

Another Simulation: Deformation Simulation 1

Two hundred independent replications of a mean zero non-stationary Gaussian spatial process were simulated at 100 points in 2D.

The true covariance of the process is isotropic in a deformed space - but non-isotropic in geographic space. The variance was constant.

Data for 10 of the 100 sites are withheld.

Three csv files are uploaded for analysis, together with a pdf figure showing locations of all 100 sites:

- "GeographicLocProvided.csv" contains the locations of 90 sites for which data are provided.
- "DeformationDataProvided.csv" contains the 200 simulated observations for 90 sites.
- "GeographicLocWithheldSites.csv" contains the locations of the 10 withheld sites.
- GeographicLocationsRedWithheld.pdf shows the locations of all 100 sites - indicating which are withheld.

Goal: estimate the true spatial correlation structure, both between the locations where observations have been provided, and also between the withheld locations.

200 replications from the same process have been provided. However, it may be of interest to run certain methods with subsets of these replications to study how estimation improves with increasing numbers of replications.

The data may be read in using

```
obs.loc <- read.csv( "GeographicLocProvided.csv", header=T)
                # gives a 90 by 2 data frame of locations where observations available

pred.loc <- read.csv( "GeographicLocWithheldSites.csv", header=T)
                # a 10 by 2 data frame of locations where data are withheld

dat.loc <- read.csv( "DeformationDataProvided.csv", header=T)
                # a 90 by 200 data frame with observations for 90 sites.
                # The columns correspond to the 200 realizations
```