr>
<td></td>
<td>★★</td>
<td>The report <strong>includes</strong> GLOBE data from at least two different schools, regions or countries, and describes efforts to <strong>coordinate</strong> data collection. Data from the student expedition to Mt. Kilimanjaro may be included as part of this badge.</td>
</tr>
<tr>
<td></td>
<td>★</td>
<td>The report <strong>includes</strong> GLOBE data from at least two different schools.</td>
</tr>
<tr>
<td>B5. Engineering solution</td>
<td>★★★★★</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>★★★★</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>★★</td>
<td>The report includes all of the components for level 1, and: Describes the potential impact of the solution on the environment.</td>
</tr>
<tr>
<td></td>
<td>★</td>
<td>The report describes an engineering solution to a real-world problem, based on student-generated sources of evidence.</td>
</tr>
</tbody>
</table>
# GLOBE International Science Fair—Judging Rubric and Badges for HS Science Projects

<table>
<thead>
<tr>
<th>Element</th>
<th>Level</th>
<th>Superior - 4</th>
<th>Good - 3</th>
<th>Progressing - 2</th>
<th>Basic - 1</th>
<th>Score</th>
</tr>
</thead>
</table>
| 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 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
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
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
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.

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.
# GLOBE International Science Fair Badge (All Projects—Overall Report)

<table>
<thead>
<tr>
<th>★★★★</th>
<th>★★★</th>
<th>★★</th>
<th>★</th>
</tr>
</thead>
</table>

- **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)**
<table>
<thead>
<tr>
<th>Badge</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
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<td>All team members are listed, along with a <strong>clear</strong> description of each student’s contribution and some indication of how students supported one another.</td>
<td>All team members are listed, along with some examples of contributions from each.</td>
</tr>
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<td>B2. Community impact</td>
<td>The report clearly describes how a local issue <strong>led</strong> to the research questions and makes connections between local and global impacts.</td>
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<td>The report describes how input from a scientist <strong>extended</strong> students’ understanding of the project.</td>
<td>The report includes a description of input from a scientist.</td>
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<td>B4. Interscholastic connection</td>
<td>The report describes a <strong>carefully planned</strong> interscholastic or international collaboration that describes rationales for data collection in different regions and the advantages of comparing results.</td>
<td>The report describes an interscholastic or international collaboration, including planning for data collection and comparing results.</td>
<td>The report <strong>includes</strong> GLOBE data from at least two different schools, regions or countries, and describes efforts to <strong>coordinate</strong> data collection. Data from the student expedition to Mt. Kilimanjaro may be included as part of this badge.</td>
<td>The report <strong>includes</strong> GLOBE data from at least two different schools.</td>
</tr>
<tr>
<td>B5. Engineering solution</td>
<td>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.</td>
<td>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.</td>
<td>The report includes all of the components for level 1, and: Describes the potential impact of the solution on the environment.</td>
<td>The report describes an engineering solution to a real-world problem, based on student-generated sources of evidence.</td>
</tr>
</tbody>
</table>
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**

<table>
<thead>
<tr>
<th>Level</th>
<th>★★★★★</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badge</td>
<td></td>
</tr>
</tbody>
</table>

| 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**
<table>
<thead>
<tr>
<th>Badge</th>
<th>★★★★</th>
<th>★★★</th>
<th>★★</th>
<th>★</th>
</tr>
</thead>
</table>
| 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

<table>
<thead>
<tr>
<th>Element</th>
<th>Superior - 4</th>
<th>Good – 3</th>
<th>Progressing – 2</th>
<th>Basic – 1</th>
<th>Score</th>
</tr>
</thead>
</table>
| 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. |       |       |
Find info Online

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

GLOBE.gov ➔ News & Events ➔ Events ➔ Virtual Conferences ➔ 2016 International Virtual Science Fair
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
Questions? Comments?

malmberg@ucar.edu