Clim. Past Discuss., 5, C103–C105, 2009
www.clim-past-discuss.net/5/C103/2009/

Climate of the Past Discussions

Interactive comment on "Changes in atmospheric variability in a glacial climate and the impacts on proxy data: a model intercomparison" *by* F. S. R. Pausata et al.

Anonymous Referee #2

Received and published: 27 April 2009

This is an interesting study that analyses the changes in the characteristics of the NAO in 4 different models. It this fits well in the scope of Climate of the Past and to my opinion deserves publications after some revisions.

The paper is mainly descriptive. I understand that it is not straightforward to go deeply in the mechanisms but the section 3.3 appears quite short. The manuscript will certainly benefit from improvements in this discussion section, providing additional references and presenting in more details the various hypotheses.

Some points in the methodology should also be clarified as discussed below.

Specific points.

1/ I am not familiar with figures such as Fig. 4 and Fig 8c. Could the authors explain the exact meaning of those figures and how they are obtained?

2/ The end of the introduction (end of page 914, beginning of page 915) is a bit awkward. Reading it, I do not know if it is already the expected conclusions of the paper or the synthesis of previous work (but there is no reference and if it is the case, what is the main originality of the paper?). This point should be clarified in order to show he exact goal of the study, in addition from the model intercomparison exercise.

3/ Section 2. Why only selecting 4 models. Is there a special reason to take only those ones?

4/ Section 4. The discussion about the implication of the results presented on the reconstruction of climate variability is a bit weak. I would expect that in the majority of the cases people are aware that for a climate that is clearly different from present one, considering the stationarity of the relationship between different climate variables is usually not a good hypothesis. Does the authors have examples of reconstructions that makes such a hypothesis?

5/ Section 4. The authors mention that if seasonality affects the proxy, changes in how variability is distributed throughout the year can have an influence of the signal. Could the author develop a bit this idea and explain how their results could be related to this point.

6/ Section 4. The authors present only the results for 2 models while the results of the four models were presented in section 3. For consistency, results of all the models should be discussed in this section too.

7/ Section 4. The correlations are presented in Fig. 5 and Fig. 6 for winter only while in section 3, they are discussed for all the seasons. Why focusing here only on one season?

8/ The reason why 4 particular points are selected in Table 3 is not clearly discussed.

CPD

5, C103–C105, 2009

9/ Page 921, line 20. It is mentioned that Southern Norway is a region where the correlation is particularly high on Fig. 7.For me, only Southern Denmark-Northern Germany is highlighted of Fig. 7 in Europe.

Interactive comment on Clim. Past Discuss., 5, 911, 2009.