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Trends in percentiles of temperature and precipitation distributions in the Czech Republic

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Trends in percentiles of monthly and seasonal precipitation and temperature are estimated in various locations of the Czech Republic for a recent period (1961-2000). Daily precipitation and temperature (maximum, minimum and mean) data from 1961 to 2000 for 78 locations with precipitation measurements and 30 locations with temperature measurements are used. The analysis aims at evaluating trends in all portions of both the precipitation and temperature frequency distributions, with an emphasis on extreme quantiles. The least-squares linear regression is used to estimate trends. A regionalization of the area of the Czech Republic is performed based on the trend magnitudes of the percentiles. Several methods of producing regions are compared; the rotated Principal Component Analysis is finally selected as the best tool and is used to identify final homogeneous regions in Czech Republic. For example, trends in the precipitation quantiles result in a clear-cut division of the Czech Republic into its western and eastern parts, differing mainly in the annual cycle of the trends. The support from the Czech Science Foundation (project 205/06/1535) is acknowledged.