



Homogeneity test and non-parametric analysis of tendencies in precipitation time series of Keszthely, West-Hungary

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Our goal is to investigate the changes of precipitation during the past almost one-and-a-half century on a local scale for Keszthely (West-Hungary, Central Europe). It is situated in an important region for tourism, agriculture and preservation of natural treasures and biodiversity of West-Balaton wetland, therefore Keszthely is located in a vulnerable part of Hungary and decreasing tendency of the precipitation is projected to be higher than average of the country. Dataset of monthly precipitation sums were analysed from 1871 January to 2014 December that was provided by the Department of Meteorology and Water Management of the University of Pannonia Georgikon Faculty (Keszthely). Pettit's test for homogeneity was used to detect change points in the time series of monthly precipitations. Homogeneity test is of high importance in analysis of time series, because helps to avoid misleading conclusions for the tendencies. Only one significant change point could be detected in the dataset. The dataset was divided into two parts at this brake point and analysed by non-parametric Mann-Kendall trend test. This non-parametric test for tendencies is commonly used to detect monotonic trends in time series and has less strict requirement for application than linear trend. No assumption of the normality is required. Suspected significant negative tendencies of monthly precipitations could not be proved in either of the two sections of the dataset. Not only the seasonality, but also the autocorrelation of the data should be taken into account for the analysis of the trends. Suspected declining tendency could not be proven on the contrary that as was supposed based on the literature.