

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.

Anonymous Referee #2

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This paper used multiple datasets to examine the patterns of NW Amazon fire occurrence in response to the proximity to roads, rivers, and forest edges. A major contribution from this study is that it revealed the differing relationships between fires and forest fragmentation in different countries of this region. Overall the manuscript is well written and suitable for publication on Biogeosciences. My main concerns are in the method and discussion sections.

Major comments:

Need more explanation on the statistical tests used in this study. For example, what is ANOVA test? Is it a specific test method, or a general referral to a collection of statistical methods for the purpose of Analysis of Variance (ANOVA)? A reference to a

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paper or a program set would be good. The ‘null model’ of CFD should be explained better so that readers can understand without resorting to Kumar et al. (2014). What’s meaning of ‘D-statistics’ in Table 1 and Table 2?

Some results deserve more discussion. The authors discussed the country-level differences in interannual variability of fires, mostly on climate perspective. However, as the authors pointed out later in the paper, a large portion of the fire occurrences in this region is associated with human activities. The socioeconomic path and its impacts on fires may vary by country to country. For example, the differences shown in Fig 2B could also be due to different levels (and starting time) of the REDD efforts, in addition to climate/weather impacts.

Results shown in Figs 4 and 5 are the centerpieces of this study, in my opinion (The first part of this study, i.e., the regional differences in fire occurrences, is quite obvious and well studied before). So I suggest the authors should put more efforts in the discussion of these results. For instance, are these relationships changing in different years, or at different stages of the fire season? Other than the cumulative frequency (CDF), I would also like to see the observed fire density patterns as a function to the distance to rivers/roads/forest edges.

Minor suggestions:

P5L85 - I suppose “65W” should be “80W-65W”?

P5L88 - “2,140.936 km²” looks like a typo. Should be changed to “2,140,936 km²”

P5L89 - Similarly, “1,558.324 km²” should be “1,558,324 km²”

P5L89-91 - Please use the same format for all areas, i.e., either using ‘XXX,XXX’ or ‘XXX XXX’, but do not mix these two formats.

P5L98 - Please be more specific on the active fire data used. There are different MODIS active fire products available on FIRMS. Please explicitly state the product name.

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P5L99 - There's a surplus ')' in this line.

P5L110 - One "interannual" should be "intra annual"?

P6L119 - Another surplus ')' here.

P14 - Is it possible to show major roads and rivers in this figure?

P16 - The figure in this page is the same as Fig 3 in p17.

P19 - In Fig 5A, I think it is not needed to draw data corresponding to distance values of > 8000m. Looks like the cumulative frequencies in all countries have already approached 1.

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