Access the following data sets:

a1 <- read.table("http://www.stat.ucla.edu/~nchristo/statistics_c173_c273/o3.txt", header=T)

a2 <- read.table("http://www.stat.ucla.edu/~nchristo/statistics_c173_c273/soil.txt", header=TRUE)

a3 <- read.table("http://www.stat.ucla.edu/~nchristo/statistics_c173_c273/swiss_rainfall_data_all.txt", header=TRUE)

Description of data sets:

1. California ozone data: Ozone levels were measured at 175 location in California on 08 August 2005. Variables: date, site, lat, lon, o3.

2. Maas river data: Concentration of lead and zinc were measured at 155 locations on the flooded banks of the Maas river in the Netherlands. Variables x, y, lead, zinc.

3. Swiss rainfall data: Rainfall measures at 467 location in Switzerland were taken on 08 May 1986. Variables: x, y, data.

For each data set above:

a. Perform a non-spatial exploratory analysis (summary statistics, histograms, etc.).

b. Create a geodata object using geoR.

c. Use the command plot and points to construct and print the appropriate graphs.

d. Compute and plot the sample variograms (classical and robust). You can compute omnidirectional variograms and variograms by choosing different values for the arguments dir and tol.

e. Try to fit a model variogram (exponential, spherical, etc.) by eye to the any one of the sample variograms you constructed in (d) using the command lines.variomodel. Print the graphs that show the fitted model variograms.