Plotting

Introduction

Continuing on where we left of, for this exercise we will do some simple calculations on the weather data and create some plots. For anyone who was not able to parse the data file of last week, you are free to use the reference implementation that was uploaded to Blackboard. The exercise of Tuesday was a preparation for this homework (and some questions will be repeated, so that it is clear which questions need to be answered and handed in).

For this week's exercise you are to hand in a report (A4, PDF) and any Python code you used to answer the questions. Be sure to put your name and student number on the report and in a comment at the top of any Python file you submit. Be sure to clearly mark which file/code corresponds to which of the questions below.

Questions

1. Find the wettest and the hottest day on record in the interval from 01-01-1950 to 31-12-1999. Provide the code you used to find these numbers. Also answer the question where these records were broken.
2. In preparation for the plotting exercises; extract a time-series of the temperatures in 1968 at a weather station of choice. Provide the code that can do this and include the first 10 dates and temperature measurements in your report.
3. Calculate monthly average temperatures for the time-series you created in the previous exercise. Create a line plot of these average temperatures for each month. Make sure to properly label your axes and set the title to 1968 station name (where station name should whichever weather station you used). The plot should be stepped. Extra credit if you can change the labeling of the tickmarks to read J,F,M,A,M,J,J,A,S,O,N,D. Save the plots/figures to file, and include them in you report and also provide the code you used to create them.
4. Now choose 5 years, and two stations (one along the North Sea and one in the east of the Netherlands). Where are the summers hotter and where are the winters colder. Illustrate your answer with the plots you created, and add them to your report and hand in the code you used to answer the question.
5. Create a time-series plot for the decade 1960-1969 for the temperature at a weather station of choice. Provide the code, and add the plot to your report.
6. The globally-averaged atmospheric temperature has increased with respect to historic records (i.e. over the last several decades), is this trend visible

in the data we have? You are free to create any plot you like. Describe your methods, provide the code and add any plots to your report.