Geophysical Research Abstracts
Vol. 14, EGU2012-11116, 2012
EGU General Assembly 2012

MCMC estimation of the V-copula and t-V-copula with censored data

J. Rodriguez and A. Bardossy
University of Stuttgart, Germany

The V-copula was originally introduced in 2008 in a paper by Bárdossy and Li as a flexible tool for modelling the kind of dependence present in geostatistical applications. Then it was recently used by Bárdossy and Pegram for modelling rainfall at several gauges, with a view to daily precipitation simulation. One of the difficulties of using the V-copula lies in estimation, since the density is very complicated and computationally costly. The aims of the present work are, firstly, to introduce the t-V-copula, whereby the Gaussian distribution used for constructing the V-copula is substituted by a Student distribution, thus enriching the possibilities of dependence modelling; and secondly, to show how to estimate the parameters of the V-copula and t-V-copula with and without censored data, within a MCMC framework. In the censored data case, the censored part of the data is considered as missing and imputed by simulation at each iteration of the MCMC algorithm. The censored data case is relevant in particular for rainfall modelling, in connection with the wet/dry event modelling, since the upper part of the uncensored distribution can be used for modelling the rainfall values (wet periods), and the censored part for modelling the dry periods, on each location.