



A Kernel based approach for the analysis of extreme precipitation events

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The statistical characterization of extreme precipitation events, in a climatically exposed and vulnerable area as the Euro-Mediterranean region, is essential and can help to achieve a better understanding of the underlying dynamics responsible for the development of such events.

In the frame of Extreme Value Theory, daily exceedances over an objective threshold can be modeled by using the Generalized Pareto Distribution. Many estimators exist for the inference of the GPD parameters. However, when spatio-temporal non-stationarity arises, only a few estimators can be adapted. The well known Maximum Likelihood can be easily modified to handle with covariates in a parametric way, but it is computationally slow and suffers from optimization problems. Trying to overcome these drawbacks and using a nonparametric approach, a method based on Generalized Probability Weighted Moments and Kernel regression has been developed. The proposed method is presented and its potential is explored through the application on a set of more than 300 daily precipitation series in Switzerland (covering the period 1961-2010).