**Biogeosciences
Discussions**

Interactive
Comment

Interactive comment on "Rainfall patterns after fire differentially affect the recruitment of three Mediterranean shrubs" *by* J. M. Moreno et al.

J. M. Moreno et al.

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General comments: The study shows interesting insights into germination and the recruitment success of Mediterranean species in response to rainfall variability between years. Such data are rare and thus the study approach and results are an important contribution in understanding successional changes in ïňĄre-prone plant communities. Therefore the manuscript should be presented in Biogeosciences.

C2.1: However, improvements are necessary. To avoid repeating, I strongly agree with the critics raised by referee #1. Although a sophisticated study design was used and described, it is hard for the reader to follow. Perhaps an additional graph would clarify and help to explain the design better.

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R2.1: See response above. A new graph has been added.

C2.2: Many and difficult to read ïňＡgures were used. Only ïňＡgures that are necessary to understand the main message of the study should be left.

R2.2: See comment above. Figs. 3 and 4 will be redrawn to enhance their clarity.

C2.3: Considerable attention must be paid to language improvement. For example, the term "much" is used too often. Consulting a native speaker is recommended before publishing.

R2.3: The text was given to read to a professional editor. Anyhow, we will reread the text and avoid repetition of some terms, as indicated.

SpeciïňＡc comments:

C2.4: A ïňＡre in the middle of the ïňＡre season could have helped to improve the experiment, without the study could just have measured "extreme" values.

R2.4: From a practical point of view, a fire in the middle of the season was not be feasible, since they are forbidden by law. Anyhow, aside from issues related to the intensity of the fire, which we do not expect to vary a whole lot from these fires based on observations of the mean diameter of burned branches here and elsewhere, burning at the two extremes of the fire season was important to tackle the question of how variable might be the germination response taking into consideration the phenology of seed dispersal. In this regard, including an intermediate fire, while adding some value, was not critically important.

C2.5: Some references mentioned refer to canopy-stored seed banks and not soil seed banks. However this is not highlighted in the manuscript.

R2.5: Agree. This will be done.

C2.6: I disagree that ïňＡre season do not play a role in plant establishment (P5772 L14-20). Please see e.g. Whelan & York 1998 and Heelemann et al 2008 - their

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studies in areas with lacking or changing rainfall seasonality also show a change in best ïňĄre season for recruitment success.

R2.6: The text quoted refered to a question posed in regard to this experiment, not in general. In fact, in the following paragraph we mentioned two papers that say that documented a fire season effect, and so it was said. In this section we were focusing on the results of this experiment which is one of the few in which fire season is studied across several years, not single-season experiments. So there is no contradiction with what the reviewers mentions, since we were aware of the two papers mentioned (in fact, these were cited in earlier versions). Anyhow, we have modified this section to avoid any confusion with regard to what we are referring to, and have added new text to further clarify the object of the discussion and implications thereof of our experiment.

C2.7: Fig. 1 shows a rainfall season with the impression that two rainfall peaks exist. Was there a change in rainfall seasonality in the last decades?

R2.7: No to our knowledge. See Esteban-Parra et al. 1998 (cited in the text).

C2.8: Fig. 2 and 5 could just be explained within the text. Bar plots should also show variances.

R2.8: We have added some additional explanations about these graphs. Including error bars for all seasons would be impractical and only mess up the clarity of the graph. The reader is referred to the corresponding table where statistical tests are provided, since these are the ones that must be considered. We based our discussion on these tests.

C2.9: Figures could show all plots (18) instead of only 6 for the categories.

R2.9: Plots within a burn cannot be considered independent with regard to the focus of this study (season, year of burning). Including the plots in the models would inflate the degrees of freedom, and lead to erroneous results. If we plotted them as suggested, we would have to modify the type of regression model (several values of Y for one value

of X). Alternatively, we could use the mean of such values and regress one Y over one X value for each year-season treatment. This is what we do and we understand that this is correct. Notwithstanding, we will include in new table, as an appendix, with all the original values.

Technical comments

C2.10: P5762 L19-20 Use dots for genus names

R2.10: Agreed and corrected.

C2.11: P5770 L6 dependent

R2.11: Agree. Corrected.

C2.12: P5770 L13 event-dependent

R2.12: Agree. Corrected.

C2.13: P5772 L1 rewording "So, : : :

R2.13: Agree. Corrected

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