

Basin compatibility and merging procedure for improving copula applications.

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Hydrograph peak, volume, duration, and shape intrinsically include pivotal information about watershed hydrological properties and the nature of the rainfall-runoff dynamic. The aim of this work is to introduce the concept of “compatibility” between catchments, that is the possibility to transfer, from one catchment to another, the information about the dependence structures at play. Given a set of synthetic runoff time series simulated varying watershed soil use and concentration time, we investigate the resulting change of the dependence structures of peak-volume, peak-duration and volume-duration pairs. The results indicate how the hydrological features may affect the corresponding copulas. The outcomes of the investigation could be particularly effective in two practical applications: for determining the degree of compatibility of the dependence structures associated with different basin scenarios, and for enriching scanty data bases, in order to improve the estimation of multivariate copulas.