

Interactive comment on “Changing patterns of fire occurrence in proximity to forest edges, roads and rivers between NW Amazonian countries” by Dolores Armenteras et al.

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This paper analysed the effects of proximity (of roads, rivers and forest edges) on the occurrence of fires. We understand that these three features are indicative of accessibility to forested areas by humans. The study was conducted on a scale which encompassed multiple countries; a novel and necessary attempt to investigate forest fire frequency in the understudied NW Amazonian region.

It is an interesting topic, mainly relevant to the conservation of fragmented habitats, and to policy decisions regarding road network expansion.

This paper can benefit from some significant editing which might improve understand-

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ing. We have made some suggestions on both major and minor corrections which we believe will benefit the authors. Overall, we found that the study was pertinent and that research questions were exceptionally well-addressed. The title is succinct. We did find a lack of consistency in terms throughout the document.

This review was undertaken by a discussion group at the University of Edinburgh, and is organised by section of the document.

Abstract:

Minor comments:

L17- It is not clear what Legal Amazonia is – is this referring to Amazônia Legal?

L23- There is a missing capital letter for ‘we’, and a missing ‘s’ at the end of difference.

L24- There should be a comma after country.

L23,24- ‘peak fire’ is repeated a lot and this sentence could be reworded.

L28- There is a missing capital letter for ‘amazonian’.

-you could mention that the study is novel because the region hasn’t been explored yet.

Introduction:

Minor comments:

L36- “forest” should be “forests”.

L37- “at what” should be “at which”.

L39- “or grazing” seems unnecessary.

L40- there are too many citations here, and they break up the flow of the paper. Using a maximum of 3 in-text citations per parentheses (i.e. one classic, two more recent/relevant) might help.

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L41- some commas are missing: a lot of long sentences are used here, which need to be broken up a little.

L42- “forest related” should be “forest-related”, and “products has enhanced” should be “products have enhanced”.

L43- awkwardly phrased sentence, and not sure of its meaning.

L45- “in general terms” is too vague a term.

L47- what is meant by “unusual”? i.e. is it more frequent?

L49- need to capitalise “oscillation”, and give the acronym “NAO” to be consistent with L48 “ENSO”.

L54- comma after “Amazon”.

L57- “loss of” is unnecessary here, as you are already talking about reductions.

L60- comma needed after “fire patterns”, and “legal” should be capitalised to be consistent.

L62- need to choose between “shorter” or “weaker”: one alludes to length of time, the other to the temperature or rainfall.

L66- this sentence can be removed, it provides unnecessary repetition.

L68- “Armenteras and others, 2013” should be “Armenteras, et al., 2013”.

L69- “climate change” is unclear, please clarify the meaning in this context or provide an example, e.g. under IPCC scenarios.

L72-73- awkward phrasing, could be changed to “Little is known about factors which influence fire dynamics and patterns in NW Amazonia, or about the links between fires and deforestation and fragmentation in. . .”.

L73- “NW” needs to be consistent: either use “NW” or “north western”.

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L74- “Ecuador” should be “Ecuadorian”. Remove “but see”.

L82- The types of forest fragmentations should be addressed in your methods.

Major comments:

L58- information on why fires are important hasn't yet been given, and while we assume it is a human-related issue, this hasn't been clarified. This seems integral to the study, should be expanded upon.

L60-63- sentences on rainfall don't appear relevant to this study. If they are, relevance needs to be included and shown, otherwise they should be removed from the introduction. Furthermore, the removal/relocation of this section would allow for a smoother transition into the following paragraph; it is currently an awkward transition.

L75-76- this sentence should be incorporated earlier on; it's particularly important in understanding why this study is being done, where there is a gap in our knowledge.

Methods:

Minor comments:

L85- Unnecessary detail in site description– Figure 1 already includes study site coordinates.

L88-89- A greater level of detail than required.

L104- The section will benefit from a justification why was the data source chosen. The same applies for the use of the USGS HydroSheds data (L107).

L110- Clarify intra- and inter- for variability.

L111- Clarification needed as to what type of data was used: individual year one or pooled for all years.

L115- It was briefly mentioned in the Discussion section that river networks are investigated due to being transportation routes. It might be beneficial to include this

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justification or expand on it as part of the Methods section.

L123- Unnecessary information included in parenthesis.

L124- Avoid the use of words like “totally” and substitute for more quantitative terms.

L126,131,132- CDF rather than CFD consistently used throughout section.

Major comments:

Not entirely convinced that 2010 forest/non-forest map used is adequate as rapid deforestation has occurred in the period investigated. This might shift the forest edges. Weather changes because of deforestation (wind speed and direction) might influence fire occurrence. Would it be possible to relate fire occurrence MODIS data to MODIS land use data? If not, it might be useful to discuss any limitations due to the data used in the Discussion section of the paper.

Results:

Minor comments on figures:

Figure 1 - consider adding colour, the study area and hotspots are difficult to differentiate as well as the country borders. If colour isn't an option consider using multiple figures.

L282- “.” after Figure 1.

Figure 2 - more detail in the legend to define the key also you might consider using colour again here (it's difficult to differentiate between Venezuela and Colombia). There is also a cropping error on the x axis label and a missing bracket on the y axis label. Figure 2B could also probably be supplementary.

L285- add a space between “)(“.

Figure 3 - again consider colour and you are missing brackets on the y axis label.

L286- elaborate on what you mean by “monthly average” i.e. over how many years?

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L287- add a space between “)(“.

Figure 4 5 - Add colour, it is very difficult to read your figures and the resolution of the text is blurry. Furthermore the font used for labeling figures A and B are different than the font used for figures C and D. You also mixed up CDF and CFD in the y-axis labels

Table 1 2 can both be moved to the appendix or supplementary information. All they are saying is that there is an association between fire and accessibility/forest edge compared to the null and since they all have the same p-value just quote that in the results section and write “see appendix” instead of keeping these tables.

Minor comments on text:

L142- Reword ‘less fires’ – to perhaps the least, or fewer. Capital needed for “South” to be consistent.

L144- capital for ‘north’.

L145- capital for ‘south’.

L146- when reporting an anova, you should give the number of degrees of freedom and the error of degrees of freedom as well.

L151- reword ‘this is not surprising’.

L153-155- the structure of this sentence could be improved. Is this sentence relevant to include in terms of the research questions you set out?

L154- Missing capital for ‘southern’

L157- Irrelevant information, as the legend tells us this information. However, tables should potentially be removed and put in supplementary information.

L159-161- This is all you need but could be expanded to summarise the information in the table – that all p-values <0.01 and refer to supplementary material.

L163- ‘On the other hand’ is not necessary.

L166- missing comma after Ecuador.

L167- 'The case for roads' is too conversational, similar with 'it is really' – re-wording is needed. This information might be more relevant for the discussion.

L173- should say 'see supplementary material' instead.

L178- 'table 2' not required if they are put in supplementary information.

L180-183- the reporting of the p-values is good here.

Discussion:

Minor comments:

L186- "indicated" should be "indicate", and the present tense should be used throughout the discussion.

L189- Figure 1 is not entirely appropriate to support this information. Perhaps Figure 3a would be a more appropriate figure to reference at this point.

L190- Consider adding more detail regarding what is meant by a "well-established" feature

L192- SST is not referred to previously. Thus there should be a full name for this in parentheses here.

L194,197- Equator is not capitalized here but has been capitalized throughout the rest of the paper. Consider changing this for the sake of consistency.

L199-211- This paragraph incorporates results not previously discussed in the results section. Results could be presented first in the results section and then discussed in more detail in the Discussion. This paragraph also does not aid in answering the key research goals of the study, and could therefore be condensed down to a few sentences that explain how extreme weather events could influence variation.

L210- "associated to the AMO" should be "associated with the AMO".

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L210- Niña should be La Niña.

L212- “influence of accessibility in fire occurrence” should be “influence of accessibility on fire occurrence”.

L217- It is not necessary to have “However” and “Contrary to this study”, just one of these would suffice to start the sentence.

L219- “we obtain this result also in Brazil” could be made to read better by altering it to “we also obtained this result in Brazil”.

L239- Should the reference “Armenteras and others, 2013” not be “Armenteras et. al, 2013), all other papers are referred to this way.

Major comments:

-Perhaps touch on the limitations of the study and how these might impact on results. Expanding on the direction of future research could also be helpful.

-The final sentence of the discussion touches on some really important issues, these should have been expanded on and should make up a much larger section of the discussion.

-In general, replacing sections of the discussion that simply present results, with text explaining and expanding on the importance of these results would make for a far more interesting and informative discussion section.

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