

Lab 9 for GEOL 1147 (Introduction to Meteorology Lab)

In this lab, we will explore the variation of the precipitation over different stations. Especially, we will explore the interannual variability in the precipitation.

1. Go to Western U.S. Climate Historical Summaries (<http://www.wrcc.dri.edu/Climsum.html>) to download data for station (San Diego). Click 'S. California' in the bottom of the webpage. Then click 'San Diego Wso Airport'. Click 'Custom Monthly Listing'. Select Start Year to '1950'. Select End Year as '2012'. Click 'Create Listing'. Save the data to an Excel file.

If observations for one or more days are missing from a particular month, a footnote, consisting of a lower case letter from "a" to "z", is attached to the precipitation total for that month. The footnote "a" means that one day of observations is missing, while "b" means 2 missing days, "c" means 3 missing days, etc., up to "z", which means that 26 or more days are missing. Since significant rainfall events might last only a day or two, we don't want to use a station that is missing too many days of observations. However, for this project we will focus mostly on precipitation totals during December, January, and February. Hence, if no precipitation totals for December, January, and February since 1950 are footnoted with the letter "d" (that is, 4 missing days) or higher, then the station is acceptable for our purposes.

2. Calculate the average monthly precipitation for each month, and the average annual total, from 1950 to 2012.

a. Click in the empty cell at the bottom of the "JAN" column.

b. Type "**=average**".

c. Highlight the precipitation data from 1950 through last year. [Click into the cell containing the 1950 JAN observation, then drag the cursor down to last year's JAN observation. You should see something like "B2:B64" appended to what you've already typed into the cell.]

d. Type ")" and press the <return> key. The average January rainfall from 1950 through last year should appear in the cell.

3. Construct a histogram of the monthly averages of precipitation.

4. Calculate the standard deviation of precipitation for each month and annual mean.

5. Construct a histogram of the standard deviations of precipitation.

6. Calculate averaged precipitation in Jan and Feb for each year.

7. Calculate mean and standard deviation for JF precipitation over 1950 to 2012.

8. Calculate averaged precipitation in Jul and Aug for each year.

9. Calculate mean and standard deviation for Jul and Aug precipitation over 1950 to 2012.

10. Plot time series of averaged precipitation in winter (Jan & Feb) and summer (Jul & Aug).

11. Why is there more precipitation in winter than summer at San Diego?