

Topic:

"A new method for prediction of extreme values of time series."

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Time: Tuesday November 25th at 14.15 - 15.00

Place: Room T7 at Marine Technology Centre

ABSTRACT: Extreme value statistics for time series, even in applications, have very often been based on asymptotic results. This is done either by assuming that the epochal extremes, for example yearly extreme wind speeds, are distributed according to the generalized (asymptotic) extreme value distribution with unknown parameters to be estimated on the basis of the observed data. Or, it is assumed that the exceedances above high thresholds follow a generalized (asymptotic) Pareto distribution with parameters to be estimated from the data. The major problem with both of these approaches is that the asymptotic extreme value theory itself cannot be used in practice to decide to what extent it is applicable for the observed data. Hence, the assumption that an asymptotic extreme value distribution is the appropriate distribution is based more or less on faith or convenience.

In an effort to ameliorate this situation, we have developed a new method for extreme value statistics of time series based on a concept we call average conditional exceedance rate (ACER). This method is less restrictive and more flexible than the ones based on asymptotic theory. In particular, it has the capability to capture statistical dependence and subasymptotic behaviour of the data, which is important for accurate prediction. It also applies to nonstationary time series.