

Review_Report_Miranda_et_al_2022

Anonymous Referee #1

Referee comment on "The Landscape Fire Scars Database: mapping historical burned area and fire severity in Chile" by Alejandro Miranda et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-467-RC1>, 2022

Review Report: Miranda et al. 2022

The objective of the study is to reconstruct improved attributes of the historical fire database of Chile by leveraging Landsat imagery and Google Earth Engine (GEE) platform. The proposed workflow within GEE is well executed. The approach can semi-automatically generate different levels of fire products with homogeneous and unambiguous naming conventions. The introduction is well written. Accuracy assessment and validation of the generated products are also reasonable. Challenges of the approach and uncertainties of the results were acknowledged appropriately in the discussion. Figures and Tables are clearly presented. Availability of data sets and codes publicly is very nice.

The methodology and discussion sections are written well, however, it contains some ambiguities that could be clarified in the text.

- The fire area cut-off threshold of 10 ha seems too high provided the 30 m resolution of Landsat imagery.
- The thresholds used for generating fire masks are not clear. For instance, it is not clear whether a global or local threshold was used. Provided the fire scar mask was generated individually, it is appropriate to use local threshold and conduct sensitivity test. The threshold can vary from one fire scar to another based on the condition at the time of image acquisition. Similarly, the sensitivity of thresholds used for spectral filtering could be elaborated a bit.
- Chile seems to be maintaining an up-to-date historical fire point database (CONAF). A major setback for the workflow is likely transferability of the approach to the areas where there is a no or limited point database of historical fire. Alternatives or improvements that could be made to the workflow can be elaborated. For instance, an automation of the identification of thresholds (manually identifying threshold for each fire scar and severity can be challenging); could FIRMS database be useful at least starting 2000 for seeding the workflow?

- How does the Landscape Fire Scars Database fit into other larger/global fire databases (e.g., Global Fire Atlas)? The data set could be relevant for studies at global scale in addition to its use cases like fire management in Chile.

Specifics

L125: "...must be in the form of point data". Is there any alternative when the fire database/record does not exist?

L125: "100 ha as seed value", explanation is needed for the choice.

L125: The reason for drawing a buffer around a point is not clear. Is it for extracting attributes for spectral filtering?

L140: When was the 'mosaic' and 'reduce' function used? Does the approach decide which one to use based on some condition?

L150: The suitability of the use of RdNBR in Chile needs to be justified if it was used for the first time.

Table 1: Fix the abbreviation "Dnbr". Value inside the square root is missing.

L170: Explicitly mention the "new criteria". It appears at L180, but it could be clearer.

L175: "initial search distance" what was the value? Is it the same for all fire scars?

L180: "0.3 ha is retained" is confusing. Is it a fire scar? How is it different from the 10 ha threshold?

L210: "Closeness Index", does it consider the shape similarity between reference and mapped fire scar?