

Preface

These lecture notes arise as the continuation of the International Spring School *Advances and Challenges in Space-time modelling of Natural Events*, which took place in Toledo (Spain) in March 2010. This Spring School was addressed to young researchers (Master students, PhD students, PostDoc researchers) in academics, extrauniversitary research and industry, interested in learning about recent developments, new methods and applications in spatial and spatio-temporal statistics and related areas and to exchange their ideas and results with colleagues. At the end there were around 50 students coming from all the continents; such a success was guaranteed by a good mixture between the fascinating Toledo and the excellent lecturers being there.

There were several motivations justifying such a Spring School. Recent literature emphasize the need for comprehensive mathematical and statistical frameworks for the description of phenomena evolving over space or time or both of them.

Once established the crucial importance of simultaneously studying the spatial and temporal components in the evolution of an environmental process, it is worth mentioning that the approach to such problem can be extremely variable, depending on the researcher point of view and the discipline he comes from. A very important dichotomy regards.

The School covered the main branches of spatial and space–time statistics: Geostatistics, non-Gaussian random fields, Markov random fields, space–time point processes, large space–time dataset, spatial design, and last but not least, extreme values theory for spatial processes. Such a huge range of subjects attracted the interest of students and young researchers and we hope they appreciated the result of this organization and the time they spent in Toledo.

The Editors of these Lecture Notes are extremely grateful to the lecturers for their excellent work at the Spring School, and to the students for the participation in the course and for the enthusiasm they gave to such event.

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