



Monitoring of meteorological drought in Hungary

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Monitoring of extreme climate events, such as drought is important in the Carpathian basin and in the wider Danube region. This disaster can cause costly losses in these regions. According to the IPCC report (2012), a significant increase in frequency and magnitude of this hazard is expected due to climate change.

The first step in the risk assessment process is the mapping of the spatial distribution of a specific drought event and the analysis of the frequency of the drought. Our investigations focused on the often used relative drought index, namely the Standardized Precipitation Index (SPI) in the area of Hungary. The monthly precipitation sums for computation of SPI are originating from 461 Hungarian rain gauges in the period between 1951 and 2017. The time series are quality controlled and homogenized by MASH (Szenthimrey, 2007) method. We calculated the different SPI values from the observed daily station data for each month. We used an upgraded version of an SPI calculator and the MISH interpolation method which were developed at the Hungarian Meteorological Service (Szenthimrey and Bihari, 2007). The SPI calculator is able to compute SPI for the location of the stations and also the gridded SPI values to support the mapping and to derive the countywide averages for time series analysis.

In this study, we analyze the frequency, the duration and the intensity of the drought events occurred from 1951 until nowadays in Hungary by applying SPI3, SPI6, SPI9 and SPI12 indices for this purpose. Our investigation aims to determine the area is affected by drought more frequently and to detect the possible change in frequency, duration or intensity of drought events in the last years. We are going to use our results in the “DriDanube - drought risk in Danube region” project as part of the drought risk assessment method to identify the drought events and to determine the geographical distribution of the probability of the drought.

The DriDanube region covers the PannEx area as a whole. The results will be available for other applications is going to develop in PannEx initiative in the future.

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