

ABS17: MODELING SPATIAL AND SPATIO-TEMPORAL DATA WITH ENVIRONMENTAL APPLICATIONS

Villa del Grumello, Como, Italy
19-23 June 2017

Monday June 19

- 13.00 - : Registration
- 14.00 - 16.00 : Introduction to spatial statistics. Discussion of different types of data and problems. Discussion of references and software. Examples of spatially referenced data. Graphical exploration of spatial fields.
- 16.00 - 16.30 : Coffee break
- 16.30 - 18.00 : Introduction to Bayesian methods and hierarchical models.

Tuesday June 20

- 9.00 - 10.30 : Basic properties of Gaussian random fields. Smoothness. Spectral densities. Examples of families of correlations functions. Traditional approaches to estimation: variograms.
- 10.30 - 11.00 : Coffee break
- 11.00 - 12.30 : Maximum likelihood estimation. Bayesian approach to estimation. Prediction for spatial random fields: kriging. Bayesian kriging.
- 12.30 - 14.00 : Lunch at Villa del Grumello
- 14.00 - 16.00 : **Practical session:** Installing and running R software for exploring and fitting spatial data with geoR and spBayes.
- 16.00 - 16.30 : Coffee break
- 16.30 - 19.10 : Participants' talks

Wednesday June 21

- 9.00 - 10.30 : The big data problem: reduced rank models and other modern approaches to dimension reduction. Process convolutions, predictive Gaussian processes.
- 10.30 - 11.00 : Coffee break
- 11.00 - 13.00 : **Practical session:** Fitting predictive Gaussian processes with spBayes
- 13.00 - : Free afternoon and evening

Thursday June 22

- 9.00 - 10.30 : Multivariate spatial models. Cross correlation functions. Coregionalization.
- 10.30 - 11.00 : Coffee break
- 11.00 - 12.30 : Spatio-temporal models. Space-time covariance functions.
- 12.30 - 14.00 : Lunch at Villa del Grumello
- 14.00 - 15.30 : Quick introduction to dynamic linear models. Conditional linear models for space-times data.
- 15.30 - 16.00 : Coffee break
- 16.00 - 18.00 : **Practical session:** Fitting multivariate spatial models with spBayes
- 19.00 - : Farewell dinner

Friday June 23

- 9.00 - 11.00 : Integro-differential equations (IDEs). Dynamic linear models to fit IDEs.
- 11.00 - 11.30 : Coffee break
- 11.30 - 13.00 : **Practical session:** Fitting space-time data using IDEs.