SAS Programming
Practice #4

Learn to program efficiently. Each problem does not have to be in a separate program – you should try to accomplish several tasks in one program, especially if all procedures operate on the same SAS data set. Do NOT use unnecessary SORT and PRINT procedures. SAS **do not need to be printed** out as a part of the analysis. Print data sets only when it is requested for you to do so. Write one program for Problems 1 and 2. Create the SAS data set(s) needed only once in the program.

1. a. For each month in the Mesonet temperature data construct high resolution vertical frequency bar charts of the data the maximum and average temperature. Select 8 to 10 midpoints for each variable two ways. Use the MIDPOINTS option or the LEVELS option. Which option gives you more control? What is the default number of bars?

   b. For the Mesonet temperature data, construct a high resolution vertical bar chart for the month variable where the bar height is determined by the mean of the wind speed.

2. a. For the Mesonet temperature data, test for differences between the March and April average high temperatures using the TTEST Procedure. Use $\alpha = 0.01$ in making your conclusions. (Hint: Use a WHERE statement.) That is, $H_0: \mu_{MAR} = \mu_{APR}$. Include a 99% confidence interval for the difference.

   b. Using the TTEST procedure, for the January data only, conduct the one-sided paired t-test testing whether the daily maximum humidity exceeds the minimum humidity. Use $\alpha = 0.01$ in your conclusion. Include only the agreement plot for this paired t-test in your program code and HTML output. Testing this may seems bit silly. More informative is this: How would you estimate the 99% confidence lower bound of the difference? This estimate is providing a 99% confidence lower bound for the humidity range on a day in January.