GLOBE Research Project Planning Guide

Modified from a document created by [GLOBE Mission EARTH](#).

STUDENT OUTCOME: Students will be prepared to present their research at the [GLOBE Student Research Symposium](#) (SRS) and/or submit to the [GLOBE International Virtual Science Symposium](#) (IVSS).

TIMELINE for the SRS:

Count backwards from your region's SRS date for a suggested timeline for completing a GLOBE student research project.

- View the [dates for each regional SRS](#).
- Find [resources and support on facilitating GLOBE research and the science practices](#).

☐ 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 causes or affects one or more outcome variables.
    - What affect does __ have on __?
- Write a one sentence HYPOTHESIS that answers your question.

☐ 3-10 weeks prior to SRS: *Collect Data*

- Determine equipment need to perform field work (see [GLOBE protocols](#) and [GLOBE equipment](#) information)
- Design data collection plan:
  - Determine frequency of data collection.
  - Decide where will data be collected.
  - Identify who will collect data.
  - Identify who will enter data into GLOBE database.
- Data Collection from:
  - Field work from data collection plan
  - [GLOBE Visualization Tool](#)
  - NASA Satellite data/images (e.g., My NASA Data's [Earth System Data Explorer](#))

☐ 5 weeks prior to SRS: *Write Introduction*

- Obtain a [GLOBE poster template](#)
- Write about the following:

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- o Describe the problem you are trying to solve.
- o State of the <u>science</u> of your topic(s).
- o Why is this research important to your group?
- o What is the community impact/connection of your research?

☐ **4 weeks prior to SRS:** *Write About Your Research Method*
- Write about the following:
  - o Describe what you did for your research:
    - ▪ Include number of data sets you used.
    - ▪ What data sets did you compare?
  - o Describe your study areas: (site, school, community)
  - o Describe GLOBE protocols used
  - o Justify why the data presented are sufficient to answer the research question
- Include a picture of your study area (e.g., from Google Earth)
- Include an image or two of students collecting data

☐ **3 weeks prior to SRS:** *Analyze Results*
- Create a table of your results:
  - o Make sure your table has a <u>title</u> and is <u>numbered.</u>
  - o Make sure each column and row in your table is clearly labeled.
- Create a visualization of your results- graph(s):
  - o Make sure your graph has a <u>title</u> and is <u>numbered.</u>
  - o Make sure you have a legend (description of the information) in your graph.

☐ **2 weeks prior to SRS:** *Discussion of the Results*
- Summarize (in words) your results by referring to your tables(s) and graphs(s).
- Write about possible sources of error with your data:
  - o What errors in your data might there be?
  - o Do your results compare with someone else's research? (You will have to look online to see if anyone else has done the same kind of research as you just completed.)

☐ **2 weeks prior to SRS:** *Conclusion*
- Discuss whether the results support your hypothesis:
  - o Discuss why or why not your hypothesis was correct.
- Write about how you reached your conclusion.
- Restate why it is important to know the results of your research.
- What follow-up actions would you like to take:
  - o Continue the study?
  - o Use different protocols?
  - o Collaborate with others?
- Write about the impact of working with a project mentor/scientist (*if applicable).*

☐ **1 week prior to SRS:** *Bibliography*
- State the books/articles/websites you used in this project.

☐ **1 week prior to SRS:** *Abstract (1 paragraph)*
- Write down what you did in your research project.
- Write down why you did this research project.
- Write down your conclusion of your research.

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☐ **Week of the SRS:** *Practice Presentation*
- Prepare Poster(s).
- Students present to Class and Other Stakeholders.

TIMELINE for the IVSS
See the [required elements](#) for an IVSS project.

Only projects that have received 4 stars on "research" *and* have completed all the elements will be entered into the random drawing for a stipend. *(The stipend is intended to offset the costs for students/teacher to attend the GLOBE Annual Meeting held each summer)*

☐ **12 weeks prior to IVSS deadline: Assign Groups**

☐ **10-11 weeks prior to IVSS: Research Question and Revision of Research Question**

☐ **4-9 weeks prior to IVSS: Collect Data**

☐ **6 weeks prior to IVSS: Write Introduction**

☐ **5 weeks prior to IVSS: Write Research Methods**

☐ **4 weeks prior to IVSS: Analyze Results**

☐ **3 weeks prior to IVSS: Discuss Results**

☐ **2 weeks prior to IVSS: Write Conclusion**

☐ **1 week prior to IVSS: Write Bibliography and Abstract**

☐ **IVSS upload deadline: Upload to GLOBE website**

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