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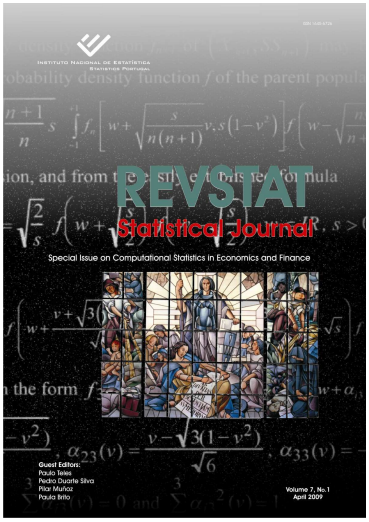

In 2003 the National Statistical Institute launched the scientific statistical journal **REVSTAT-STATISTICAL JOURNAL**, published in English two times a year, with a prestigious international Editorial Board, which came to substitute the *Revista de Estatística* [Statistical Review], published in Portuguese between 1996 and 2002.

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This Volume of **REVSTAT: Volume 10, No. 1 - March 2012**, is about **"Collection of Surveys on Tail Event Modeling"** and includes six articles. Their abstracts are presented below:

AN OVERVIEW AND OPEN RESEARCH TOPICS IN STATISTICS OF UNIVARIATE EXTREMES

Authors: *Jan Beirlant, Frederico Caeiro* and *M. Ivette Gomes*.

This review paper focuses on statistical issues arising in modeling univariate extremes of a random sample. In the last three decades there has been a shift from the area of parametric statistics of extremes, based on probabilistic asymptotic results in extreme value theory, towards a semi-parametric approach, where the estimation of the right and/or left tail-weight is performed under a quite general framework. But new parametric models can still be of high interest for the analysis of extreme events, if associated with appropriate statistical inference methodologies. After a brief reference to Gumbel's classical block methodology and later improvements in the parametric framework, we present an overview of the developments on the estimation of parameters of extreme events and testing of extreme value conditions under a semi-parametric framework, and discuss a few challenging open research topics.

A REVIEW OF EXTREME VALUE THRESHOLD ESTIMATION AND UNCERTAINTY QUANTIFICATION

Authors: *Carl Scarrott* and *Anna MacDonald.*

The last decade has seen development of a plethora of approaches for threshold estimation in extreme value applications. From a statistical perspective, the threshold is loosely defined such that the population tail can be well approximated by an extreme value model (e.g., the generalised Pareto distribution), obtaining a balance between the bias due to the asymptotic tail approximation and parameter estimation uncertainty due to the inherent sparsity of threshold excess data. This paper reviews recent advances and some traditional approaches, focusing on those that provide quantification of the associated uncertainty on inferences (e.g., return level estimation).

MAX-STABLE MODELS FOR MULTIVARIATE EXTREMES

Author: Johan Segers.

Multivariate extreme-value analysis is concerned with the extremes in a multivariate random sample, that is, points of which at least some components have exceptionally large values. Mathematical theory suggests the use of max-stable models for univariate and multivariate extremes. A comprehensive account is given of the various ways in which max-stable models are described. Furthermore, a construction device is proposed for generating parametric families of max-stable distributions. Although the device is not new, its role as a model generator seems not yet to have been fully exploited.

BIVARIATE EXTREME STATISTICS, II

Authors: *Miguel de Carvalho* and *Alexandra Ramos*.

We review the current state of statistical modeling of asymptotically independent data. Our discussion includes necessary and sufficient conditions for asymptotic independence, results on the asymptotic independence of statistics of interest, estimation and inference issues, joint tail modeling, and conditional approaches. For each these topics we give an account of existing approaches and relevant methods for data analysis and applications.

MODELLING TIME SERIES EXTREMES

Authors: *V. Chavez-Demoulin* and *A.C. Davison*.

The need to model rare events of univariate time series has led to many recent advances in theory and methods. In this paper, we review telegraphically the literature on extremes of dependent time series and list some remaining challenges.

A SURVEY OF SPATIAL EXTREMES: MEASURING SPATIAL DEPENDENCE AND MODELING SPATIAL EFFECTS

Authors: *Daniel Cooley, Jessi Cisewski, Robert J. Erhardt, Soyoung Jeon, Elizabeth Mannshardt, Bernard Oguna Omolo* and *Ying Sun*.

We survey the current practice of analyzing spatial extreme data, which lies at the intersection of extreme value theory and geostatistics. Characterizations of multivariate max-stable distributions typically assume specific univariate marginal distributions, and their statistical applications generally require capturing the tail behavior of the margins and describing the tail dependence among the components. We review current methodology for spatial extremes analysis, discuss the extension of the finite-dimensional extremes framework to spatial processes, review spatial dependence metrics for extremes, survey current modeling practice for the task of modeling marginal distributions, and then examine max-stable process models and copula approaches for modeling residual spatial dependence after accounting for marginal effects.