Geophysical Research Abstracts
Vol. 20, EGU2018-7430-1, 2018
EGU General Assembly 2018

Comparison of the major European drought events of the last 250 years

Vojtech Moravec (1), Johanna Blöcher (1), Petr Pavlik (1), Filip Strnad (1), Martin Vokoun (1), Martin Hanel (1), Oldřich Rakovec (2), Rohini Kumar (2), Petr Máca (1), and Yannis Markonis (1)

(1) Czech University of Life Sciences Prague, Water Resources and Environmental Modeling, Prague, Czech Republic (markonis@fzp.czu.cz), (2) UFZ-Helmholtz Centre for Environmental Research, Leipzig, 04318, Germany

Several major droughts occurred during the last years in Europe, such as these in 2003 and 2015. In order to better assess the severity of the recent events, hydrological simulation can be used to model them and compare it to similar past events. In this study, we use the ensemble results of mesoscale Hydrological Model (mHM), including 10 meteorological forcing sets and 10 hydrological model parameterization sets, resulting in 100 ensemble members. We present a comparison of major drought events in Europe over the last 250 years and explore how the simulation uncertainties influence the extremity of each event. By putting the recent droughts in this long-term perspective, we observe that they are not so extreme: the events of 1858–59, 1921–22, and 1949–50 were significantly more severe. However, the 2003 and 2015 droughts may be regarded as the most extreme droughts driven by precipitation deficits during the vegetation period, which is linked to the increasing temperature trend and consequently to the increased evaporative demand.