Name: Date:

Biome Climate Investigation

Guiding Question:

- When comparing your biome to another global biome, is the degree of change in future temperature and precipitation similar or different?
    - Sub-Question: How will your biome shift as a result of climate change?

Definitions:

- *A **biome** is a major ecological community or complex of communities that extends over a large geographic area characterized by an abundant type of vegetation. The organisms of a biome are adapted to the climate conditions associated with the region.*

Conduct the Investigation:

1. In your science notebook, record your **local biome** *(using the Biome Global Map as a resource),* and describe how you think your local biome will be impacted by climate change.
2. Use the guiding questions above, or identify a new question, concerning your local biome and anticipated climate change. Record your **research question** in your notebook.
3. What **data/information do you need** in order to answer your research question?
4. **Explore and then select** from the list of the following **tools**, to investigate your research question:

    * first 3 tools are best used to study a single location

    a. *Printable Biome Map*

    b. *Biome Map with Selected Climate Data*

    c. *Interactive Biome Map (on the Forest Mapper)*

        i. From the Data Tools page on the Student Climate Data website, click on the 'Carbon Mapper' link.

        ii. Close the introductory pop-up window.

        iii. Click the box next to the 'GLOBE Carbon Cycle' layer, and then click the box next to 'WWF_biomes' to load the biome map.

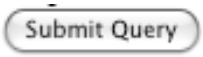
        iv. Click and drag the map and use the zoom tool to find your location.

        v. Use the Legend tab, or the identify tool (click on the  icon at the top left of the map, and then click on your location) to identify the biome name.

    d. *Climate Change Comparisons visual tool* used for comparing your biome to another global biome. *(**Will not work on iPads, needs java to run*)

        i. Within the main Data Tools page click 'Single Site Climate Data.' When the page loads, click 'Explore and Download Data' next to the 'Climate Change Comparisons' heading.

ii. Follow the instructions on the site to enter your biome's latitude/longitude and the latitude/longitude of another biome to compare their predicted change in climate.

iii. Click 

iv. When the page loads, click the 'Click to View Google Motion Chart' link.

v. Once the motion chart loads, click on both boxes under the 'Select' heading on the right side of the graph.

vi. Click play - the  button under the graph- to view the changes in climate over time.

vii. Consider the following questions: What variable is on the x-axis of the Motion Chart? What variable is on the y-axis? What is the time range for the graph? Was there any overlap between the two biomes? If so, at what years did they overlap? What was the general pattern in predicted climate change for each biome?

viii. Reset the graph by dragging the  button back to the start.

ix. Now click *off* the boxes under the 'Select' heading on the right side of the graph. This turns off the data trail, making it easier to see individual data points.

x. Hold your mouse over each of the two data points on the graph, the temperature and precipitation values for the year 1870 will appear in boxes on the axes. Record the values in a table.

xi. Now click play - the  button again.

xii. Pause the graph (by clicking the pause button) when you have reached the current year. Hold your mouse over the data point to record the current climate values.

xiii. Continue playing the graph until it reaches the end. Record the climate values for the year 2099.

Record your results:

1. Using text, data tables, and/or graphs, record your observations and results in your science notebook.

Conclusions and Discussion:

1. Record the notable outcomes of your investigation.
2. Respond to the questions:
    a. Do the tools provided help to answer the question you posed?
    b. What other information would be helpful for this investigation?
    c. What further research questions do you have? Record at least one.