With your partner, pick two climate divisions you will analyze. If you’re from Connecticut, take a look at your home town division as one of your two climate divisions. Download and open and open the data files for those regions.

To keep the analysis simple for now, you will focus on April temperature data (i.e. use only the Month 4 data)

*1. Looking at the data for the two climate divisions you have chosen to analyze, how would you determine temperature change from 1895-2009? In your answer, address the following questions: What are your independent and dependent variables? What type of graph would be useful and why? What statistics would you use to extract the rate of temperature change from that graph? How would you calculate total temperature change over the 115 year period?*

Based on your answer to the question above, produce a plot of temperature change for each of your climate divisions of interest (two graphs total). Using these graphs, record the rate of change (oC/year) and total temperature change (oC) from 1895-2009 in the table below.

|  |  |  |
| --- | --- | --- |
| Division | Rate of Temperature Change (oC/year) | Total Temperature Change (oC) |
| 2a. |  |  |
| 2b. |  |  |

*3. Is temperature increasing, decreasing, or remaining stable in your climate divisions? Do your divisions show similar trends or are they different?*

Another tool commonly used by climate change scientists is a temperature anomaly plot. Yearly temperature anomalies indicate how much warmer or colder a given year is compared with the long-term average temperature. These plots are useful because they clearly indicate anomalously warm and cold years while still providing information on long-term temperature trends.

To calculate yearly temperature anomalies for your division, you first need to calculate the average spring-time temperature (oC) for your division. Simply calculate the mean of all 115 temperatures in your division. Next, subtract the mean temperature from each of the yearly temperature values to produce yearly temperature anomaly values.

*4. If the temperature anomaly for a given year is negative, what does this mean?*

*5. If the temperature anomaly for a given year is positive, what does this mean?*

*6. What type of graph should you use to analyze temperature anomaly data?*

Based on your answer to question 6, produce a temperature anomaly graph for each of your climate divisions of interest (two graphs total). Using these graphs, answer the following questions:

|  |  |  |
| --- | --- | --- |
| Division | Rate of Temperature Change (oC/year) | Total Temperature Change (oC) |
| 7a. |  |  |
| 7b. |  |  |

*8. Are the temperature change rates and total temperature change values the same as in your original graphs? Why?*