

Interactive comment on “Stalagmite water content as a proxy for drip water supply in tropical and subtropical areas” by N. Vogel et al.

N. Vogel et al.

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Reply to Short Comment of Zoltan Kern

Thank you very much for bringing my attention to the data set of stalagmite water contents in an Hungarian stalagmite (Demény et al. 2012), which I read with great interest. The authors compare in Fig. 3A the delta-18-O-calcite and the water content records of the stalagmite covering the time period between approximately 10'000 and 5'000 years ago. Indeed, both curve progressions are quite similar between approx. 10'000 and 6'200 years. Specifically, the decreasing water content is accompanied by progressively heavier delta-18-O-calcite; which is contrary to our results from three stalagmites from Yemen. Furthermore, Fig. 3A shows that at 6'200 years ago the delta-18-O-calcite shows a dramatic shift towards more negative values, which then

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dominate the record until approx. 5'200 years ago. During this time the water content remains uniformly low and thus seems to be fully decoupled from the delta-18-O-calcite record.

These findings might look somewhat discouraging, as the co-variation of both parameters is, where present, contrary to those found by us. However, I would like to emphasize that there is a major difference between the stalagmites studied by Demény et al. and our samples, which might very well explain the differences found in the studies: Demény and co-workers interpret the stalagmite's delta-18-O-calcite record (or, more specifically the delta-D record and thus, indirectly, the delta-18-O-calcite record) in terms of the source-effect (northern vs. Mediterranean moisture sources in the context of shifts in the NAO), while the delta-18-O-calcite in our stalagmites is primarily influenced by the amount of precipitation in the area. I am convinced that also for the Hungarian stalagmites the decreasing water content is not a random feature but contains paleo-climate information. However, the correlation between the parameters delta-18-O-calcite and water content in a part of the record might or might not be accidental as a sole change in moisture source will probably not change the water content of a stalagmite sample unless the change in moisture source is accompanied by a change in, e.g., the amount of precipitation as well.

Thus, while (due to the reasons outlined above) not in agreement with our findings, the results of Demény et al. (2012) also highlight the potential of the water content as a new and straightforward tool to deduce paleo-climate information from stalagmites. However, as mentioned by the authors as well as by us, more work is certainly needed to fully understand and exploit this promising paleo-climate proxy.

Kind regards, Nadia Vogel

Interactive comment on Clim. Past Discuss., 8, 2893, 2012.

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