

## **Distribution of heavy precipitation events in Romania between 1980 and 2009**

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We have analysed the temporal and spatial distribution of heavy precipitation events in Romania that were recorded at meteorological and pluviometrical stations between 1980 and 2009. Correlations have been made with the large-scale atmospheric circulation in Europe at the time of the events, by the classification of Hess-Brezowski circulation types (Grosswetterlagen) as documented by Werner and Gerstengarbe in 2010. We have taken into account all types of precipitation that amounted to, or surpassed the threshold of 50 mm in 24 hours, regardless of their nature (either short-lived rain caused by instability, or continuous, lengthy precipitation caused by frontal activity). The set of data on heavy precipitation, and the circulation types for each day between 1980 and 2009 have been stored in dedicated Microsoft SQL Server relational databases. Using Structured Query Language (SQL) queries we have been able to link these pieces of information to one another and detect correlations. For instance, we have found that, since circa 1997, the number of heavy precipitation events that have been recorded at stations in Romania has increased, comparatively to the 1980-1996 interval. Also, the maximum precipitation amount appears to have increased since the same year, and amounts over 100 mm in 24 hours have been recorded more frequently than before. Also, we have found that the BM, TRM and WZ Grosswetterlagen are the main large-scale circulation types associated with heavy precipitation in Romania.