Clim. Past Discuss., 8, C2949–C2951, 2012
www.clim-past-discuss.net/8/C2949/2012/

Climate of the Past Discussions

Interactive comment on "Simulated European stalagmite record and its relation to a quasi-decadal climate mode" *by* G. Lohmann et al.

G. Lohmann et al.

gerrit.lohmann@awi.de

Received and published: 24 December 2012

Answer to referee #2

related to the manuscript "Simulated European stalagmite record and its relation to a quasi-decadal climate mode" (Clim. Past Discuss., 8, 3513-3533, 2012) by Gerrit Lohmann, Anne Wackerbarth, Petra M. Langebroek, Martin Werner, Jens Fohlmeister, Denis Scholz, Augusto Mangini

We thank the referee Francesco Pausata for the constructive review. The main critics from the referee was related to the analysis of the data but also about the way is written. We therefore rewrote some texts and we have re-done most of the analysis. The presentation of the input and output is now more clear. We now show the time

series of d18O, precipitation, evaporation in Fig. 1. The decadal variability in the temperature and d18O can be seen by the spectra for the input and output in Fig. 4. The local temperature and δ18Oprecip indicate pronounced interannual variability, whereas δ18Odrip and δ18Ocalc exhibit pronounced decadal variability (Figs. 3, 4). The spectra of the temperature, speleothem δ18Ocalc as well as the local δ18Oprecip values show interannual (with peaks at about 3 and 5 years) and quasi-decadal variability (at about 14 years). The decadal peak is not significant for temperature and δ18Oprecip (Fig. 4a, c), in contrast to δ18Odrip and δ18Ocalc where the interannual variability in δ18Odrip, δ18Ocalc is suppressed (Fig. 4b, d) and the power spectra emphasise pronounced peaks at about 14 years. The pronounced quasi-decadal d18O signal is introduced into the stalagmite already in the input series.The lag of about 3-5 years (Fig. 5) is related to the infiltration of a water parcel and its inflow into the cave. This value is consistent with earlier work at Bunker cave (Kluge et al., 2010; Wackerbarth et al., 2010).

In the following, we provide details to the referee's points:

1) We have re-written the abstract, included the coordinates, and are not explicit in the approach. Furthermore, we eliminated some unnecessary sentences (e.g., the SST tripole).

2) We inserted more citations of relevant literature. Thanks for the hints. We are more explicite about the Baker et al. Paper. Furthermore, the discussion of SST and atmospheric circulation is included (as suggested). We emphasize that changed boundary conditions may change the large-scale teleconnections.

3) We reformulated the results section, since we include more input and output of the stalagmite model. We followed your suggestions in including the power spectra for d18O in precipitation as well in drip water. We removed the lag composite analysis and use now the correlation (composites always have some subjectiveness). We rewrote now the figure captions.

CPD

8, C2949–C2951, 2012

Minor comments: We define d18O_prec and calc. We followed your suggestions.

We attach as pdf the new version of the manuscript. We refer to the new figures here.

Please also note the supplement to this comment:
http://www.clim-past-discuss.net/8/C2949/2012/cpd-8-C2949-2012-supplement.pdf

---

Interactive comment on Clim. Past Discuss., 8, 3513, 2012.