Geophysical Research Abstracts
Vol. 19, EGU2017-12277, 2017
EGU General Assembly 2017

Investigating the impact of atmospheric blocking on temperature extremes across Europe using an objective index

Lukas Brunner (1), Andrea Steiner (1), and Jana Sillmann (2)

(1) Wegener Center for Climate and Global Change, University of Graz, Graz, Austria (lukas.brunner@uni-graz.at), (2) Center for International Climate and Environmental Research (CICERO), Oslo, Norway

Atmospheric blocking is a key contributor to European temperature extremes. It leads to stable, long-lasting weather patterns, which favor the development of cold and warm spells. The link between blocking and such temperature extremes differs significantly across Europe. In northern Europe a majority of warm spells are connected to blocking, while cold spells are suppressed during blocked conditions. In southern Europe the opposite picture arises with most cold spells occurring during blocking and warm spells suppressed.
Building on earlier work by Brunner et al. (2017) this study aims at a better understanding of the connection between blocking and temperature extremes in Europe. We investigate cold and warm spells with and without blocking in observations from the European daily high-resolution gridded dataset (E-OBS) from 1979 to 2015. We use an objective extreme index (Russo et al. 2015) to identify and compare cold and warm spells across Europe. Our work is lead by the main question: Are cold/warm spells coinciding with blocking different from cold/warm spells during unblocked conditions in regard to duration, extend, or amplitude? Here we present our research question and the study setup, and show first results of our analysis on European temperature extremes.

Brunner, L., G. Hegerl, and A. Steiner (2017): Connecting Atmospheric Blocking to European Temperature Extremes in Spring. *J. Climate*, 30, 585–594, doi: 10.1175/JCLI-D-16-0518.1.

Russo, S., J. Sillmann, and E. M. Fischer (2015): Top ten European heatwaves since 1950 and their occurrence in the coming decades. *Environ. Res. Lett. 10.12*, S. 124003. doi: 10.1088/1748-9326/10/12/124003.