

## ***Interactive comment on “Hydrological response of a small catchment burned by experimental fire” by C. R. Stoof et al.***

**Anonymous Referee #2**

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The paper is interesting and has some useful information, even though the time series is relatively short, presumably the function of a PhD deadline. I was disappointed with the explanation of the statistical analysis in the methods section, this needs to be completely rewritten in my opinion. For example, there is no mention of how the cross-correlation was done and the results of this analysis are vague: how do you put the results of a cross-correlation into an ANOVA to extract a result (Table 4), this seems quite illogical based on the table caption and there is no detail on how or why this was done in the methods. The authors then draw several important conclusions and discussion points from this analysis, so it's methodology definitely need to be explained better. Additionally, I am unsure which correlation method was used and there is no obvious discussion on what variables were put into the ANCOVA or why an ANCOVA  
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was even used instead of other methods. On p 4063, line 13, they say that the ANCOVA analyses were performed at the time scale appropriate for each spatial scale, that's not very informative! And needs improvement. The Q-Q plots used in fig 3 are not described in the methods, what data is used, what do they do and how are they analysed?

In the introduction, the authors state that water repellency can be induced by wildfire. I note that there are many published papers that show it can also be destroyed in many ecosystems, so the statement on p 4054 lines 25, 26 need correcting.

On p 4055, line 27, increases should be increase

The statement relating to prediction of risk of flooding in burned areas, p 4057 line 9, needs elaboration.

In section 3.5, the authors talk circumstantial evidence provided by the soil moisture probes, p 4068 line 10. They then analyses this data and talk conclusively about a shift in moisture through time (Fig 9). I don't think it's appropriate to draw conclusive results from circumstantial evidence!

I am not sure it is possible to extract the small scale of this experimental study to describe how wildfire works at a larger scale. I think it would be better to stick to drawing conclusions related to the study area and perhaps the local region, but not catchments everywhere, as indeed they point out in the first few lines of section 4.5

A number of references appear to be grey-literature derived from conference proceedings. My opinion is that these references and any conclusions derived from the should not be included, stick to scientifically peer-reviewed journal articles where possible.

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