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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Contrasting large fire regimes in the French Mediterranean" *by* Anne Ganteaume and Renaud Barbero

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Interactive comment on "Contrasting large fire regimes in the French Mediterranean" by Anne Ganteaume and Renaud Barbero Anonymous Referee #2 Received and published: 18 November 2018 In this study the authors characterize the spatial and temporal patterns of large fire activity in a region of southern France where a longitudinal gradient in fire weather and land use conditions exists. This is a valuable addition to the literature, namely because it goes back in time more than usually available in Europe. However, in its present form, the manuscript falls short of fulfilling its potential, and I share most of the concerns expressed by reviewer #2, namely unclear objectives/research questions that forcefully lead to unfocused analysis and discussion. Additionally, I felt that many sentences are excessively referenced, which breaks the

reading flow, and English expression could be significantly improved in order to make the ms. more appealing.

Answer: We thank the reviewer for this positive review. We tried to improve the readability of the manuscript and removed some references. We hope the manuscript is now more appealing.

Specific comments

L14. "up to 5 or 6 times by recurrent LF" is redundant. Also, better to delete 5, as it is not the maximum value. Answer: This has been corrected.

L21-23. Rephrase, from my interpretation what is of concern is the future repetition of 2003-type events. Answer: We removed this sentence following reviewer #1 suggestion.

L32-33. The sentence is confusing, rephrase. Answer: This sentence has been corrected as requested.

L39. I would say that is more "determine" than "contribute". Answer: This has been corrected.

L50. Fire management includes fire prevention. Answer: This has been corrected.

L79. Stationary, not stationarity. Answer: This has been corrected.

L108-109. Comprised and composed should be in the present tense. Answer: This has been corrected.

L119. It should be "unpublished data" or "data on file" rather than "pers. comm.", because Ganteaume is one of the authors. Answer: Yes indeed, this has been corrected.

L137-140. I don't think this is needed. Just keep the final parte relative to France. Answer: This has been corrected as requested.

L146. If you are using daily maximum (or means of minimum and maximum?) values

of weather variables you are not calculating the FWI indexes correctly, which are based on noon observations. Clarify this. Answer: The reviewer is right. The FWI requires noon observations. Unfortunately, SAFRAN is a daily meteorological database and does not provide data at 1200 local time. We thus opted to use Tmax as a surrogate of noon temperature following prior analyses (e.g., Jolly et al. 2015; Abatzoglou et al., 2018). We clarified this point in section 2.3.

L153. Why mean values and not a more extreme value, e.g. the 90th percentile, as large fires are known to occur under more extreme weather conditions? Answer: Both metrics (mean and extreme values based on percentiles) are relevant to track fire activity. Indeed, LF usually occur during periods of higher fire danger (e.g. consecutive days with FWI typically >95th percentile) but the amount of burned area over a season is also strongly correlated to mean seasonal FWI. We repeated Figure 4 using the 90th percentile of each grid cell instead of the mean. As expected, results are highly similar, suggesting that the whole distribution of FWI (including both mean and extreme values) is shifting towards lower values as we move eastwards.

See below Figure 1: Top) Longitudinal cross-section of LF extent computed over 30-km sliding windows. The 95% confidence intervals were estimated using a bootstrapping approach. Bottom) Same as top panel but for mean June-September 95th percentile FWI (in red) and the percent of fuel cover (in green).

L154. Clarify what you mean by “fuel”, i.e. which land cover types are excluded or included. Answer: This has been corrected as requested, the fuel cover types referred to the forest types.

L161. What you refer to as “recurrence” is overwhelmingly used in the literature as “frequency” (number of times burnt / time). I would advise to do the replacement across the entire manuscript, as it much more informative to report n/t than the number of times burnt. Answer: Following the reviewer’s suggestion, we replaced the total number of times burnt by the frequency expressed as number of times burnt during the entire

period studied (56 years for the Western area and 58 years for the Eastern area).

L164. Here it seems you are referring to “fire return interval”, but then we find out in results that the variable is expressed in hectares. Be more precise regarding fire return “level”. Answer: Figure 6b is actually showing the fire return interval for a given fire size (fire return level). We clarified this point in section 2.5 (Temporal analyses) and removed the reference to “fire return interval” from section 2.4 (Spatial analyses).

“age of the last burned area” is time since fire or patch age at the time it burned? Answer: It is the time since the last fire

L166. Comparisons between the 2 regions? Answer: Yes it is. We clarified this part.

L190. Delete “occurrences” Answer: This has been corrected.

L301-307. This paragraph does not discuss results, presents them. Answer: The results and discussion sections have been rewritten.

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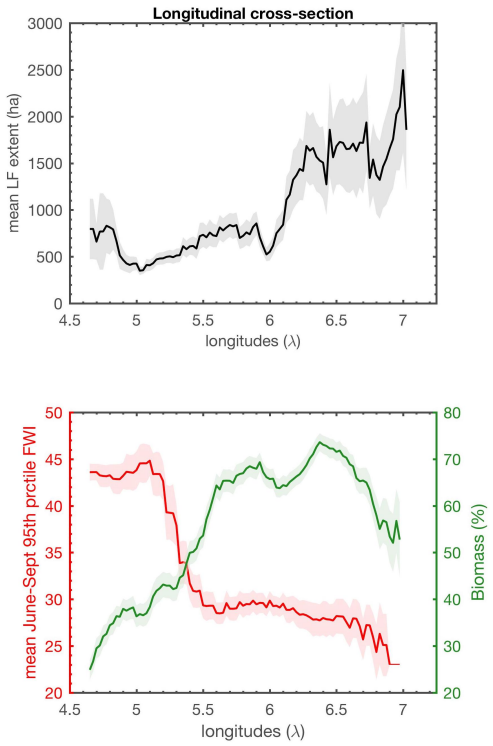
Longitudinal cross-section
mean LF extent (ha)
3000
2500
2000
1500
1000
500
0
4.5
5
5.5
6
6.5
7
longitudes (λ)
mean June-Sept 95th prctile FWI
Biomass (%)
50
45
40
35
30
25
20
80
70
60
50
40
30
20
4.5
5
5.5
6
6.5
7
longitudes (λ)

Fig. 1.