



Regional drought assessment in Cyprus

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Regional drought assessment is conventionally based on drought indices for the identification of drought characteristics, such as its intensity or severity, duration and its areal extent. Drought indices are mainly special combinations of indicators which are based mainly on meteorological and hydrological data.

In the present study, drought assessment is achieved by using the Standardized Precipitation Index (SPI) and the Reconnaissance Drought Index (RDI) for the whole area of Cyprus. SPI is calculated from the monthly precipitation data, while RDI, apart from precipitation, it also incorporates the potential evapotranspiration which is estimated from the monthly mean temperature data. On the one hand, SPI is designed to quantify the precipitation deficit for multiple time scales, which reflect the impact of drought on the availability of the different water resources. The basic advantages of using the SPI are the simplicity of its calculation, the possibility to describe the drought on different time scales and its standardization which ensures independence from the geographical position of measuring stations. On the other hand, RDI is similar to the Aridity Index which was proposed by FAO.

The regional drought indices were estimated for the period 1971-2008 by integrating spatially precipitation and potential evapotranspiration using GIS techniques. Droughts in Cyprus are becoming more frequent events with adverse impacts on the economy, social life and on the environment. During the period 1971-2008, Cyprus suffered from nine meteorological drought events, with the most significant ones in the periods 1971-1974, 1981-1984, 1989-1991, 1993-1994, 1995-2000 and 2004-2008. The first five meteorological droughts were followed by acute water shortage and affected the entire population of Cyprus, whereas the last one developed into hydrological and agriculture drought, although the preceding years were relatively wet and the surface reservoirs were filled with water. It has to be stressed that the amount of rainfall during the hydrological year 2007-2008 was only half the mean annual rainfall which is the second lowest during the whole period of measurements in Cyprus. As a result, in 2008 the dams are almost empty and the government has imposed a number of water saving measures in order to overcome the problem. The second characteristic of the drought periods is the fact that the duration of the drought episodes is usually 1 to 3 years, with the exception of the last cases when drought was recorded for five consecutive years.