

Interactive comment on “Climate forcing reconstructions for use in PMIP simulations of the last millennium (v1.0)” by G. A. Schmidt et al.

Anonymous Referee #1

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Review of the paper entitled “Climate forcing reconstructions for use in PMIP simulations of the last millennium (v1.0)” by Schmidt et al.

This paper describes in details the experimental design proposed in the framework of the third phase of the Paleoclimate Modelling Intercomparison Project (PMIP3) in order to perform simulations with coupled climate millennium covering the past millennium. The various forcings are described and the choices for selecting particular reconstructions are discussed. Such a clear and comprehensive description is very welcome as the simulations performed in PMIP3 will certainly be the basis of numerous studies in the years to come. The present paper will thus be a very useful reference for any scientist interested in any aspect of the forcing used. I thus recommend the publication of the paper in Geophysical Model Development. Some comments are listed below that

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the authors might consider useful.

General points

1/ I understand the point of view of the authors that providing one single forcing set could give the false impression that this particular set is the most reasonable and that uncertainties are small. However, one of the goals of intercomparison exercises is precisely to compare model results in the same conditions. As a consequence, while it is instructive to propose a variety of forcing representing current uncertainties, selecting one set that should be run in all the groups would be very useful for the intercomparison itself. All the groups should then perform a simulation with this set at least and then with additional ones if possible.

2/ Several simulations covering the last millennium were performed in the last decade. In particular, a summary is given in the 4th assessment report of the IPCC (Jansen, E., J. Overpeck, K.R. Briffa, J.-C. Duplessy, F. Joos, V. Masson-Delmotte, D. Olago, B. Otto-Bliesner, W.R. Peltier, S. Rahmstorf, R. Ramesh, D. Raynaud, D. Rind, O. Solomina, R. Villalba and D. Zhang (2007). Palaeoclimate. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.). That would be very instructive to precisely know how the proposed forcings differ from the ones in those previous simulations. This is very briefly discussed page 1562 but not mentioning figure 6.13 of Jansen et al. (2007) where the forcing used to drive models are given. A figure for instance showing those solar and volcanic forcings compared to the ones proposed here by the authors, to see if there is an overlap or if they are clearly distinct, would be very instructive in the interpretation of the result and in the comparison between the various simulations.

3/ A Table describing all the solar and volcanic forcings would be very useful, in partic-

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ular to follow easily all the acronyms used in the different figures (GRA, CEA, PMOD, WLS (noback), WLS (back), ...).

Specific points

1/Page 1551, Line 25. The “classical Medieval period” is defined as 1000-1200 CE. I think that would be necessary to explain that this definition is not very strict, that the timing of the “classical Medieval period”, also referred to as the “Medieval Warm Period” or “Medieval Climate Anomaly”, is different between the studies and to explain in one sentence why it has been “of particular interest in previous work”.

2/ Page 1566, line 14. It is mentioned that “regional climate changes driven by the various forcings will be of most utility in assessing model skill”. However, the contribution of internal variability is also larger at regional scale than at global scale making more complex any attribution of a signal to a particular forcing. I think that at least mentioning this point would be useful for the readers.

Interactive comment on Geosci. Model Dev. Discuss., 3, 1549, 2010.