Comment 1

This manuscript aims to analyse the spatiotemporal configuration of fire ignitions in a small area of NW Spain and to test for spatiotemporal interaction. In general the manuscript is well written and presented. However, I do not consider that the manuscript represents a substantial contribution to the understanding of fire ignitions. There are many papers on spatiotemporal patterns of fire ignitions, many of which are not cited, and the current manuscript does not bring substantial novelty.

ANSWER: Our main aim in this work has been to analyse the space-time structure of ignition fires in a wide region using a new and relevant methodology based on space-time point process statistics and to illustrate the use of such tool in a forest-fire context. To the best of our knowledge, this has been the first time this new methodology has been applied in such important context. We really think that our paper can clearly illustrate the use of this new space-time methodology, otherwise a complex one, and helps other researchers working in space-time earth phenomena to consider and use this new approach. There are other papers on space and time patterns of fire ignition, though most of them just deal with either spatial or temporal patterns, separately. We have tried to cite work directly related to spatiotemporal point pattern analysis, which is the methodology applied here. In any case, we shall refer other relevant papers about space and time, and spatiotemporal point processes in the final manuscript.

Comment 2

I have two additional major comments. The first comment is related to the way the authors present their work, which particularly in sections 2.3 and 3 is not very appealing for readers that do not dominate mathematics and Rippley's K function. I think this could be improved (for example the authors could avoid using the K equation so many times in the Results and in Figures 3-5, and instead talk about it in a more comprehensive/intuitive way).

ANSWER: The referee is right. The use of mathematical notation for the space-time Ripley's K function simplifies the notation and reduces the length of the text. However, it is true that we can support in several cases this specific notation with a short explanation to clarify such complex concept. For instance, we can write in page 2900 line 17 (after the mathematical notation of the Ripley's K function):

"i.e the empirical spatiotemporal Ripley's K function minus this function under the hypothesis of no spatial-temporal structure (fire ignitions are independently distributed)"

We wanted to be specific in methodology to allow for replication of this procedure. That shall be amended in the finally version of the paper if it is finally accepted for publication.

Comment 3

The second comment is related to the study area and sample size. The authors selected a study area in NW Spain with 30 x 30 km. In my opinion this is a small area for this type of study, and in addition the fact that only 5 years were studied, is a drawback for the manuscript. This was somewhat recognized by the authors (page 2902, lines 15-16 and lines 22-25), and probably they could have made an additional effort to minimize this drawback.

ANSWER: The study area is representative of the conditions in this Spanish ecoregion and provides a reasonable number of points for obtaining robust estimators of summary statistics to study the spatiotemporal dynamics of fire ignition. The high-risk Galician landscape is highly fragmented in small patches (Figure 1, Costafreda-Aumedes et al. 2013), changing widely in fuel conditions and landscape structure within very short distances, so 900 sq km allow encompassing the land use patch diversity of the region appropriately. Moreover, this area is larger than usual for regional fire prevention planning in Spain. About the period of 5 years of study, we have considered the largest temporal dataset available in this Spanish region (Galicia), from the public dataset of the Ministry of Environment, Rural and Marine Affairs of Spain (MAGRAMA). Fire ignitions recorded before 2007 were recorded in a lattice structure which allows more than one fire ignition to be placed in the same spatial location. As such, data recorded before 2007 cannot be analysed as a point pattern. Moreover, the year 2011 is the latest update of this public dataset. Also cited in the paper, there was a policy change in fire management in 2007. Finally mention that fire managers routinely use 5 years for fire prevention planning in Spain.

Comment 4

Additionally, and considering the conclusions (Page 2903), I think it would be particularly interesting to try to show that the statement in lines 9-10 is true. One can ask if the results suggesting this are based on sufficient robust datasets, and I am not convinced.

ANSWER:
The reviewer refers to these lines: "In fact, this lack of spatiotemporal structure for large lag intervals seems to suggest that in this area there are no persistent risk factors that are repeated on an annual basis, such as ongoing local social conflicts (i.e. for hunting rights), cyclic traditional agricultural practices (Barreal et al., 2011) or long-term serial firesetters as suggested by Chas-Amil et al. (2012), but there may be on a short-term basis." Yes, it would be interesting to prove this, but given the uncertainties in fire records causality and human behaviour regarding fire occurrences, we could not go beyond in this analysis, even though we could consider a longer dataset. A social analysis would be also required.

Comment 5

Following I include a few specific comments:
Page 2895, lines 24-25 and Figure 1C: It would be interesting to show how fire ignitions are distributed along seasons; the authors could present a graph with ignition frequency in each season, to clearly show how prevalent are fire ignitions in the summer months.

ANSWER: The referee is right. We shall add a new figure or a table with the ignition frequencies distributed by seasons. Fires occur throughout the year, but incidence is somehow lower in winter, depending on the year.

Comment 6

Page 2901, lines 4-5: I guess that many readers will not be familiar with "envelope values".

ANSWER: The referee is right. We shall write in page 2901 and after lines 4-5 the following sentence:

"These envelopes are obtained by assuming pointwisely the fifth-largest and fifth-smallest values for the spatiotemporal Ripley's K function minus this function under the hypothesis of no spatiotemporal structure based on 199 inhomogeneous Poisson point randomizations."

Comment 7

Figure 3: Please include more comprehensive legend; for example what means the "v" in the x-axis?

ANSWER: Again, the referee is right, the "v" values are defined in the text (Section 2.2 Spatiotemporal statistics) although we can write a line in each figure legend specifying the meaning of this "v" value.

References

-Costafreda-Aumedes, S., Garcia-Martin, A., Vega-Garcia, C. (2013) The relationship between landscape patterns and human-caused fire occurrence in Spain. *Forest Systems* **22**:71-81.