

EGU21-9951

<https://doi.org/10.5194/egusphere-egu21-9951>

EGU General Assembly 2021

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Transitions between dry and wet periods in Europe during 1950–2019

Zuzana Bestakova^{1,2}, Petr Maca², Jan Kysely^{1,2}, Ujjwal Singh², Yannis Markonis², and Martin Hanel²

¹Institute of Atmospheric Physics CAS, Department of Climatology, Praha, Czechia (bestakova@ufa.cas.cz)

²Faculty of Environmental Sciences, Czech University of Life Sciences, Prague, Czech republic (bestakova@fzp.czu.cz)

The study deals with probabilities of transitions from arid to humid environment and vice versa in Europe. Aridity index, defined as a ratio of potential evapotranspiration and precipitation and representing the ratio between energy availability and water availability, is used to characterize humid (wet) and arid (dry) regions and allows us to study transitions between individual periods (wet-wet, wet-dry, dry-dry, dry-wet). Three gridded datasets – CRU (UEA, 2020), E-OBS (ECAD, 2020) and ERA5 (ECMWF, 2020) – are used for this purpose. The aim of the study is to compare the three datasets as to transitions between wet and dry conditions, which are determined according to the aridity index, and evaluate the variability in Europe over 1950–2019. The changes in the aridity index since 1950 are found to be most pronounced in Northern and Central Europe.

references:

ECAD, 2020: E-OBS gridded dataset, available from <https://www.ecad.eu/download/ensembles/download.php>.

UEA, 2020: University of East Anglia – Climatic Research Unit, available from <https://lr1.uea.ac.uk/cru/data>.

ECMWF, 2020: European Centre for Medium-Range Weather Forecasts – ERA5, available from <https://www.ecmwf.int/en/forecasts/datasets/reanalysis-datasets/era5>.