Ocean Science

Discussions

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Interactive comment on "A Monte Carlo simulation of multivariate general Pareto distribution and its application" *by* L. Yao et al.

Anonymous Referee #1

Received and published: 15 January 2015

General Comments

This paper uses a Monte Carlo simulation in order to model with a Multivariate Pareto Distribution, bivariate data consisting of two series of sea wind and wave records in the period 1960-1982. Based on my reading, I am unable to recommend the publication of this paper in its current form. In particular, the manuscript is hard to follow as no explanations are given.

Specific Comments:

- There is not any section describing the used dataset (i.e. I was not able to find the time resolution of the dataset.)

- The method description is confused and explained in general without any reference to the considered variables.

- It is not clear as the authors have got the standard marginal distribution from observations: are the uniform marginal values expressed in Frechet units?
By looking in Figure 1 it seems that authors fitted the observation records with some univariate model, but it would be better to explain in details and clearly what they have done to model each single variable, and which kind of distribution formula they have used to transform data in standard unit.
As an example if the authors have used Pareto distribution to model marginal data, I would expect a discussion on how they have chosen the threshold.

- Goodness of fit: In figure 1 the authors have shown the probability plot in order to test the goodness of fit performed to the univariate variables, it would be better not to use only graphical methods, but also some statistical hypothesis testing in order to quantify the significance level of the goodness of fit by reporting the p-value.
However, in Figure 1 the graphical "Fitting testing" seems to represent a discrete distribution and not a continues one as expected, due to the nature of the used variables. In Fig.1a we see that all the wind values in the range 0.4 and 0.6 (standard unit) show the same probability. Authors should explain why they have got the same probability for a range of observed values. If the single marginal considered variables are not well modeled, then the joint distribution cannot be modeled correctly as well. For this reason the interpretation and conclusion are not adequately supported by the evidence presented. I think the paper has to be

completely rewritten before resubmission. In addition if from one side the paper use novel data trying to model them with very advanced tools, not substantial conclusion are reached.

Interactive comment on Ocean Sci. Discuss., 11, 2733, 2014.