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Please introduce yourself in
the chat window. Include
your name, institution, and
location.

Participants

Web: 1 Hands Raised: 0

Chairpersons (Presenter)

Start My Audio Meeting

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THE GLOBE PROGRAM



GLOBE International Virtual Science Symposium

2017

www.globe.gov

<http://www.globe.gov/science-symposium>

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Type questions or comments in the chat space here



GLOBE International Virtual Science Symposium

2017

www.globe.gov

<http://www.globe.gov/science-symposium>



Overview of the Science Symposium

Julie Malmberg, PhD

malmberg@ucar.edu

Education, Outreach, and Technology Specialist

GLOBE Implementation Office

GLOBE International Virtual Science Symposium



- Online space for students to share and discuss GLOBE research with other students, scientists, GLOBE community
- Open to **all** GLOBE students K-16
 - Rubrics by grade level

2016 International Virtual Science Fair Metrics

Student Reports:

Region	Number of Entries
Africa	0
Asia and the Pacific	22
Europe and Eurasia	10
Latin America and the Caribbean	7
Near East and North Africa	44
North America	22
Total	105

2016 International Virtual Science Fair

U.S. -

Title: [The Effect of Land Use on Water Quality](#)

School: St. Francis Xavier Catholic School

Location: Gettysburg, Pennsylvania

Teacher: Amy Woods

Title: [How does Asphalt Affect Soil Temperature](#)

School: Roswell Kent Middle School

Location: Akron, Ohio

Teacher: Steve Frantz

International -

Title: [Seasons and Climatic Factors Affecting Dengue Cases in Muang Nakhon Si Thammarat, Thailand](#)

School: Princess Chulabhorn Nakornsrihammarat

Location: Nakhon, Srithammarat, Thailand

Teacher: Kanokrat Singnui

Title: [Determining the Presence of heavy metals in the air by using GLOBE protocols for aerosols, conductivity and pH](#)

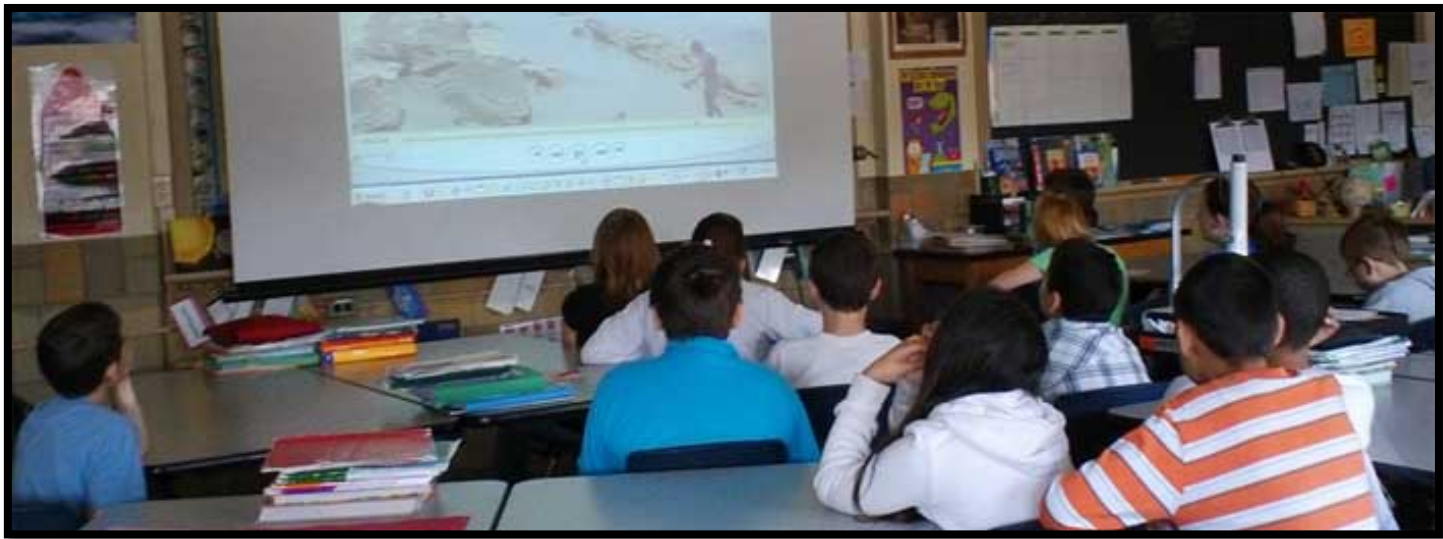
School: Prirodoslovna i graficka skola

Location: Rijeka, Croatia

Teachers: Marina Pavlić and Irena Sabo

New for 2017!

- Open to K-16
- New optional badge (Exploring STEM Careers)
- Later due date (03 April 2017)



Merit Based Student Research Badge

- Students earn points
- No limit to projects that earn top ranking



Optional Badges

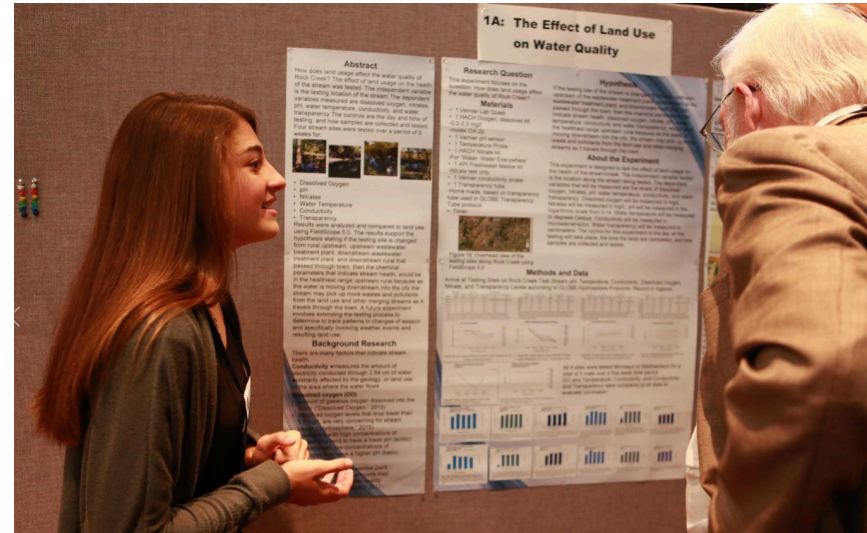
- Possible for students to earn up to 3 out of 6 additional badges
- Students describe how each badge was earned in their report document



- **Collaboration:** Team members and their roles, student contributions, advantages of collaboration
- **Community Impact:** Describes how a local issue led to the research question and what impact the students have on their community
- **Connection to a STEM Professional:** Collaboration with a STEM professional and how it enhanced the student research
- **Engineering Solution:** An engineering solution to a real world problem based on student research
- **Exploring STEM Careers:** Understanding how student research relates to STEM careers
- **Interscholastic Connection:** Describes interscholastic or international collaboration and how it benefits the research

Drawing

- Earn 4 star Student Research Badge AND at least two optional badges → entered into a drawing
- Projects drawn will receive funds to help offset the cost of attendance at the 21st 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

Determining the presence of heavy metals in the air by using GLOBE protocols for aerosols, conductivity and pH

Organization: [Prirodoslovna i graficka skola, Prirodoslovna i graficka skola](#)

Student(s): Dino Bešić Sarah Butigan

Grade Level: Secondary (9-12)

GLOBE Teacher: [Marina Pavlić, Irena Sabo](#)

Contributors:

Presentation: [View Document](#)

Optional Badges: Engineering Solution

Date Submitted: 03/11/2016



[View Research Report](#)

Aerosols are solid or liquid particles or both, suspended in air with diameters between about 0.002 μm to about 100 μm . Aerosol particles vary greatly in size, source and chemical composition. Some of the components are heavy metals, which can be measured by GLOBE protocols. We used the method of moist sedimentation to acquire a sample of air in Bakar, and then analysed it with GLOBE protocols. We were inspired to use this method when the citizens of Bakar invited us to see the big black blot in the middle of The Bakar Bay and the black particles in their homes. As we collaborated with them investigating the sea, soil and the bottom of the sea in our previous projects, we determined that the pollution was coming from the air. We decided to investigate the quantity of suspended particles (aerosols) in the air and determine their chemical composition. Analysing the sample's we concluded that the sample with heavy metal's had higher pH and conductivity levels than normal. By tracking the: aerosols, air temperature and rainfall our data showed that the aerosols are highest when temperature and rainfall levels were low. This method's could help more GLOBE researchers to study heavy metals in air.

General News/Events Topics: [Virtual Science Fair](#)

[Return to Student Research Report Listing](#)

Comments

[Add Comment](#)

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Olawale

1. I really enjoyed reading your abstract, sounds interesting and educative. Your Abstract does not exceed 200 words. And contains The problems, Questions, Objectives, conclusion and recommendation.
2. Your explanation under research question does not identified your Research question

How to Enter

- Updated upload tool available online early 2017



Do GLOBE > For Students > Student Research Reports

◀ Do GLOBE

For Students

Student Research Reports

Be a Scientist

STEM Career Speakers

Games

Student Research Reports

Check out student research reports from around the world! Would you like to have your report added? Click on the graphic to the right to submit your report.

Upload your
research report

Year Organization Category



06/16/2015

Changes in the amount of rainfall runoff in the basin of Nysa Kłodzka river in the area of Nysa

Research project









06/07/2015

"LET OUR ISTRIA SHINES, BUT NOT AT NIGHT!" PART 2

On the occasion of World Environment Day 2015, and the International Year of Light 2015, we published results of our project "LET OUR ISTRIA SHINES BUT NOT AT NIGHT!" PART 2 on school and local medias (www.ssmb.hr).

Student Research Reports

* Required Fields

School / Organization *   Select  Add Another Organization/Teacher 
GLOBE Teacher *   Select

Student(s) * 


Additional Contributors * 

Grade Level *

Report Title *

Report Description * 

Report Date *

Abstract or Summary * 

Upload Research Report *

Select a new file

 No file selected


Upload Report Thumbnail Image * 

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

 No file selected

Photo Releases 

Select a new file

 No file selected

Optional Badges 

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

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

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 several kilometer river and a 15.29 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 fawns, 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 biota. 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 methods were generated 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 10ppm or 10 mg/L. The Cove River biome is, normally, safe against pollution, but if runoff of nitrates caused by heavy precipitation (which was a factor correlated with nitrate levels in the runoff) and by the waste of the surrounding civilization continues, then pollution of the biota 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

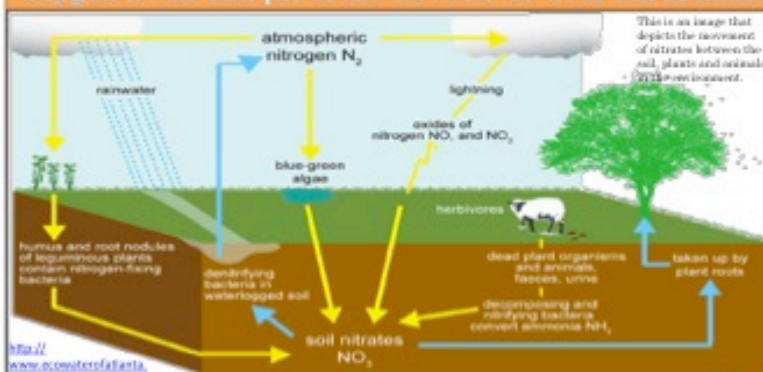
DV- Nitrate levels

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 Yerriss Probe Wire to measure the dissolved oxygen level and temperature of the water sample immediately after collecting the water so that the results are not assimilated by exposure to the atmosphere.
3. Record dissolved oxygen levels and water temperatures.
4. Bring sample back to the lab to test water pH and nitrate levels using the HANNA Aquarian Phosphate/Nitrate Testing Kit. Follow the instructions attached to the testing kit.
5. Record water pH and nitrate levels.
6. Dispose of chemical wastes appropriately.

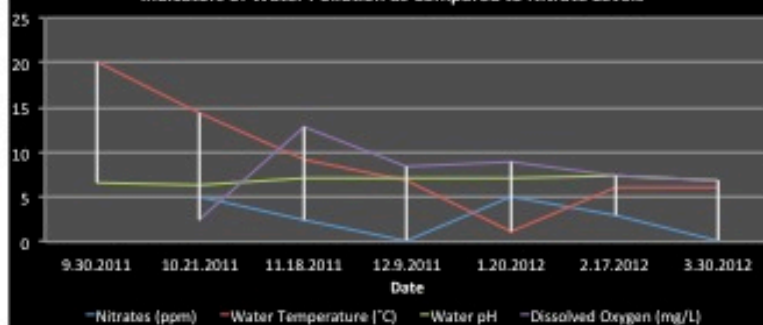
The Change of Nitrate Levels, Temperature, Dissolved Oxygen levels and pH of the Cove River Over Six Months



Indicators of Pollution as Compared to Nitrate Levels

Date	Indicators of Water Pollution as Compared to Nitrate Levels						
	9.30.11	10.21.11	11.18.11	12.9.11	1.20.12	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	6.4	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

Indicators of Water Pollution as Compared to Nitrate Levels



Conclusions

The purpose of this experiment was to determine if the water quality of Cove 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 ocean, water pH, or water temperature. However, it is still important to note water pH because a high pH prevents nitrate-producing bacteria growth. Moreover, low water pH and water temperature also affect dissolved oxygen levels, those factors must be taken into account before establishing a relationship between dissolved oxygen levels and nitrate levels.
- 5. The Cove River currently meets the FDA standards for healthy nitrate levels.

Future Directions

This experiment can be improved by testing multiple 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 wastewater 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

- 1. "More Information about Nitrate in Drinking Water." *EPA.gov*. United States Environmental Protection Agency. 6 Mar. 2012. Web. 3 Apr. 2012. <<http://water.epa.gov/dw/dwcontaminants/contaminants/nitrate.cfm>>.
- 2. "Measuring Nitrate and Their Effects on Water Quality." *Fluoride*. Web. 4 Apr. 2012. <<http://www.fluoride.org/education/measuring-water-quality/in-water/5/Video.html>>.
- 3. "Nitrate and Nitrite." *As/geo*. Argonne National Laboratory. Aug. 2005. Web. 3 Apr. 2012. <<http://www.ornl.gov/pub/in/nitrate/np.cfm>>.
- 4. "Nitrate and Nitrite." *Delaware.gov*. Delaware Health and Social Services. Jan. 2003. Web. 5 Apr. 2012. <<http://dhsos.delaware.gov/dhsos/Files/nitrateofy.pdf>>.

Acknowledgements

We would like to thank Professor Scott Grimes and Mr. Kevin Dalkow 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?



2017 International Virtual Science Symposium

[Rubrics](#)

[Resources](#)

[FAQs](#)

[Scientist Participation](#)

[Mentor Scientists](#)

[Instructions](#)

2017 GLOBE International Virtual Science Symposium

The GLOBE Program is pleased to announce the 2017 GLOBE International Virtual Science Symposium 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!

Notice the name change? Read the [Frequently Asked Questions \(FAQs\)](#) to see why!

Keep checking back to this page to see more news and instructions!

Overview:

The 2017 GLOBE International Virtual Science Symposium takes place online, and K-16 students from any GLOBE country may participate. GLOBE students use the GLOBE data they entered into the database and should collaborate with scientists, including STEM (science, technology, engineering, and math) professionals who are part of the [GLOBE International STEM Network \(GISN\)](#). This is a great opportunity for students to practice the skills they've learned through their involvement in The GLOBE Program and apply them to address real-world problems. It can be hard work, but the excitement that comes with discovery and new insights makes it worthwhile.



Every project that is submitted will be hosted on the Student Research Reports section and students will receive virtual badges to reward them for their work. There is no limit to the number of entries per student or per school and there is no limit to the number of students per project.

View past projects in the [2016 GLOBE International Virtual Science Fair](#).

Webinar announcement:

"2017 GLOBE International Virtual Science Symposium Informational Webinar"

Dr. Julie Malmberg of the GLOBE Implementation Office and Matt Silbergliitt of WestEd will host an informational webinar on 19 October 2016 at 10:00 am MT/12:00 pm ET. ([Click here to convert to your timezone.](#)) The webinar will cover the instructions, badges, rubrics, and guidelines for the science symposium. [Click here to register for the webinar.](#)



GLOBE International Virtual Science Symposium Instructions - 2017

How and What to Submit:

Each student project should include the following components and should be submitted via the Virtual Science Symposium Report Tool. Make sure to have all the items prepared when accessing the tool.

1. **Abstract or Summary:** A 200 word or less description of the research project.
2. **Research Report:** The complete research report as .PDF or .DOCX/.DOC. If including more than one language, make sure the report is just one file. Elements of the Research Report are described in the rubrics.
3. **Badge Description:** For any of the optional badges (you may select up to three), include a short summary of how each badge has been completed.
4. **Presentation:** Either the link to an uploaded video hosted on an online video sharing site (YouTube, Vimeo, TeacherTube, etc) or the presentation poster. Whether presented as a video, a narrated PowerPoint, or as a poster, the presentation should describe the student research. Videos should be 10 minutes or less.
5. **Thumbnail Image:** An image to be displayed with the student report.
6. **Photo Release Forms:** All individuals who appear in photos or video must send in a [photo release](#). Save all the photo releases into one file.



Scoring:

Information about scoring is provided on the [Rubrics](#) page. All projects will be scored by a team of judges from the GLOBE International STEM Professionals Network.

Every student project will receive a virtual Student Research Badge. Scored projects will receive between one and four stars on the Student Research Badge, with a 4-star research badge representing superior projects. Additionally, students have the option to complete up to three additional badges including collaboration, community impact, connection to a STEM professional, engineering solution, exploring STEM careers, and interscholastic connection.

Please note that if students choose to submit a report in a language that is not English, it will be shared with the community via the Virtual Science Symposium webpages, but it will not be scored. Only reports in English will be scored by the team of judges. However, students are encouraged to submit their reports in English and their first language (as one document).

Awards:

All students who submit a project will receive a virtual Student Research Badge and up to three additional badges (out of six choices total). These badges can be displayed on GLOBE School Profile Pages, shared via Social Media, or printed out and shared with the students.

2017 International Virtual Science Symposium

Rubrics

Resources

FAQs

Scientist Participation

Mentor Scientists

Instructions

GLOBE International Virtual Science Symposium Resources - 2017

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
- 2016

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
- Purdue Online Writing Lab Research and Citation Resources

Tips for preparing a presentation:

- Webinar - Scientist Skills: Presenting your Results
- Ten Secrets to Giving a Good Scientific Talk
- Poster Template [PowerPoint](#) | [PDF](#) (note: this includes the high school and undergraduate elements, modify as needed for middle school and primary school)

Data Resources:

- Setting Up Your Data Site
- Entering Measurement Data
- Retrieve and Visualize Your Data
- Advanced Data Access Tool

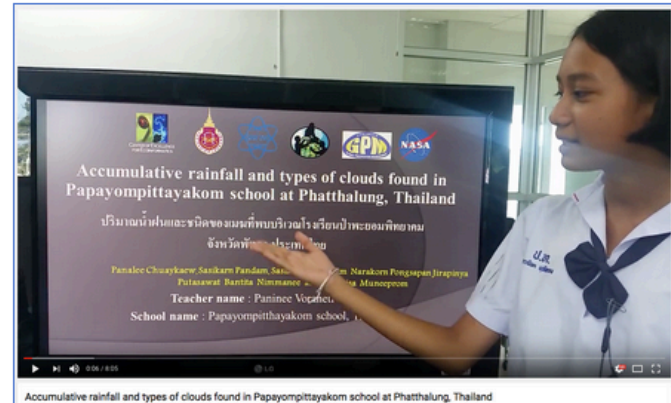
Webinars

Upcoming:

- 19 October 2016 at 14:00 UTC (10:00 a.m. MT/12:00 p.m. ET): [2017 GLOBE International Virtual Science Symposium Informational Webinar](#) (registration)
- TBD: An In-Depth Look at the Badges
- TBD: K-4 Research Projects

Archived:

- Teacher Webinar: Conducting Field Investigations
- Teacher Webinar: Writing Research Questions
- Teacher Webinar: Analyzing GLOBE Data
- Teacher Webinar: Writing Conclusions using the CER Framework
- Putting It All Together - the Science Fair Poster (Communication)





Frequently Asked Questions - 2017 GLOBE International Virtual Science Symposium

Q. Why did the name change from a science fair?

A. A science symposium is a place for researchers to present and discuss their work. In order to reflect the overarching goal of students sharing their GLOBE research, we thought a science symposium better represented this event than a 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 science, technology, engineering, or math (STEM) professional. How can I be involved?

A. If you are part of the [GLOBE International STEM professionals 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 (coming soon!). If you are interested in being part of the GISN, send an email to help@globe.gov.

Q. What if the scientist or other STEM professional I want to work with is not part of the GLOBE International STEM professionals Network (GISN)?

A. That's fine! But, encourage the scientist or STEM professional 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



Scientist Participation



GISN Interest Form: 2017 GLOBE International Virtual Science Symposium

The 2017 GLOBE International Virtual Science Symposium will showcase student research projects from around the world. Student projects are due on 03 April 2017 and judging will take place 23 - 29 April 2017.

There are two volunteer opportunities for GISN members 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 mentors. Second, you can volunteer to help judge the student projects in 2017. 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 Symposium! If you have any questions, please contact help@globe.gov or see the Science Symposium webpage at <http://www.globe.gov/news-events/globe-events/virtual-conferences/2017-international-virtual-science-symposium>

Your Name

Your answer



2017 International Virtual Science Symposium

[Rubrics](#)

[Resources](#)

[FAQs](#)

[Scientist Participation](#)

[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

[Charles Mwangi](#), Nairobi, Kenya, maina.charles AT gmail.com, Atmosphere, Hydrosphere, Engineering, English

[LAWANI Ylliass Destin](#), Cotonou, Benin Republic, ylliass AT gmail.com, Atmosphere, Biosphere, Hydrosphere, Pedosphere, Climate changes, French, English (writing)

[Ayodeji Awodugb](#), Ogbomoso, Oyo State, Nigeria, aoawodugba AT lautech.edu.ng, Pedosphere, Soil, English

Asia and Pacific Region

[Dr. Sunita Bal](#), Bhubbaneswar, India, sunitabal2009 AT gmail.com, Atmosphere, Hydrosphere, Pedosphere, Pesticide analysis, Physical Organic Chemistry, Micellar catalysis, Pesticide analysis, Soil analysis, Wine analysis, English

Europe and Eurasia Region

Latin America and Caribbean Region

[Ana B. Prieto](#), Junín de los Andes, Neuquén, Argentina, anabeatrizprieto AT gmail.com, Atmosphere, Biosphere, Hydrosphere, Pedosphere, Science Education- STEM, Spanish, English

[Claudia Caro](#), Coimbra, Portugal, ccaro AT gmail.com, Biosphere- Ecology, English, Spanish, Portuguese

[Virginia Aguilar](#), San José, Costa Rica, virginia.aguilar AT fod.ac.cr, Hydrosphere, Hydrology and Oceanography, Spanish

[Javier Sabas Francario](#), Buenos Aires, Argentina, francario AT stmary.edu.ar, Atmosphere, Hydrosphere, Spanish

Timeline

- Entries accepted starting in early 2017 (look for announcements)
- Projects Due: 03 April 2017
- Scoring & Comment Period: 23-29 April 2017
- Badges Announced: 15 May 2017
- Live Drawing: 15 May 2017
- GLOBE Annual Meeting: July/August 2017

Rubrics

Matt Silberglitt
Senior Research Associate
WestEd STEM Program



GLOBE INTERNATIONAL SCIENCE SYMPOSIUM
STUDENT RESEARCH BADGE (ALL PROJECTS—OVERALL REPORT)

★★★★	★★★	★★	★	
<ul style="list-style-type: none"> Report contains all of the criteria listed below and makes clear connections among them. The report is well organized, neat and well presented. The writing is clear and concise. The report contains the five elements required for acceptance, clearly labeled. Members of the project team respond to judges' comments with additional insights gained. 	<ul style="list-style-type: none"> Report contains all of the elements and most of the criteria listed below and makes clear connections among them. The report is well organized, neat and well presented. The writing is clear. The report contains the five elements required for acceptance, clearly labeled. 	<ul style="list-style-type: none"> Report contains most of the criteria listed below. The report is well organized. The report contains the five elements required for acceptance, clearly labeled. 	<ul style="list-style-type: none"> Report contains the five elements required for acceptance, clearly labeled. (1, 2, 3, 5 & 8) 	<ul style="list-style-type: none"> Report submitted, but does not contain all five elements required for acceptance.

ADDITIONAL BADGES (UP TO 6—OPTIONAL)

B1. Collaboration	B2. Community impact	B3. Connecting to a STEM Professional	B4. Interscholastic connection	B5. Engineering solution	B6. Exploring STEM Careers
<p>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.</p>	<p>The report clearly describes how a local issue led to the research questions and makes connections between local and global impacts.</p>	<p>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.</p>	<p>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.</p>	<p>The report describes an engineering solution to a real-world problem, based on student-generated sources of evidence, and describes the potential impact of the solution on the environment.</p>	<p>The report describes how the project is related to a STEM career or profession, including the ways the data gathered, skills gained, and results might be used.</p>

Project elements for HS and Undergrad (bold=required)

1. Title
2. Abstract or Summary
3. Research Question(s)
4. Introduction and review of the literature
5. **Research Methods**
6. Results
7. Discussion
8. **Conclusion**
9. Bibliography/Citations

Project elements for 6–8 (bold=required)

1. Title
2. Abstract or Summary
3. Research Question(s)
4. Introduction
5. **Research Methods**
6. Results
7. Discussion
8. **Conclusion**
9. Bibliography/Citations

Project elements for 3–5 (bold=required)

1. Title
2. Summary
3. Research Question(s)
4. Introduction
5. **Research Methods**
6. Results
7. Discussion
8. **Conclusion**
9. Bibliography/Citations

Project elements for K–2 (bold=required)

1. Title
2. Summary
3. Research Question(s)
4. Introduction
5. Research Methods
6. Results
7. Discussion
8. Conclusion



Find info Online

<http://www.globe.gov/science-symposium>

GLOBE.gov → News & Events → Meetings & Symposia → Virtual Science Symposia

Stay tuned for future webinars on K-4 projects and a more in-depth look into the badges



Questions? Comments?

malmberg@ucar.edu

