

Reviewer #3:

The manuscript submitted by Tang et al. presents a ML framework for improving the predictability of fire occurrences and sizes in boreal peatlands. Having gone through the first round of referee comments, I'm satisfied with the changes incorporated by the authors as well as the much improved discussion of the results.

However, I would like to highlight two minor areas of improvement for the manuscript before it is accepted for publication.

a) In the section on ML predictability (lines 379-380), while the authors have cited some papers as examples of ML application in fire modeling, they do not cite several recent papers that have developed interpretable ML models for global burned area prediction and stochastic fire prediction. These include but are not limited to:

<https://gmd.copernicus.org/articles/16/869/2023/>

<https://gmd.copernicus.org/articles/16/3407/2023/>

b) There should at least be some minimal documentation of how to navigate/run the analysis data and ML models provided in the GitHub repository -- there is none currently.

Respond to reviewer #3:

We are grateful for your constructive comments, which are very valuable in improving our manuscript. We have taken the following actions to enhance our manuscript:

a) Expanded References on ML Predictability (Lines 379-385):

We appreciate your recommendation of several key recent publications related to interpretable ML models for predicting global burned areas and stochastic fire occurrences. We have incorporated these references into our discussion to provide a more comprehensive overview of recent research and revised [lines 379-384 \(revisions are marked in blue\)](#) accordingly.

b) Enhanced GitHub Repository Documentation:

Your emphasis on the necessity of documentation has been well noted. In compliance with the Journal's policies and the Editor's requirements, we have archived the data, code, and some initial results on Zenodo, now including documentation (README.txt) in Version 2 (under Tangetal2023/Scripts/), which can be found at <https://zenodo.org/record/7754018#.ZBi62uyZPK0>. In addition, we have updated our GitHub repository. Due to constraints on data size, we have provided a README.txt file there only, which provides information for installation and running processes.