# Analyzing Historical Climate Data – SWES461

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

This classroom exercise will allow you to explore climate data at a location of your choice using basic Excel skills. You will look for patterns and trends in the data and describe them by answering the questions below. Save your figures/charts by copying them directly to this document or printing them and attaching them to this document.

1. Go to <http://cdiac.ornl.gov/epubs/ndp/ushcn/ushcn_map_interface.html>
2. Select a **State** and **Station** from the list and click on Get Monthly Data from the link on the map. This will open up a new page.
3. Look for the ‘**Create a download file of monthly data**’ link under Available Download Files and click on it. This will bring you to a series of checkbox options under ‘**Download a comma-separated file of monthly data’. Choose the following variables for your file:** PRECIP, TMIN, TMEAN, TMAX.
4. Click the Get Data button. This will generate a download link on a new page. Download the file to a folder or the desktop where you can access it in Excel. Double-click the file and it should open the file in Excel directly.
5. To analyze the data, we will be using a combination of filter and pivot table functions in Excel to analyze the data. We will go over how to use these functions during the class exercise.

***Answer the following questions using your dataset.***

1. Where is your station? (City, state, elevation):
2. What is the period of record for the station?
3. Describe the following attributes of the station climate
* Average annual temperature (and standard deviation):
* Warmest month (TMEAN):
* Coolest month (TMEAN):
* Record warmest temperature (value and month/year):
* Record coldest temperature (value and month/year):
* Wettest month:
* Driest month:
* Record wettest month (value and month/year):
1. Which month has the greatest variability in mean temperature? The lowest?
2. Which month has the greatest variability in precipitation? The lowest?
3. Create a time series of annual average temperature using TMEAN and also calculate the annual temperature anomaly. Create a plot of annual temperature anomalies labeling graph with title and axis labels. Add a linear trendline to the plot with the slope equation. Describe any patterns (cycles, high/low periods, persistence and/or trends) on the plot. Is there a trend? If so, what is the slope on the trendline? (copy figure here or attach print out)
4. Do an identical analysis for annual precipitation. Describe any patterns (cycles, high/low periods, persistence and/or trends) on the plot. Is there a trend? If so, what is the slope on the trendline?