

## ***Interactive comment on “The Fire Modeling Intercomparison Project (FireMIP), phase 1: Experimental and analytical protocols” by Sam S. Rabin et al.***

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**General comments** The manuscript provides a well written overview of available global fire models, which is a really valuable contribution to the literature, highly relevant to the journal GMD. The level of detail about each of the models is excellent, with specific equations included to describe how each model is parameterised –it is great to see this sort of information in one place. The relevant references are included, so if more detail were required, it would be easy to find. However, since one of the main aims of the manuscript is to describe Phase 1 of an Intercomparison Project, there needs to be much more detail in the sections describing Model evaluation, Benchmarking, empirical and observational comparisons (more detail below). Is there any reason why

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the manuscript is split into Phase 1 and doesn't present the results of the evaluations? Is it that the evaluations have not yet been completed, or that it would just be too much for one paper?

**Specific comments** Page 2, line 17 – Define fire regime somewhere in the Introduction It would be good to be told somewhere in the text that the models include PFTs relevant to both the Northern and Southern hemisphere conditions. As it is, the reader has to go to Table S15 in the Supplementary Material before finding out, for example, which models include evergreen vegetation. A table listing the FireMIP prescriptions should be included. For example, what is the prescribed vegetation height? What other prescriptions are there? Justify why they are imposed. Page 5, line 17 –Why were the 1901–1920 climate and 20 lightning inputs recycled for the first 200 years of the simulation? Page 6, line 3 – Write PFT in full the first time it's used Page 10, line 1 – Define GFED regions Page 10 – Model evaluation, Benchmarking, empirical and observational comparisons. These sections need a lot more detail, considering that the aim of the paper is to describe the experimental and analytical protocols. The benchmarking paragraph seems overly simplistic, and could be improved by a more thoughtful consideration of the difficulties in validating model output or comparing models. What sort of observations will be used to assess model performance? There is very little detail given in the table. What are the “appropriate tools” that will be used? The identification of causal relationships is notoriously difficult in interactions between climate, weather, vegetation and fire, so it's important to say how you're going to assess the models. Page 11, line 20 – when and where will the data be made available?

**Technical corrections** Page 3, line 18 – the apostrophes around “right output” and “wrong reasons” are unnecessary Page 4, line 21 – delete “of” before “an” Page 9, line 3 – delete “been” Page 12, line 22 – expand eg. to words, “including, for example, . . .” Page 12, line 33 –delete “that” Page 14, figure legend, line 3 – delete period before bracket Page 15, figure legend, line 2 – delete period before bracket

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