

In this work the authors evaluated the burned area and carbon emissions across Canada and Alaska over a 19-year period, using remote sensing data, field observation and modeling. The paper is well structured and clear, especially the introduction, results and discussion. However, the methodology could be resumed with flowcharts or some information added as supplementary material and the discussion could explore more perspectives and applications from the ABoVe-FED.

We thank the reviewer for their helpful comments. We have addressed each and believe the manuscript is stronger as a result. Original comments are given below, and our responses are in [blue text](#).

Specific comments:

1. Line 149: The meaning of ABoVE domain is not cited early.

[We have added the meaning before the acronym on line 157.](#)

2. Lines 175-180: Fig 1: The colors in the legend can be resumed by parenthesis instead of repeating “is shown in..”

[We agree it is easier to read in this fashion, and we have corrected the caption on Figure 1 on lines 184 -186.](#)

3. In this figure its would interesting to show the final land cover map (for i.e. the last year of study, 2019)

[We added the land cover classifications as Figure S1.](#)

4. Line 187: What did you mean by “burn depth”?

[We believe a detailed discussion of the methodologies of how burn depth and combustion are measured is beyond the scope of our methodology, and is suitably described in Rogers et al., 2014, Walker et al., 2018, and Dieleman et al., 2020, among others. Burn depth in this case refers to the vertical depth of burning in the soil organic column, which is directly related to carbon combustion. We have directed the reader to methodologies on line 192-194.](#)

5. Lines of burned area mapping approach could be more resumed in a flowchart, for example.

[We agree with the authors comment and we have added a two flow charts, one for burned area \(Figure S4\) and one for combustion/burn depth \(Figure S8\) in the revisions which we believe will help readers follow the methodology.](#)

6. Figure 8: add how much is “low fire occurrence”

[Of the total burned area less than 2% burns in these months across all years. We have edited the figure caption on lines 808-809.](#)