Natural Hazards and Earth System Sciences Discussions

Nat. Hazards Earth Syst. Sci. Discuss., author comment AC1
https://doi.org/10.5194/nhess-2021-143-AC1, 2021

Reply on RC1

Matthew C. Perry et al.

Author comment on "Past and future trends in fire weather for the UK" by Matthew C. Perry et al., Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2021-143-AC1, 2021

Major comments

We would like to thank the reviewer for their helpful comments. We agree that adding an assessment of the weather drivers influencing the projected changes in fire weather indices would enhance the paper. We have carried out further analysis to calculate changes in the contributing weather parameters between the periods used in the study and the changes in frequency of dangerous fire weather, for ensemble members and countries at the 2 and 4 degree levels. Relating these changes to changes in the fire weather indices shows that decreased relative humidity and increased temperature are the main drivers of the large increase projected in very high FWI in summer. The main results from this analysis will be added into the final version of the paper together with some discussion.

Minor comments

Section 1.2: We have revised the title of this section to 'Drivers of wildfire activity' as suggested

L65-69: Thanks for this suggestion, which we have implemented by moving this paragraph to form a new section 1.3 on 'Fire danger'. We have also added further details to this section and a link to section 2.2

L155-156: A reference has been added to a Met Office report (Kitchen, 2010) on the class thresholds, and additional text has been added to summarise the main methods used to derive the thresholds.

L155-166: The explanation of the use of ISI for spring and FWI for summer has been expanded and clarified, adding reference to the results of a study by de Jong et al. (2016) which supports this. References have also been added for the implementation of the Canadian FWI system for the UK (Met Office, 2005) and the Natural Hazards Partnership (Hemingway and Gunawan, 2018).

Section 2.3: The readily available ERA5-based FWI dataset was used. This section has been re-worded in the final manuscript to clarify this, and a reference added (Vitolo et al., 2020).

Figures 1-3: These figures have been converted to units of ha as suggested.

Technical corrections

L132: This sentence has been revised as suggested to: “small and spatially fragmented burned areas are not mapped at the 500 m scale at which the MCD64A1 product was calculated.”

L268: This sentence has been revised to make it clearer: “In spring, the most frequent occurrence of high fire danger was clearly in the most recent year of 2020, with 2011 having the next highest frequency.”