

Dealing with Preferential Sampling in Geostatistics: Some approaches and examples

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Resumo/Abstract:

The analysis of spatially referenced data became prominent in recent years due to methodological and computational advances. The Statistics Area that covers the study of these events is known as Spatial Statistics and its subareas include several procedures to perform inference and prediction in cases where the data locations bring information to the analysis. In particular, Geostatistics is the subarea of Spatial Statistics in which data are obtained through a partial observation of an continuous spatial process. Classical approaches to perform inference in Geostatistics consider the sample points as fixed or, if coming from a stochastic process, independent of the underlying process that generated them. On the other hand, if the sampling design is dependent of the underlying spatial process, then we have a process under Preferential Sampling. In real situations, Preferential Sampling can be explained by many reasons, as economic seatbacks, political influence, private interests, among others. In statistical terms, researchers have deal with this through inclusion of indirect covariates or assigning spatial point process to model the sample design. In this talk we present some real data obtained under preferential sampling and recent approaches to perform inference when we are interested in parameter estimation, spatial prediction or designing new samples.