

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) From the Student Climate Data website, navigate to the Data Tools page, and click 'Biome Maps'. Open the *Printable Biome Map*.
- 2) In the table below, record your local biome and another global biome you would like to compare to yours

|            | Your Biome | Comparison Biome |
|------------|------------|------------------|
| Biome Name |            |                  |

- 3) **Record your hypothesis**---How do you think the climate conditions of your local biome and the comparison biome will be impacted by climate change?

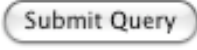


- 4) From the main Data Tools page click ‘Biome Maps’. Open the *Biome Map with Climate Data* graphic.
- Using the graphs provided on the *Biome Map with Climate Data* graphic, explain how climate conditions will shift in your biome and the other biome in the future.


| <b>Your Biome:</b>              |  | <b>Comparison Biome:</b> |
|---------------------------------|--|--------------------------|
| <b>Impact of Climate Change</b> |  |                          |

- 5) Now select a latitude and longitude in each of the selected global biomes to compare changes in climatic conditions in those two locations.
- From the main Data Tools page click ‘Carbon Mapper.’ Close the introductory pop-up window.
  - Zoom out so the globe can be viewed.
  - Click the box next to the ‘GLOBE Carbon Cycle’ layer, and then click the box next to ‘WWF\_biomes’ to load the biome map.
  - Click and drag the map and use the zoom tool to find your location. The longitude and latitude are displayed below the map where it says ‘Location’. Record the latitude and longitude values in the table below.

| <b>Location</b> | <b>Your Biome</b> |           | <b>Comparison Biome</b> |           |
|-----------------|-------------------|-----------|-------------------------|-----------|
|                 | Latitude          | Longitude | Latitude                | Longitude |
|                 |                   |           |                         |           |

- 6) Use the *Climate Change Comparisons tool* to investigate the degree of change in the two biomes.

- a) 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.
- b) 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.
- c) Click  Submit Query
- d) When the page loads, click the ‘Click to View Google Motion Chart’ link.
- e) Once the motion chart loads, click on both boxes under the ‘Select’ heading on the right side of the graph.
- f) Click play - the  button under the graph- to view the changes in climate over time.
- g) What variable is on the x-axis of the Motion Chart? What variable is on the y-axis?
  
- h) What is the time range for the graph?
  
- i) Watch the graph play through once and record your initial observations below. 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?
  
- j) Reset the graph by dragging the  button back to the start.
- k) 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.
- l) 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 the table below.

- m) Now click play - the  button again.
- n) 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.
- o) Continue playing the graph until it reaches the end. Record the climate values for the year 2099.

| Year          | Biome | Temperature | Precipitation |
|---------------|-------|-------------|---------------|
| 1870          |       |             |               |
|               |       |             |               |
| Current Year: |       |             |               |
|               |       |             |               |
| 2099          |       |             |               |
|               |       |             |               |

Record any other observations, questions, etc. below.

7) When comparing your biome to another global biome, is the degree of change in future temperature and precipitation similar or different? What are some notable outcomes of your investigation?

8) What further research questions do you have? Record at least one.