

EGU22-3666

<https://doi.org/10.5194/egusphere-egu22-3666>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## European heat waves of summer 2021 in the context of past major heat waves

Ondřej Lhotka<sup>1,2</sup> and Jan Kyselý<sup>2,3</sup>

<sup>1</sup>Institute of Atmospheric Physics of the Czech Academy of Sciences, Prague, Czech Republic

<sup>2</sup>Global Change Research Institute of the Czech Academy of Sciences, Brno, Czech Republic

<sup>3</sup>Faculty of Environmental Sciences, Czech University of Life Sciences, Prague, Czech Republic

Climate change-induced rise in global temperatures is linked to changes in hot extremes. The recent summer of 2021 was marked by extremely high temperatures over the Mediterranean, which together with numerous wildfires considerably affected human society and natural environment. Using daily maximum temperatures from the ERA-5 reanalysis, we aim to assess the severity of heat waves in 2021 in the context of past major European heat waves (since 1950) through analysing their length, spatial extent, intensity, and overall magnitude. We show that the summer of 2021 was record-breaking in terms of total duration of heat waves and their magnitude was comparable to those in 2003 and 2010. The past two decades (2002–2021) almost completely redraw the spatial pattern of the occurrence of the historically most severe heat wave in European regions. Before 2002, heat waves of 1955, 1972, and 1994 were the most severe in many parts of Europe. Considering the whole 1950–2021 period, however, those heat waves remain as historically the most severe only over a small portion of their original area, and the map is dominated by the 2003, 2010, 2018, and 2021 events. This documents a rapid change in heat wave characteristics in Europe over the last two decades.