



Extreme values copulas

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Bivariate probability distributions have a good potential to play a substantial role in describing extreme events in geosciences. Based on a copula C describing the dependence of variables from random vector (X, Y) , we can analytically derive the copula C_n describing the dependence of $\left(\max_{i=1,\dots,n} X_i, \max_{i=1,\dots,n} Y_i\right)$, where $(X_1, Y_1), \dots, (X_n, Y_n)$ is an IID sequence of random vectors with the same distribution function as (X, Y) . If $\lim_{n \rightarrow \infty} C_n = C^*$ exists, it is called a max-attractor of C . We describe the structure of max-attractors by means of Archimedean copulas with dependence function A , but also as copulas invariant under power transformations. A proposal for max-attractors fitting real hydrological data will be offered. Note that by means of survival copula, min-attractors of copulas can also be described.