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Changes in the frequencies of unusual hydroclimatological events

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Abstract

The water cycle is an important part in the global climate system which is almost sure by climate change. These changes might not only affect means, variances at single locations, but also in the spatial and temporal dynamics. It also might change the frequencies of hydroclimatological events that can lead to the occurrence of unusual events for multivariate sense. The purpose of this study is to investigate the occurrence of unusual hydroclimatological events in the different multi site and multi temporal sense. For this purpose we consider the short time temporal dependence and the spatial dependence of meteorological variables. This enables the identification of unusual events which include extreme and non-extreme events. The unusual events can be identified using the depth function. The main idea of depth function is to measure the centrality of a point with respect to multivariate dataset. A point with low depth that located on or near the boundary of the dataset is classified as the unusual events. Long time series of daily mean temperature, precipitation, antecedent temperature index, and antecedent precipitation index for selected European stations are analyzed. The result shows the persistence and dynamical behavior of unusual events in spatial and temporal scale.

Biography

Yulizar has completed his master degree at the University of Stuttgart, Germany in 2010. Currently, he is doing Ph.D. at the Institute for Modelling Hydraulic and Environmental Systems at the University of Stuttgart since 2011. His main research is 'Investigating of time series analysis in the hydroclimatological events'.