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The summers of 1531–1540 in Central Europe: The driest decade of the past five centuries?

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The summers of 1531–1540 in the Czech Lands were, according to three drought indices (SPI, SPEI, Z-index) reconstructed from the Czech documentary evidence and instrumental records (Brázdil et al., Clim. Res., 2016), the driest decade during the past five centuries. Based on documentary data, dry patterns of different intensity (represented e.g. by dry spells, low number of precipitation days, drying rivers and lack of water sources, frequent fires) for central Europe (Germany, Switzerland, Austria, Czech Republic, Poland, Slovakia and Hungary) were well expressed for summers in 1532, 1534–1536, 1538 and particularly in 1540. Summer droughts derived from documentary data in central Europe were confronted with gridded summer precipitation totals reconstructed from instrumental, documentary and selected natural proxies (Pauling et al., Clim. Dyn., 2006) and further with summer scPDSI reconstructed from tree-ring widths in the Old World Drought Atlas – OWDA (Cook et al., Sci. Adv., 2015). While in precipitation reconstruction summers of 1531–1540 represented the driest decade of the past 500 years in central Europe, according to scPDSI from OWDA it was the ninth driest decade, despite quite important spatial differences in the occurrence of drier and wetter areas between both reconstructions. From the analysis it follows that particularly the summers of 1534, 1536, 1538 and 1540 were dry not only in central Europe, but also over greater parts of western Europe.