**Climate
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Discussions**

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Interactive comment on "How cold was Europe at the Last Glacial Maximum? A synthesis of the progress achieved since the first PMIP model-data comparison" *by* G. Ramstein et al.

Anonymous Referee #2

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I concur with "Anonymous Referee #1" that this manuscript addresses a key issue for PMIP and the data-model community in general, and I share the frustration of not being able to evaluate the overall between this paper and the Wu et al. paper (in press). In addition, there are several parts of the manuscript that require attention before the reader can assess the validity of the conclusions. In particular, many of the figures are either missing information, have very small fonts and symbols, or are poorly explained. These problems include:

1. The regions north of $50°$ N were largely covered by the ice sheet during the LGM. The simulations are apparently strongly by this ice sheet and there is no possibility of

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acquiring pollen data from this area. This is also the area of the greatest disagreements among the models, and the reader's eye is drawn to these discrepancies (which are not relevant to the subject of this manuscript). So Ě why not truncate the figures at 50° N?

2. For Figure 1, is there any meaning implied by switching from squares to triangles between the two panels? What are the error bars representing (2 standard deviations?). Are the error bars the same for all figures?

3. For Figure 2, it would be helpful to specify the resolution of the model next to the model in the legend.

4. Figure 4 has the PMIP1 results in gray with PMIP2 results in color. The result is pretty confusing - I suggest not including the PMIP1 results on this figure.

5. I think that that figure 5 is a great idea, but it is not well executed. The text is too small and the color blocks for the legend are tiny. The text does not explain how well the simulated modern vegetation agrees with the observed - are there any systematic biases?

6. Are the results from the inverse vegetation modelling methods in Figure 6 from Wu et al.? On this figure, what are the meanings of: a) the bars in the middle of the diamonds (median values?), b) the colored dots, c) the limits of the diamonds (1st and 3rd quartiles?), and d) the limits of the whiskers?

7. What is the relation between the Inverse results presented in Figures 6 and 7? They do not appear to be the same and it is not clear why this is so.

I think that it is unfortunate decision to include Mean Annual Temperature (MAT) as a variable for reconstruction. Similar MAT values can result from either a maritime climate with a small range of temperature variations over the course of the year OR from a continental climate with hot summers and cold winters. Why not use growing degree days as a measure of the annual energy budget?

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