

Interactive comment on “Proxy benchmarks for intercomparison of 8.2 ka simulations” by C. Morrill et al.

Anonymous Referee #2

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At your request, I have reviewed the article “Proxy benchmarks for intercomparison of 8.2 ka simulations” by C. Morrill, D. M. Anderson, B. A. Bauer, R. Buckner, E. P. Gille, W.S. Gross, M. Hartman, and A. Shah for the special issue of Climate of the past entitled “Progress in paleoclimate modelling”.

This study focus on the 8.2 ka event. Morrill et al. presents a new synthesis of proxy data based on 112 terrestrial or marine high-resolution records. The palaeoclimate values or trend inferred from these data will be used to validate different models simulations (Morrill et al., Climate of the Past, same issue), in the framework of the PMIP 3 project which now includes the 8.2 ka event as a test of model sensitivity to North Atlantic freshwater forcing. The paper of C. Morrill et al presents interesting findings in terms of results, particularly the occurrence of wet conditions in the Southern Hemi-

C2412

sphere tropics and warm conditions in the Southern Hemisphere. I think this paper is very clear, well written and concise and can be published in Climate of the Past with minor changes, which are listed below.

- Other high-resolution data which have recorded the 8.2 ka event are missing in your paper; they should be included in your synthesis. I mean: - France, lake Annecy (Magny et al, 2003); Furthermore, Magny also proposed in the same paper a regional synthesis on the 8.2 ka based on various paleoclimate records. Could you mention (discuss) this paper in your text? - Balkans: lake Malik (Bordon et al., 2009), lake Prespa (Aufgebauer et al., 2012); - Aegean Sea: SL 152 (Kotthoff et al., 2008; Dormoy et al., 2009); - Alboran Sea (Combourieu-Nebout et al., 2009 : pollen and SST; Dormoy et al., 2009). It is of note that several transfer functions have been applied to lot of these data to produce quantitative estimates of seasonal temperature and precipitation. I think that you can add them in your study to refine your spatial coverage in the Mediterranean area (area where models and data are not in agreement).

- Your discussion is concise but very (too?) short. In my point of view, important points are missing in a paper which focuses on proxies data: -a discussion about the seasonality: your study is a compilation of different climate signals based on pollen data, speleothems, ice records, alkenones, Mg/Ca, chironomids, forams, and isotopic data. However, some proxies reconstruct seasonal parameters (for example, lake-levels indicate summer precipitations, chironomids record summer temperatures) while other proxies rather record an annual signal. Lakes, pollen, and isotopic data can produce an opposite climate trend which can be explained by the fact that these proxies may reflect processes linked to seasonality. This is an important point which needs to be discussed. - I invite you to add a point in your discussion about the proxy uncertainties. Is the cooling of 1.0 to 1.2 °C statistically significant? For example, with such a value obtained by applying transfer functions to pollen data, you can be inside the error bar. I invite you to check this point. - Could you add more details on the methods used to provide the climate anomalies (MAT, WA/PLS...)? It's a very important point, because

C2413

the choice of the method can induce different results (see Peyron et al 2011, for more details). You can just add a column with the method used in your table 1.

- Figure 3 a: colder (warmer) than what? Please be more precise. - Figure 4 a: drier (wetter) than what? Please be more precise. - Table S1: use the same term as in figure 1: cave or speleothem. - Be careful with the terminology: pollen data is a proxy which can be analysed from lakes or marine cores (first column). I invite you to be more precise, put pollen in the column "proxies analysed" , and also add and fill another column entitled "climate signal" after the column "proxies analysed".

Interactive comment on Clim. Past Discuss., 8, 3765, 2012.