

Interactive comment on “Climate reconstruction from pollen and $\delta^{13}\text{C}$ using inverse vegetation modeling. Implication for past and future climates” by C. Hatté et al.

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Referee Comment

MS-NR: cpd-2008-0063 submitted for publication in Climate of the Past (CP):

Title: Climate reconstruction from pollen and $\delta^{13}\text{C}$ using inverse vegetation modeling. Implication for past and future climates. Author(s): C. Hatté, D.-D. Rousseau, and J. Guiot

General comment

I am very satisfied with the overall quality of the abovementioned manuscript. Further-

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more, I am pleased to recommend it for publication.

Specific comments The paper submitted to CP: 1) addresses relevant scientific questions within the scope of CP; 2) present novel concept and tool for reconstructing past climate; 3) present important conclusions in respect to the evaluation of the past and future climate; 4) clearly outline scientific methods/or refer to the published papers; 5) present new results supporting the interpretations and conclusions; 7) gives proper credit to related work and clearly indicate their own new/original contribution.

6) The description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? I am not capable to judge this point, but I assume that it should not be a problem within a modeling community. 8) Does the title clearly reflect the contents of the paper? Yes, but I would suggest to add word "data" or "records" after pollen and $\delta^{13}C$ in the title. 9) Does the abstract provide a concise and complete summary? Yes 10) Is the overall presentation well structured and clear? Yes 11) Is the language fluent and precise? Yes 12) Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? Yes 13) Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? See technical corrections 14) Are the number and quality of references appropriate? Yes 15) Is the amount and quality of supplementary material appropriate? Yes

Minor comments and Technical corrections

1) In Figure 6: blue bands used to indicate event stratigraphy and correlate the records should be either made transparent or underlying the climate reconstruction curves. Otherwise they are hiding part of the useful information 2) Page 74 lines 18-19: should be written "reduce" not reduces 3) Page 75 lines 1-5. Please edit this paragraph, because "available palaeoclimatic reconstructions/records" CAN NOT BE SIMULATED by climate models. Furthermore quantitative reconstructions include not only transfer functions, but indicator species method, for example, too. In this case I would refer

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to Iversen 1944, or Grichuk 1965 (see paper by J. Guiot in Palaeoklimaforschung or Tarasov et al., 2007 in EPSL) 4) Page 75 In my opinion you are too strict in criticizing "modern analogue technique". There is no "universally perfect method" and "inverse modeling approach" has its own limitations. After all palaeoscience is benefiting from getting results by several, not by one method. 5) Page 77 line 14: I suggest "the La Grand Pile Eemian" 6) Page 82 lines 10-20. It is not very clear how any simulations obtained with ppmv 300 can help in understanding future, if modern CO2 values are already above 300? 7) Page 85 line 18. Should be "factor of two" 8) Acknowledgements: please replace YYY and XXX with the project numbers

I hope my comments are useful and looking forward to see revised paper published.

Pavel Tarasov

Interactive comment on Clim. Past Discuss., 5, 73, 2009.

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