SIMULATION STUDY BASED ON SPATIAL EXTREMES MAX-STABLE PROCESSES

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- *ABSTRACT: The most mathematical models developed for rare events are based on probabilistic models for extremes. Although the tools for statistical modeling of univariate and multivariate extremes are well-developed, the extension of these tools to model spatial extremes data is currently a very active area of research. A natural approach for such modeling is the theory of extreme spatial and max-stable process, characterized by infinite dimensional extension of multivariate extreme value theory, check the extreme dependence through the extreme coefficient. This article describes the simulation. This work describe the simulation of such processes in different configurations, so that it can contribute to the modeling associated risk maps for spatial extremes. Checking also the isotropic and anisotropic behavior of these models via Monte Carlo simulation, by implementing the new correlation functions these models existing in geostatistics. The proposed models consider the Euclidean space and a transformation called climatic space, which makes it possible to explain the presence of directional effects resulting from synoptic weather patterns. This methodology is based on the theorem proposed by De Haan (1984) and Smith (1990) models and Schlather (2002). Estimates are performed using maximum pairwise likelihood, comparing the behavior of the estimates of the parameters under study. Asymptotically is viable the simulation of spatial extremes based in max-stable processes, possibiliting of diagnosis extreme events, enabling, for example, identify by maps directional effects resulting from meteorological phenomena. Therefore, this methodology could be important for the appropriate management of environmental risks and disasters in countries that have their economy deeply dependent of the agribusiness.*

- *KEYWORDS: Correlation function; extreme coefficient; climatic space; Monte Carlo simulation.*

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