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Interactive comment on "A high-resolution reanalysis of global fire weather from 1979 to 2018 – Overwintering the Drought Code" *by* Megan McElhinny et al.

Anonymous Referee #2

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1. General considerations - This paper is easy to follow, provides a new method to calculate FWI using ERA5HRS data from 1979 to 2018 and uses two techniques to evaluate start-up value of the DC. Any efforts to reduce and anticipate damage from forest fires are welcome. - An important conclusion of the paper is that the dataset obtained shows some important differences in DC values depending on the procedure that the authors use. They conclude that the consequences of a forest fire may be worse in some regions compare with other predictions using default values of DC.

2. Global revisions to improve the paper - The data repository presents different spatial resolutions according to the years. Authors would need to display information about the

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Discussion paper

spatial resolution used in the repository's raster files and whether this spatial resolution depend on geographic location or not. - Is it possible to complete the data repository with the intermediate calculations or variables performed?

3. Particular revisions to improve the paper - Fig.1, Fig.2 and Fig.3 use a reference system, probably geographic coordinate system over WGS84 to show the maps. It is necessary to indicate the reference system used in all maps. It would be highly recommended to indicate throughout the paper (for example in the footnote under figures), the reference system used. - Fig. 3 shows a map for North America in 2016, but we do not know the reference system and no grid appears. - In section 3.3, the authors describe that R-cffdrs package is used for calculating FWI Systems outputs. It is very important to show the version of the packages used. The versions of the packages in R are necessary to reproduce the calculations the authors made. - There are several reported examples that using different versions of R packages produces different results in calculations. To improve reproducibility, I recommend the use of R packages such as the Git package. If this is not possible, the authors must show the list of all the packages used as well as the dependency tree, together with the version of R used. - Section 4.2 and Fig.2 represent validation for Canada. Some graphics appear in figures (upper left corner), but It would be very interesting to know if the represented histograms fit some known probability density function and what function might be. - In section 4.3, the authors present the specific statistical study for 2016 in North America (FWI index). It would be necessary to extend this study for several years, to see if the observed differences depend on the place or also depend on the time variable, showing a larger geostatistical study using time and position.

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