

EGU21-2050

<https://doi.org/10.5194/egusphere-egu21-2050>

EGU General Assembly 2021

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



A global perspective on the sub-seasonal clustering of precipitation extremes

Alexandre Tuel and Olivia Romppainen-Martius

Institute of Geography, Oeschger Centre for Climate Change Research, University of Bern, Bern, Switzerland
(alexandre.tuel@giub.unibe.ch)

The occurrence of several precipitation extremes at short time intervals can have major impacts on human societies, leading for instance to persistent flood conditions. Although the sub-seasonal clustering of precipitation extremes has already attracted attention, most studies have focused on catchment or regional scales. Therefore, little is known about its spatial and seasonal distribution. Here, we apply simple statistical metrics based on Ripley's K function, at a global scale and for each season separately, to identify regions where precipitation extremes to cluster in time over timescales of a few days to a few weeks. We analyze several observational and reanalysis datasets, and compare them to Global Climate Models (GCMs) from the CMIP6 archive. While sub-seasonal temporal clustering is largely concentrated to the tropical oceans, it is also significant seasonally outside the tropics in several regions, like eastern subtropical oceans, southwest Asia or Eastern Africa. We also find that CMIP6 models generally correctly reproduce clustering patterns, paving the way for an assessment of trends in sub-seasonal clustering under climate change.