**Description**

The data were collected during a study of the settlement pattern of common terns on a small islet in the Delta d’Ebre (Hernandez and Ruiz, 2003). The islet was inspected at two-day intervals throughout the 2000 breeding season. The data include the location of each nest, its elevation above sea level, and elevations at a number of additional points (points without nest) on the islet.

In the file called **elevationsIslet.txt**, contains the information of the coordinates and elevation above sea, and in file, called **poly84.txt** contains the coordinates of the borders of the islet**.**

The aim is to predict the elevation above sea level along the small islet using a kriging interpolation.

Answer the following questions:

1. Explore the large variability of the elevation. Discuss the results and show the plot of the results.
2. Explore the small variability of the elevation structure. Discuss the results and plot them.
3. Explore the spatial independence. Fix the seed at 1000 using the code set.seed(100)
4. Propose four theoretical variogram and estimate the parameters via restricted maximum likelihood or weighed least square. Select the two variograms best fit the data. Explain the parameters of the chosen variogram (sill, nugget, range and kappa)
5. Predict the elevations along all the area of study using the two variogram selected in point 4. Discuss the type of kriging chosen

* 1. Compare both kriging predictions using cross-validation, and propose the best model.
  2. Show the predictions and their standard errors.

In annex, write the R code used.

Last day to delivery is the November 6th via Atenea