Records and Hurricanes

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Abstract: Statisticians are constantly engaged in a game with nature. Nature provides the true underlying population and the statistician tries to guess what it is based on observed data. The guessing game includes estimation and prediction, both from complete and from incomplete data. Here we present such methodology from a particular type of incomplete data called record-breaking data, that is, data generated from setting new records. We encounter records on a daily basis, e.g. sports records, meteorological records, financial records etc. Besides arising naturally in our daily lives, in many industrial quality control experiments and destructive stress testing, the only available data are successive minima (or maxima), i.e. record-breaking data. This paper will attempt to provide a comprehensive review of all the results related to the nonparametric inference from such data. A major part of the authors work has focused on smooth estimation from record-breaking data. Recently, the author has also applied the concept of smooth estimation to estimate the genesis time of hurricanes in the Atlantic Basin. The second part of the talk will focus on the use of nonparametric techniques to model some characteristics of a hurricane.