



## Spatial-Temporal Analysis of Unusual Hydrometeorological Events

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Precipitation and temperature are the most important meteorological variables that very likely change as a consequence of climate change. These changes might not only affect means, variances, and extremes at single locations, but might also affect in temporal and spatial dynamics. Situations can occur which never occurred before and others might disappear. In the framework of this research, the frequencies of unusual in temporal and spatial events are investigated. Unusual events in temporal scale are defined at a single site as the series of observations which differ from most of the other sequences. For the mathematical definition of unusual events, outlyingness functions are used. Under this definition all extremes are unusual events, but other combinations might also be considered as unusual. A similar definition is used for the spatial context. The occurrences of unusual events in observed temperature and precipitation series are investigated. The methodology is used to identify disappearing and newly appearing unusual events in time series. In addition, it is also used to identify tendencies of changes of unusual events in frequencies and magnitudes. Data from Europe and US are used to illustrate the methodology.