Access the calcium and magnesium data: Calcium and magnesium contents in soil samples at the 0 – 20 cm and 20 – 40 cm soil layers were measured at 178 locations. Variables of interest here: east, north, ca020.

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

After you access the data create the following data frame:

data <- as.data.frame(cbind(a$east, a$north, a$ca020))
names(data) <- c("east", "north", "ca020")

da. Create a grid using the data above (use by=10).

b. Use the idw function of gstat to predict the data points of your grid.

c. Collapse the predicted values into a matrix and use the image function to create a raster map. Add contours to this raster map.

d. Use the krig function of gstat to fit a surface (1st and 2nd) order to your grid.

e. With the image function create a raster map of the predicted values and a raster map of variances of the 2nd order surface.