HYDROLOGICAL VERSUS METEOROLOGICAL DROUGHT: A CASE STUDY FOR U.K.

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Hydrological drought analysis is usually harder to perform than meteorological analysis because of lack of sufficient data. This is generally due to the shorter records for hydrological variables than meteorological ones and to the changes in the rivers regimes that reduces the number of series appropriate for drought statistical analysis, where the natural flow regime can be considered.

The application of a regional drought model to precipitation and runoff series was undertaken for Southern U.K. in order to compare hydrological and meteorological drought estimates. For both data sets the same area and period was considered.

The hydrological drought is generally coincident with meteorological drought in the same year or the previous year. For the hydrological year 1964/65, hydrological drought clearly follows the meteorological drought generated in the previous year. The situation of 1961/62 however, where the hydrological drought has apparently no meteorological stimulus, highlights the importance of performing desaggregation of time-periods for the study of the inter-annual transposition of within year flow regimes.

The areal drought spread defined both by meteorological and hydrological characteristics can be analyzed in each hydrological year. For instance for 1975/76 a similar range of values can be observed and a coincident location of the nucleus of both types of drought. Meteorological drought in this year is classified with return period higher than 100 years while hydrological drought is close to 50 years.

Hydrological drought return period is constantly lower or at least of the same range as the return period of meteorological drought.