GLOBE Virtual Training

Atmosphere & Biosphere

Tracy Ostrom

July 17, 2020

10 am – 12 pm
Annotate – Where are You? (Hawaii Teachers)

From your zoom window:

1. Go to the top of zoom and click on “view options”

2. Click on “annotate”

3. Click “stamp” and choose a stamp

4. Place your cursor on the map where you are located and click; your stamp will appear at that spot
Annotate – Where are You?
(Everyone Else)

1. Go to the top of zoom and click on “view options”
2. Click on “annotate”
3. Click “stamp” and choose a stamp
4. Place your cursor on the map where you are located and click; your stamp will appear at that spot
Our Agenda - Atmosphere

- Introductions/Ice breaker
- Review GLOBE Protocols – Atmosphere
  - Air Temperature
  - Surface Temperature
  - Clouds
- Data Entry & Site Set Up

- GLOBE Observer
- Connections
  - UHIE
  - Cloud Challenge
  - Air Quality
Take a Poll

GLOBE stands for:
What is GLOBE?
Biosphere

The biosphere includes plant life and land cover.

Geosphere

The geosphere (pedosphere) includes rocks and soil.

Hydrosphere

The hydrosphere includes water on Earth, in rivers, lakes, and the ocean.

Atmosphere

The atmosphere includes the air around the earth and weather.
In Your Breakout Rooms… 5 minutes

Introduce yourself
- school
- grade/subject area
- which sphere are you most interested in/or can identify with/want to learn more about?

How about another poll afterwards?
Let’s Review the Atmosphere Protocols

Go to: https://www.menti.com

Enter Code 14 46 22

Answer each question.
Atmosphere - Tips

- Air temperature
  - ok to use analog thermometers
  - can compare data to digital readings

- Clouds
  - ok to use cloud chart
  - use cloud triangle to teach clouds
  - Practice, practice, practice

- Surface temperature
  - 9 data points/same surface
  - ground condition observations
  - Students love using IRT – SAFETY FIRST
Data Entry

Setting up a site

(I’ll go first)
Data Entry – your turn

1. Login to GLOBE website
2. Click GLOBE Data
3. Click Data Entry
4. Click Training Data Entry
   - Should see **SCIENCE Data Entry Training Site** at top
   - Click your school
   - Click
Sample Data Entry: Integrated Atmosphere 1-Day

1. Time/Date
2. Air Temp: 27.2 C
3. Pressure at sea level 1 mBar
4. Relative Humidity: 53%
5. Precipitation: 0 mm
6. Only isolated low clouds
7. No contrails
8. Clear blue sky
GLOBE Observer

- Free Download
- Sign up with an email address
- Start being a citizen scientist
Let’s Make a Cloud Observation

▪ Take a peek out of your nearest window
  ▪ Look up into the sky
  ▪ What do you see?
    ▪ Clouds?
    ▪ Contrails?
    ▪ Cloud height (high, medium, low)
    ▪ Sky color (light blue, blue, dark blue)
    ▪ Sky clarity (unusually clear, clear, hazy)
GLOBE Connections
GLOBE Campaigns

- Urban Heat Island Effect
- Air Quality
- GPM – Global Precipitation Measurement
- El Niño and La Niña
- Tree Height (ICESAT 2)
- GLOBE Mission EARTH
- AREN Project
- Arctic and Earth SIGNS
- NESEC

Get Started…

Learning Activities

Activities to help students learn more about GLOBE protocols and instruments.

Protocols:

- Atmosphere
- Biosphere
- Earth as a System
- Hydrosphere
- Pedosphere

Grade Level:
- Lower Primary: K-2
- Upper Primary: 3-5
- Middle: 6-8
- Secondary: 9-12
BREAK – 5 minutes and 35 seconds
Our Agenda - Biosphere

- Making Connections – Atmosphere & Biosphere
- Review GLOBE Protocols – Biosphere
  - Tree Height
  - Green Up/Green Down
- Data Entry & Site Set Up
- GLOBE Observer
- Putting It All Together
  - Research Process
  - SRS/IVSS
  - Guide/Rubric/Poster
Making Connections: Atmosphere and Biosphere

Let’s Chat: What connections do you see with these two spheres?
Let’s Review the Biosphere Protocols

Go to: https://www.menti.com

Enter Code 61 97 70

Answer each question.
Biosphere - Tips

Tree Height
- Make a clinometer activity
- Compare different types of clinometer for the same object
- try measuring different types of trees
- A “tree” has to be at least 5 meters tall
- Replication - repeat 3 times
- ?45 degrees or tangent table?

Green Up/Green Down
- ok to use local plants/trees/home
- Easily combined with other protocols
- Ok to look at pictures
- 4 buds – south side
- 3 leaves + end
- need a color chart
Data Entry – biosphere site

1. Login to GLOBE website
2. Click GLOBE Data
3. Click Data Entry
4. Click Training Data Entry
   - Should see **SCIENCE Data Entry** Training Site at top
   - Click your school
   - Click **Add site**
GLOBE Observer

- Free Download
- Sign up with an email address
- Start being a citizen scientist

Choose Your Data Collection Tool
Putting It All Together – Project Based Learning

- International Virtual Student Symposium (IVSS)
- Student Research Symposium (SRS)
  - Funding to attend
  - Open to all GLOBE students
  - Held regionally in the spring every year (Hawaii, California and Nevada)
- SRS Guide for teachers
- Project Rubric
- Template for poster presentations
SRS Planning Guide

TIMELINE SRS:
Count backwards from your region’s SRS date for a suggested timeline for completing a GLOBE student research project. Find the dates for each regional SRS here. For support on each step of the research process see the SRS Science Practices Pages.

12-15 weeks prior to SRS:
- Student groups assigned
- Research question developed by/assigned to student groups

10-11 weeks prior to SRS: The Research Question and Revision of Research Question
- Three types of Research Questions:
  - Descriptive. When a study is designed primarily to describe what is going on or what exists.
    - Describing the characteristics of a variable or phenomenon.
    - Public opinion polls compared to GLOBE data can be used to describe something.
  - Relational. When a study is designed to look at the relationships between two or more variables.
    - How does ___ and ___ compare?
    - Causal. When a study is designed to determine whether one or more variables cause or affect one or more outcome variables.
    - What effect does ___ have on ___?
- Write a one sentence HYPOTHESES that answers your question.

3-10 weeks prior to SRS: Collect Data
- Determine equipment needed to perform fieldwork.
- Design data collection plan:
  - Determine frequency of data collection
  - Decide where data will be collected
  - Identify who will collect data
  - Identify who will enter data into GLOBE database

5 weeks prior to SRS: Write Introduction
- Obtain GLOBE poster template and create a SRS and SRS reviewer feedback forms (see below).
- Write about the following:
# Student Research Project Rubric

## Content Knowledge

<table>
<thead>
<tr>
<th>Level of Understanding</th>
<th>Novice</th>
<th>Developing</th>
<th>Proficient</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demonstrates a very elementary understanding of basic scientific concepts and fundamental principles covered in the GLOBE protocol learning objectives.</strong></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Interpreting Data and Drawing Conclusions</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Demonstrates the ability to assess the quality of the data</strong></td>
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<tr>
<td><strong>Demonstrates the ability to interpret the data in the context of the hypothesis</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Explaining Observations</strong></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Describes observations in his/her own words</strong></td>
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</tr>
<tr>
<td><strong>Uses scientific language to describe observations</strong></td>
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## Assessments

1. **Novice**
2. **Developing**
3. **Proficient**
4. **Advanced**

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**Sponsored by:**

[Image of logo and text: THE GLOBE PROGRAM]
**Poster Presentation Template**

**Title:** Concise Title of Less Than 15 Words That Summarizes the Study

**School Logo**

**Team Members**

**Abstract**

- Write less than 200 words
- Describe the research context and objectives
- Ask the research question
- Describe the methods, state the results, and draw conclusions

**Introduction**

- Write between 500 and 750 words
- State the importance of the research
- Review what you know already about this research topic
- Describe the environmental or societal issue addressed by the research question
- Document the knowledge, facts, scientific concepts, and fundamental principles involved in the research question
- Use research from 3 professional studies, including at least one primary source in a “contributed” journal
- Emphasize the importance of the research
- Note research in which primary studies are used
- Use a graph or chart to explain the research

**Research Methods**

- Write between 500 and 750 words
- Plan and design the experiment
- Describe the experimental design
- Analyze the data
- Evaluate the results
- Synthesize the findings

**Results**

- Write between 500 and 750 words
- Plan the investigation
- Describe the data
- Analyze the data
- Evaluate the results
- Synthesize the findings

**Discussion**

- Write between 500 and 750 words
- Plan the investigation
- Describe the data
- Analyze the data
- Evaluate the results
- Synthesize the findings

**Conclusion**

- Write between 500 and 750 words
- Plan and design the experiment
- Describe the experimental design
- Analyze the data
- Evaluate the results
- Synthesize the findings

**Bibliography**

- Include a list of all sources of information used or consulted
- Use a consistent citation style

**Figure 1**

Map of Study Site(s)

**Figure 2**

Poster

**Figure 3**

Presentation

**Figure 4**

Template

**Sponsored by:**
Student Research Projects
Let’s Use Padlet:

How Do You See Using GLOBE With Your Students?

go to:

https://padlet.com/tostrom2/rkcqcn0x1kwp6zwb
Let’s Reflect

What do you want to see more/less of for tomorrow’s webinar?

Where/How can we support you tomorrow?

https://padlet.com/tostrom2/rkicqn0x1kw6zwb (last column)
NEXT STEPS

1. Attend Webinar #2 tomorrow where we will discuss **hydrosphere** and **pedosphere** protocols,

2. Email Tracy (tостrom@berkeley.edu) screenshots of your **protocol** training assessments for atmosphere and biosphere

3. Email your t-shirt size to Ryan (rperroy@hawaii.edu)

4. Complete the sphere introductions and protocols for hydrosphere and pedosphere
THANK YOU

Tracy Ostrom
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For more information visit www.globe.gov