

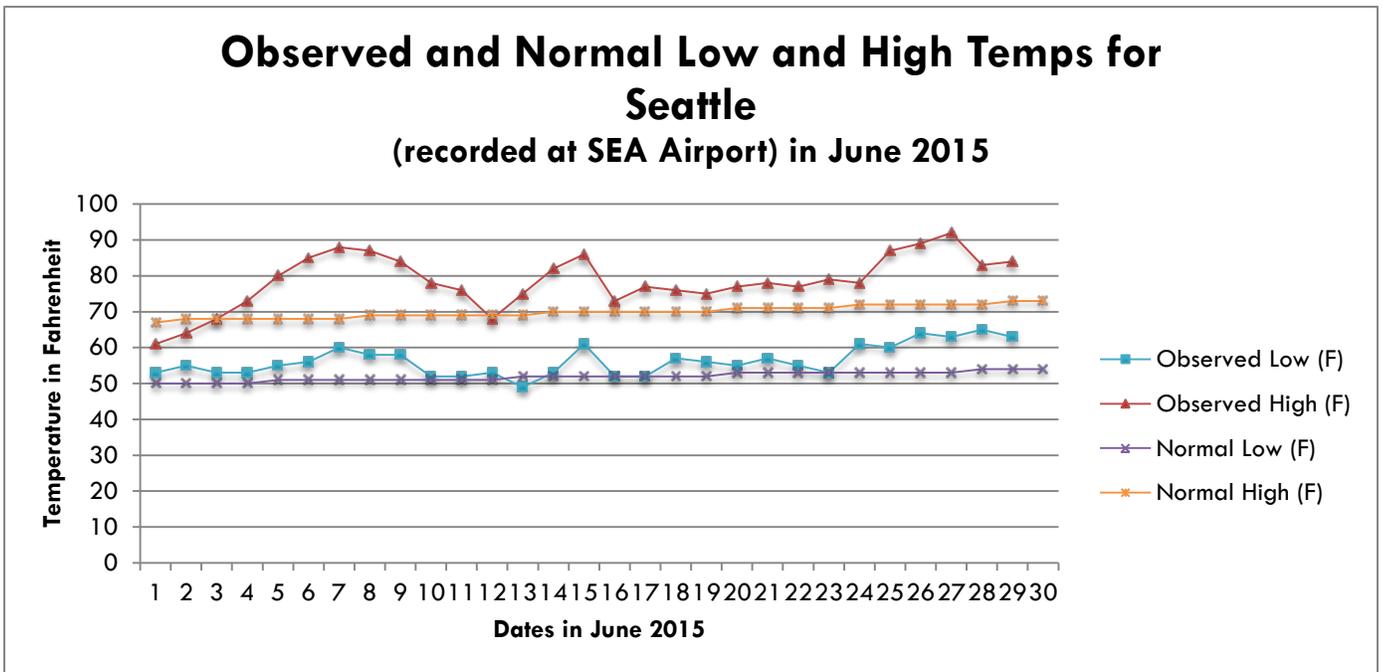
Understanding Weather and Climate Using Local Data

Student Handout

Our ability to understand climate change begins with an understanding of how weather and climate are related but different. We often hear soundbites like “We had record snowfall this year! How can there be global warming?” In order to understand why one weather event does not discredit the science of climate change altogether, we can begin with a simple investigation of our local weather and climate.

Procedure:

1. You are going to create a graph like the one below for Seattle. Note that the Seattle graph focuses on one month only from June 1, 2015 through June 30, 2015. It is recommended that you focus on one month at a time on the graph for your city.



2. You will either create a data table in MS Excel that is set up like the table on page 4 of this handout or you can do this activity on paper and use the attached data table and create the graph by hand. If you use MS Excel, the graph will be created using MS Excel.
3. Go to <http://www.wunderground.com/history/> to easily access local weather data. Enter your city and specify a date. You will be able to select a custom date range after you click “submit”.
4. On the tabs below the date choose “custom” and enter the date range for the month of your choice. When you’ve selected your range, click “get history”.

5. Scroll to the bottom of the page and you will see Weather History and Observations for your selected month.
6. For this exercise, we are focusing on the **high and low temperatures on each day**. Copy the high and low temperatures to your own table (in this handout). You may also use MS Excel to type the numbers into, or cut and paste the numbers, or download the Comma Delimited File at the very bottom of the page. Instructions for converting this type of file to spreadsheet can be found here <http://www.makeuseof.com/tag/how-to-convert-delimited-text-files-into-excel-spreadsheets/> if your teacher suggests that you use Excel.
7. The next step is to retrieve the **Climate Normals** for the days of the month you have selected. The Climate Normals are created every ten years by the National Climate Data Center in the US. These are 30 year averages for variables like temperature and precipitation. So if the Climate Normal minimum temperature for the 2nd of June is 50 degrees Fahrenheit, that is the average minimum temperature over thirty years of data. The Climate Normals we have at this time are calculated using weather data from 1981-2010.
8. Go to <http://www.ncdc.noaa.gov/cdo-web/datatools/normals> and select the “daily normal” tab. Then choose your state in the drop down menu. Next choose your city and the month you are researching. After the Normals have been found, scroll to the bottom of the screen to see the Normals for each day of the month you have selected. Now you can copy these numbers (minimum and maximum temps only) to your table or spreadsheet. Note that “high” and “maximum” are the same and “low” and “minimum” are the same.
9. Once you have completed your table, graph the observed daily temperatures on the same graph as the Climate Normals for the month and location you have chosen. Your graph should resemble the graph for Seattle below with the temperature graphed on the y-axis and the days on the x-axis.
10. Once you have completed your graph, answer the questions on the next page.

Daily Temperature in Year _____ and Climate Normals for the Month of _____ for the city of _____

Month: _____	Observed Daily Temperature (°F)		Climate Normals (°F)	
	Day	Minimum	Maximum	Minimum
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				