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Drought events: are they natural or artificial?

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Drought is the largest damage causing natural disaster in the world. Relief compensates damages usually, droughts insurance does not exist in many countries. Therefore, information about the areal distribution, severity and duration of drought are very significant. The accurate limitation of the area hit by drought is a very important ecological and economical question. The measurement of this complex phenomenon is very difficult. Usually, several indices are used to define the drought events.

Determination of the distressed area has three important steps: selection of the drought index or group of indices, their calculation in the measuring points, where we know the input parameter values, and the interpolation. Mistakes can lead to false (to give signal where it does not exist) or neglected (not recognized signal) drought events, especially in the first and the third steps. Both errors give artificial images about the drought events.

Such errors originate mostly from the use of 'well-known' methods. The application of a drought index can be excellent in a given case, but not recommended in the another one. Similarly, we have to interpolate the data in the different points to get the field of the parameter. The accuracy of the interpolation methods is not studied usually deeply enough. In some cases, the error of the resulted chart is evident, like the case of the negative precipitation. In such cases, the overall used solution to suppress the evidently wrong data, e.g. instead of negative precipitation we take zero. The most of the maps of drought indices cannot be corrected easily. The artificial drought is not only a problem of financing, but has ecological consequences, as well. Therefore, the interpolation of extreme values is very important.

A new interpolation method (MISH) was developed at the Hungarian Meteorological Service. The main feature of the method is its mathematically evolved structure. Additionally, the special climatological characteristics were taken into account during

the development. Therefore, this method has strict mathematical structure, but utilizes many benefits offered by the features of climatology. This method shows the spatial variability much better than the widely used geostatistical methods, using one single data realization in time.

A comparison of different methods will show the accuracy and area of drought interpolation for various cases.