



Conditional probabilities of transition from arid to humid environment and vice versa in Europe during the period 1766 -2015

Zuzana Bešťáková^{1,2}, Petr Máca¹, Jan Kyselý^{1,2}, Ujjwal Singh¹, Yannis Markonis¹, and Martin Hanel¹

¹Czech University of Life Sciences Prague, Faculty of Environmental Sciences, Department of Water Resources and Environmental Modeling, Czech Republic

²Institute of Atmospheric Physics, Czech Academy of Sciences, Prague, Czech Republic

Currently, there are changes in the hydroclimatic system, with most of Europe affected by droughts. Recent reconstructions on historical precipitation and temperature fields can be used for determination of impacts of meteorological, hydrological and agricultural droughts. Those reconstructions are available for European continent in gridded form (Casty et al., 2007). Aridity index, defined as a fraction of potential evapotranspiration and precipitation, can be used for characterization of humid – wet -- and arid – dry -- regions. It represents the ratio between energy availability and water availability. This study deals with conditional probabilities of transitions from arid to humid environment and vice versa. The aridity index was used to determine the transitions annual basis for the European continent for the period 1766 - 2015. The probabilities were calculated for each year, and for 10-year, 20-year and 30-year periods. It is shown that the recent droughts followed the drying of substantial part of Europe starting in 2014 (Hanel et al., 2018). The changes are most pronounced in Northern and Central Europe.

references:

Casty C., Raible Ch. C., Stocker T. F., Wanner H., Luterbacher J., 2007: A European pattern climatology 1766-2000. *Climate Dynamics* 29. 791-805.

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