Geosci. Model Dev. Discuss.,
https://doi.org/10.5194/gmd-2016-301-RC1, 2017

Geoscientific Model Development Discussions
Open Access
EGU

Interactive comment on "Identifying required model structures to predict global fire activity from satellite and climate data" *by* Matthias Forkel et al.

Anonymous Referee #1

Received and published: 13 July 2017

Dear Authors, First thank you for an extremely well-written manuscript about your exhaustive study of factors contributing to controls on burned area for climate models. I found the conclusions section especially well-written; it summarizes well the implications of your results and your conclusions are well-defended by the analysis you present.

This paper is entirely suitable for publication in GMD, I have only a few comments that perhaps can suggest where your account can be clarified.

As for the science itself, I have only a few relatively minor questions about your methodology. The strength of your conclusions is only moderate because the input datasets

Printer-friendly version

Discussion paper

you have used, which are with a few exceptions the best available, are not very good, and specifically lack skill at capturing the truly relevant properties of vegetation. This is not a flaw of your study, but merely the state of the science.

I did wonder about your choice of variables to represent climate/weather effects. First, you use a dataset based on statistical interpolation of weather station data. A reanalysis would be a much more appropriate choice: statistical interpolation of weather station data will have obvious consequences for your analysis: for instance, interpolation of (dense) coastal weather data into (data-sparse) inland areas will produce erroneous results in near-coastal interiors. Reanalysis data would not completely solve this problem, but would surely better capture the weather in fire-prone areas.

Second, the variables you use are “mean temperature, mean diurnal temperature range, mean number of wet days, and the total precipitation of the actual month and the 12 months before a fire.”

1) What is the role of “diurnal temperature range” with regards to wildfire? It seems like a very loosely related quantity.

2) Would you not get better results by using temperature and rainfall anomalies, rather than absolute values? Or perhaps this would make no difference in your analysis.

Besides that question, I have only two other minor comments:

Line 350: “(e.g. quantiles 0.01 to 0.02)” this is not clear to me; generally when I hear “quantiles” I think “bottom 20%” or “top 25%” or things like that.

Line 419: “explained reasonable” -> “explained reasonably” This was the only typo I encountered in the entire manuscript!

Interactive comment on Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2016-301, 2016.