

Interactive comment on “Size of wildfires in the Euro-Mediterranean region: observations and theoretical analysis” by C. Hernandez et al.

Anonymous Referee #2

Received and published: 27 March 2015

The authors analyze the size distribution of wildfires in the Mediterranean using the MODIS burnt area product, ERA-interim climatic data, and cellular automata modelling.

The authors state that under moderate wind conditions the size of burnt areas decrease. This result is counter-intuitive, and the authors did not present any statistical tests that examine whether their claim is statistically significant (in section 2.3).

In Figure 2a there is no trend of increase in burnt area size with wind speed. In Figure 2 the authors should also present scatter plots and examine the relationship between wind speed and burnt area statistically. Why did the authors focus just on the 95th quantile? Quantile regression may be used in addition to traditional correlation coefficients.

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In two places in the manuscript the authors report results but do not show them (e.g., p 1209 | 6, p 1213 | 17). Results should be shown. The authors should also examine and present the correspondence between wind and temperature anomalies for the MED and EAST regions, or better yet, for smaller regions.

Overall the manuscript should be edited by a native English speaker as there are many errors throughout the text. In addition, the manuscript is not clearly divided into Introduction, Methods, Results and Discussion sections.

In the text the authors use two different units for area: hectares and squared kilometers, sometimes in the same sentence. For consistency, please choose one of the measurement units and stick to it.

In the Introduction the authors provide examples of studies concerning climate conditions and wildfires, however these are mostly from North America. Additional examples should be given from the Mediterranean, e.g.:

Boboulos, M., & Purvis, M. R. I. (2009). Wind and slope effects on ROS during the fire propagation in East-Mediterranean pine forest litter. *Fire safety journal*, 44(5), 764-769.

Dimitrakopoulos, A. P., Vlahou, M., Anagnostopoulou, C. G., & Mitsopoulos, I. D. (2011). Impact of drought on wildland fires in Greece: implications of climatic change?. *Climatic Change*, 109(3-4), 331-347.

Levin, N., & Saaroni, H. (1999). Fire weather in Israel – a synoptic climatological analysis. *GeoJournal*, 47(4), 523-538.

Levin, N., & Heimowitz, A. (2012). Mapping spatial and temporal patterns of Mediterranean wildfires from MODIS. *Remote Sensing of Environment*, 126, 12-26.

Pausas, J. G., & Fernández-Muñoz, S. (2012). Fire regime changes in the Western Mediterranean Basin: from fuel-limited to drought-driven fire regime. *Climatic change*, 110(1-2), 215-226.

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Pausas, J. G., & Vallejo, V. R. (1999). The role of fire in European Mediterranean ecosystems. In Remote sensing of large wildfires (pp. 3-16). Springer Berlin Heidelberg.

The authors should report the accuracy of the MCD45 fire product, as well as the minimum size of fire detected using this product.

In all figure titles, when terms are used (e.g., P0, Yi, etc) these terms should be fully explained in the title, as titles should be self explanatory. Otherwise the readers will find it hard to understand what does P0 mean etc.

P 1205 | 7 “such wildfires” – large? Numerous? What do you mean?

P 1205 | 12: “these” – which wildfires? by various conditions such as fuel

P 1206 | 31 – define “percolation threshold”

P 1207 | 21-22 – not clear, please rephrase

P 1207 | 24 – define what was considered as large fires in this study

P 1207 | 25 – the main weakness of what? I did not understand the rationale behind combining individual fire events into a single fire event, of fire events that may be 20km apart from each other.

P 1209 | 8-11 – what is this conclusion based on?

P 1214 | 15 – should the simulation domain be increased in size so as to overcome this problem?

P 1214 | 24 – “as if to each” – this is one of many examples where English needs to be corrected

P 1215 | 9 – why (1-p) to the order of 3?

P 1215 | 27 – where is Spetses Island, provide a reference

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P 1216 | 8 – which is case study? Provide reference. Is one case study enough for validation?

Figure 3 – what do the values on the x and y axes mean?

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 1203, 2015.

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