Natural Hazards and Earth System Sciences Discussions

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Comment on nhess-2021-298

Anonymous Referee #2

Referee comment on "Hotspots for warm and dry summers in Romania" by Viorica Nagavciuc et al., Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2021-298-RC2, 2021

General Overview:

The authors analyze the hotspots for warm and dry summers in Romania using E-OBS and a regional dataset covering Romania. The authors intend to study the spatio-temporal variability and trends of hot and dry summers in the eastern part of Europe, focusing on Romania, between 1950 and 2020 and to study the relationship between the frequency of hot summers and the prevailing large-scale atmospheric circulation.

The manuscript fails in different aspects. Please find my major comments below:

- The authors should use in their analysis the SPEI over SPI. The SPEI is designed to consider both precipitation and potential evapotranspiration (PET) in determining drought. Thus, unlike the SPI, the SPEI captures the main impact of increased temperatures on water demand.

Vicente-Serrano et al. (2012)

- I don´t understand the use of ROCADA database. One can argue that ROCADA use more weather station in the computation of the gridded dataset and therefore finer spatial scales will be resolved. However, throughout the manuscript it's not clear the different between EOBS and ROCADA neither the conclusion is different when using one or another. Therefore, I would go with the long -term dataset EOBS.

- Section 3.3, this section intends to analyze the compound events in terms of hot and dry extremes. Are SPI < -1 really extreme? I don´t agree with the method used for defining compound event. They are only based on a month-to-month comparison and don´t go into further detail. What led to what? Pre-conditioning of soil moisture probably plays a role in the major Heat waves in the region. Have the authors though in using bi-variate methods to analyze the compound events? Or even to do a lag analysis between the dry and month summers?

Zscheischler and Fischer, 2020 : 10.1016/j.wace.2020.100270

Ribeiro at al., 2020 : 10.1016/j.wace.2020.100279

- Section 3.4., there is some lack of novelty in analyzing the synoptic meteorological patterns of the specific droughts years. No statistically significance is presented.

Sousa et al., 2021 : 10.1175/JCLI-D-20-0658.1

Therefore, all the changes need to be made, in order to the paper goes for a second round of revision.