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Analysis and Modeling the drought hydrologic by the copulas in North Algeria

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Abstract: In this work, we use the three dimensional copula for modeling the dependence of the drought variables, severity–duration–frequency (S–D–F). Drought is a natural event, which has huge impact on both the society and the natural environment. Drought events are mainly characterized by their severity, duration and intensity. The study adopts standardized precipitation index (SPI) for drought characterization, and copula method for multivariate risk analysis of droughts. The Beni-Behdel River basin was selected as an example to illustrate the copulas. Results indicates that the Student copula was more appropriate for drought analysis in the selected area. Drought probabilities and return periods were calculated and analyzed based on the three dimensional.

Keywords: Copula, Drought, SPI index, return period.

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