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Spatial patterns of droughts in the Northeastern Carpathians

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Hydroclimatic extremes like droughts are among the main indicators of climate change in the mountains. They are often associated with elevation-dependent warming. However, terrain features and regional circulation patterns shape local spatial patterns of droughts in the midlatitude mountains. The northeastern area in the Carpathians is suggested to have a less prominent elevation-dependent warming signal in the recent investigations of climate change. Thus, the research aims at identifying the drought distribution response to the features mentioned in the Northeastern Carpathians based on Standardized Precipitation-Evapotranspiration Index (SPEI) and Standardized Precipitation Index (SPI). For the calculation of SPEI and SPI, a newly available homogenized dataset of long gridded time series of essential climate variables for Ukraine, covering the period of 1946–2020 at $0.1^\circ \times 0.1^\circ$ spatial resolution is tested. The comparison of both indicators at 3-, 6- at 12-month time scales within the defined period is provided. The interplay effect of the North Atlantic, Mediterranean, and Polar atmospheric circulations is found in different spatial drought patterns throughout the year on southeastern and northwestern macroslopes. Preliminary results confirm that the low-mountain areas with broad-leaf and mixed forests are most exposed to drought intensification especially in the closed inner valleys and on the border of the Western and Eastern Carpathians. The continentality is revealed in the insignificant drying of the low-mountain areas of the Northeastern Carpathians towards the east over time.