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804 years drought reconstruction based on oak tree rings for Eastern Europe

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In this study, we used the Suceava oak tree-ring width chronology to reconstruct the paleo hydroclimatic events in eastern Europe, a region for which high-resolution paleoclimatic evidence is broadly missing. Our regional oak chronology reflects July hydroclimate variability in the form of the twelve months Standardized Precipitation Index over large parts of Romania, Ukraine, and the Republic of Moldova, for which high-resolution paleoclimatic evidence is broadly missing. Most of the reconstructed hydroclimatic extremes back to 1216 CE are confirmed by documentary evidence, and a robust association is found with large-scale atmospheric circulation patterns in the Northern Hemisphere and sea surface temperatures over the North Atlantic. Reconstructed pluvials coincide with a high-pressure system over the North Atlantic Ocean and north-western Europe, and with a low-pressure system over south-western, central, and eastern Europe, whereas historical droughts coincide with a high-pressure system over Europe and a low-pressure system over the central part of the Atlantic Ocean.