Uncertainty in spatio-temporal drought assessment

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In the last decade, uncertainty in drought assessment studies has received increasing attention in the hydrometeorology research community. Spatio-temporal characteristics of this phenomenon are affected by uncertainties resulting from the calculation of standardised drought indices (SDI). To our knowledge, to date, there is no analysis of how these uncertainties affect the assessment of the spatial extent of droughts.

In the present study, the uncertainty of meteorological drought extent determination in specific classes is investigated from the perspective of a candidate probability distribution, the data record length and the cumulative time scale. E-OBS precipitation daily gridded data were used to calculate the Standardised Precipitation Index (SPI) in the Vistula catchment in Poland using five distribution functions (Gamma, Weibull, Generalised Extreme Value, Person type III and Tweedie). Preliminary results indicate significant discrepancies in the spatial classification of individual drought categories, indicating greater uncertainty in determining the area affected by severe and extreme droughts.

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