May 18th, 2022

Pauline Garnier-Géré
PCI Forest Wood Sci Recommender

Dear Recommender.

I thank you and the reviewers for your valuable comments on the manuscript "Forest loss and fire in the Dominican Republic during the 21st Century". I edited the manuscript to address each point raised by the reviewers.

I would appreciate comments or suggestions on the revised version.

Sincerely,

José Ramón Martínez Batlle
Researcher at Autonomous University of Santo Domingo (UASD)

Response to Reviews on "Forest loss and fire in the Dominican Republic during the 21st Century"

Legend:

Comment from reviewer
      Response from the authors

Response to Recommender

Dear José Ramon,

Three reviewers have now assessed your work. They are overall very positive and find that both the methods using remote sensing data and the patterns described are convincing, helping the understanding of links between fire due to shifting agriculture and forest loss in Dominican Republic ecosystems. They also think that your spatio-temporal approach could inspire other studies in other countries.

> *Thank you for this comment. I appreciate your kind words and your contribution.*

They explain however that you need to address several issues before your manuscript could be recommended, and I am joining them with a few additional suggestions.

The first one concerns the methodological approach and comparison of datasets: in the long-term approach, you compare statistics and patterns from the MODIS and VIIRS datasets but use different time periods (see more details in the referees' comments). This makes it difficult to interpret results, and the comparison should be restricted to the same periods (e.g. in Table 1). It is also proposed that after this comparison, you should focus on the longer dataset. I agree with these comments and am adding that it could also be useful, if you consider it not too redundant to the annual approach, to compare a few different multi-year periods (overlapping or not) to address your working hypothesis about an increase of association between fire and forest loss. Besides, possible benefits of one dataset compared to the other could be discussed and lead to recommending which one is more appropriate to answer the targeted questions. You may also put some of the annual approach results, using the second dataset, in supporting information.

> *Thank you. I agree that using two datasets spanning different periods of time, make the results somewhat difficult to interpret. **In the revised version, I compared the 2012-2018 MODIS and VIIRS datasets for testing consistency and sensitivity of the fire patterns. Afterward, I selected only the MODIS dataset for further analyses**.*

Addressing this first issue will help address the second one that concerns mostly the form of the manuscript and the presentation of the results. I agree with the two referees who suggest restructuring part of the text (some methods being currently in the results, see details), and also reducing both methods and results, in order to clarify them (adding also sub chapters) since they are too long, and not easy to follow in some parts. I am adding one suggestion here: to please make a summarized figure of the flow of statistical analyses, to help follow the methods text, as this would greatly help to understand this part and help you summarize your text. Other comments from the referees explain specific parts that require more explanations or corrections.

> *I appreciate your suggestion. **I reduced and restructured the Methods and Results sections aiming to clarify them, and also added a graphical abstract of the methodology**, which I thing greatly improved the readability of the manuscript.*

The third important point is to extend the discussion a bit more, referring to your initial questions and developing more how your approach and results could be used to monitor or predict risks and prevent forest loss threats, integrating possible alternative strategies (see comments from the third referee).

> *Thank you.* **I expanded the discussion to include perspectives regarding risk and prevention of forest loss.**

Finally, all the valuable code that you have made available on your Github website for reproducing the analyses is not put forward nor referred to in your current manuscript. I suggest that you add a "Data and code availability" paragraph at the end of the manuscript where you provide the links, explaining also how it is structured, you can also refer to it at the end of the methods.

> *Thank you for pointing out this issue.* **I added a "Data and code availability" paragraph with links to GitHub and Zenodo repos.**

In your revised manuscript, please provide constructive solutions to all main and detailed comments from the referees below, as well as to the additional comments above,

Thank you for considering the PCI Forest and Wood Science for submitting your work, and I am looking forward to receiving your revised version,

> *Thank you for waiting so long for my revised version.*

Response to anonymous reviewer, 09 Dec 2021 00:59

The author assesses deforestation and fire activity (through MODIS and VIIRS data) and then assesses to what extent the latter overlaps with the former. I find the manuscript well-written and clear. The analytical methods are varied and somewhat intricated but adequate to the best of my knowledge. Likewise, the results and discussion are well presented and thorough. It's mostly descriptive work of patterns and the interest is somewhat local but I think it can provide guidance and inspiration for analyses at larger spatial scales in the frame of more ambitious projects.

> *Thank you for this comment. I appreciate your kind words and your contribution.* **I edited the methods, results and discussion sections, in order to improve readability.**

Response to anonymous reviewer, 05 Dec 2021 14:06

The submitted manuscript reports a study about the relationships between fires and forest losses in the Dominican Republic. The study is based on the use of several databases, built with remote sensing data.

The manuscript is fairly well-written (but see below) and the results are convincing. As a whole, I think that the study deserves being recommended, but I have a major concern about the approach that should be addressed before recommendation.

> *I appreciate your kind words and your suggestions.*

The author used for fire data two datasets: MODIS and VIIRS. The problem is that these datasets do not describe the same period (2001-2018 versus 2012-2018). The presented results are consequently not comparable and should not be compared on a multi-year basis.

Based on the presented results (Table 1, Figures 6, and Figures 10-11), it seems that the two kinds of data are well-correlated to each other, but produce values of much different magnitude. Consequently, I propose to revise the manuscript with the following approach:

(1) Build a 2012-2018 dataset for MODIS, and compare with the VIIRS dataset. These comparisons should be discussed in terms of consistency and sensitivity.

(2) Select only the MODIS dataset for further analyses as it represents a longer period than the VIIRS dataset.

(3) Present the results (as in the submitted version) but only with the MODIS data.

> *I appreciate your suggestions. I agree that it is suitable to compare MODIS and VIIRS data only for consistency and sensitivity purposes, and not for analyses covering the entire time series.* ***I adapted the text accordingly to meet this requirement, and selected only the MODIS dataset for further analyses****. I also added a graphical abstract of the methodology in order to improve readability.*

Other comments:

- Title: "Fire and forest loss…" instead of "Forest loss and fire…"

> *Thank you. I edited the title.*

- Abstract:

    => first line: remove "valuable"

    => "I found no statistical association between forest loss and fire in the eastern half of the country, a region that hosts a large international tourism hub". This sentence is rather elusive in the context of the abstract. This should be removed or explained.

> *Thank you. I edited the Abstract section accordingly.*

- line 16-17: reference format.

> *Thank you. I corrected the reference format.*

- Methods: in several passages of the manuscript (lines 17-19; 257-262; 279-287; 288-297), the methods are described outside the section dedicated to methods. Move them to the methods section.

> *I appreciate your suggestion. I edited the manuscript accordingly.*

- lines 43-45: merge the two questions.

> *Thank you. I merged the questions.*

- lines 85-88: indicate the proportion of missing values.

> *Thank you for these suggestions. I edited the manuscript accordingly.*

- lines 89-94: this looks like rather subjective. What were the explicit criteria?

> *Thank you for these suggestions. I added the criteria used.*

- Figure 2: indicate that this figure presents the fires.

> *I appreciate these suggestions. I edited the caption.*

- lines 118-120: explain the rationale of this baseline.

> *I appreciate these suggestions. I included the rationale of the baseline.*

- lines 319-320, 330-333, 457-458: I don't see any clear cyclical pattern in the results. Please argue.

> *Thank you for your comment. I expanded details, including the years in which the activity peaked. To assess the trend and cyclical components, I used the "Christiano-Fitzgerald" and "Hodrick-Prescott" filters, which I also added to the methods section.*

- Figure 7: recall what the Moran's I represents.

Thank you for these suggestions. I corrected the text.

- Figures 8-11: recall what LISA means.

Thank you for these suggestions. I corrected the figure captions.

Response to Kevin Cianfaglione, 20 Dec 2021 08:24

- The paper is very interesting, but there are various things that need to be improved.

Thank you for your kind words.

- Some chapters are too long and difficult to read. I recommend breaking these chapters into several parts and summarizing the text to the essentials, eliminating the superfluous or redundant parts. Rewrite the text using the third person and not the first person.

I appreciate your suggestion. I would have no problem writing the manuscript using the passive voice. However, if I do so, I would have to change all the wording and subsequently resend it to a proofreading service. This would cost me more than I have invested so far (this study is self-funded), so I would appreciate it if the active voice could be considered valid for this work.

- Also consider in the discussions the need to leave the vegetation to the free natural evolution and the forests without necessarily having to think about intervening in some way.

Thank you for your comment. I edited the discussion section to include your suggestion. I agree that this is an important point.

- Please see the attached file to see more details and observations. Hoping to be useful.

Thank you for the details included in the attached PDF.

- Line 1. The basis of this work and of this paper are very interesting. However, the text must be redeemed, paying attention to its legibility which is sometimes too difficult. Also it is necessary to try to reduce some chapters that are too long (breaking them into more sub-chapters) or summarizing their text. Please, take care to rewrite the text in a more scientific format (avoid the first person) and many other small formalities widespread in the current text version.

Thank you for your comment. I reduced the text and included subsections. I also included a graphical abstract of the methodology to help improve readability.

- Furthermore the authors should emphasize more the importance of why their work is useful to monitor and prevent the risks and damages from artificial wildfire (or by men) and therefore underline the value and importance of protecting the vegetation from those fires, the importance of the naturalness of the forests, and therefore the importance of letting forests develop freely, and not only thinking about actively managed forests.

Thank you for your comment. I expanded the discussion section to include these points.

- Line 57: Avoid the uses of the first person...   We used instead of I used…

Thank you for your comment. Please, see my second comment.

- Lines 473-481: The first sentence is not so clear, please rewrite and explain better this point.

I appreciate your suggestion. I edited the sentence.