Name:	Date:	

Climate Investigation

Guiding Question:

- Will the weather and climate patterns I observed in the local data continue into the future?
- How do the local climate patterns I investigated compare to other regions of the world?

Definitions:

- Anomaly is the departure from the average climate over a certain period. For example, a positive temperature anomaly indicates that the observed climate was warmer than the average climate, while a negative temperature anomaly indicates that the observed temperature was cooler than the average climate.
- Climate Normal is an average of some climate variable over a 30-year period.

Planning Phase:

1. What is the latitude and longitude of the location you are investigating? *Use the values you reported in the Weather To Climate Investigation*, or use the Carbon Mapper tool or Google Maps to find this information.

Location	Latitude	Longitude

2. How do you think this location will be impacted by climate change? In particular, how might the climate variable you investigated in the *Weather to Climate Investigation* change over time?

3. What data/information do you need in order to answer your research question?



Conduct the Investigation: Will the weather and climate patterns I observed in the local data continue into the future?

- 4. From the Data Tools page, navigate to the *Single Site Climate Data* page and click on the *Climate Time-line Annual* icon.
- 5. Follow the instructions to enter the latitude/longitude for your location, select either 'MeanAnnualTemperature,' for a **Temperature** Investigation or 'MeanAnnualSnowAmount' for a **Snow** investigation. Use the resulting graph and the *Table of 30 Year Averages* to answer the following questions.

NOTE: The climate variables reported by these tools may be different than the local Daymet dataset (e.g., **mean temperature instead of maximum temperature, and **snow depth** instead of snow water equivalent). Although the values are different, the overall trends will be the same.

a.	What is the dependent variable on the graph (y-axis)? What is the independent variable
	(x-axis)?

b. Overall, how does your climate variable change over time in this location (does it increase, decrease, or remain the same)? Provide evidence for your answer.

- c. How is the change in this climate variable different depending on which climate scenario is used? (*Hint: the legend describes the colors for each scenario*).
- d. How are the results from this investigation similar or different from what you predicted in the <u>Weather To Climate Investigation?</u> Did you expect the climate variable to follow this trend? Use evidence to explain your answer.



How do the local climate patterns I investigated compare to other regions of the world?

110	W do n	it local chilate patterns I investigated compare to other regions of the world.	
6.	6. Use the Single Site Climate Data <i>Climate Maps</i> and <i>Climate Animations</i> (Temperature) to answer the following questions:		
	a.	How does your location compare to other regions of the world? Which areas are warmen which are cooler?	
	b.	What other regions exhibit a similar predicted change in future climate as your location? What regions exhibit a smaller or greater change? (<i>Hint: Use the legend bar to quantify the amount of change</i>).	
ъ.			
	what v	n were some notable outcomes of your investigation?	
8.		further research questions do you have? Record at least one (It does not have to be rable with the data tools provided).	
9.	What 1	tools or resources would you need to answer this question?	



EXTENSION: How do the local climate patterns I investigated compare to another location?

1. Bas dep	oth.	on your investigation, choose a 2 nd location you are interested in studying in more What location did you choose? Why did you choose this location?
	b.	Using the Carbon Mapper or Google Maps, record the latitude and longitude of your second location below.
		Latitude: Longitude:
11. Follow location12. Click of latitude	then your the	to the <i>Single Site Climate Data</i> and click on <i>Climate Change Comparisons</i> . Instructions to enter the latitude/longitude for your initial location and the second ou chose above. The 'Google Motion Chart' link. When the page loads, select the boxes next to both angitude pairs in the panel on the right, and click the play icon (below the graph). The application to answer the following questions: Thick variable is on the x-axis? Which variable is on the y-axis?
b.	Wł	nich color represents your first location?
c.	Foi	your first location, how do temperature and precipitation change over time?



d.	Do you observe the same patterns in climate in your second location? How are they similar or different?
e.	Do the data points for the two locations you chose overlap at all? If so, what are the years for each location that are they overlapping?
14. Based on your investigation, do you expect that these locations will respond similarly to climate	
change	e? Explain your reasoning.