

## ***Interactive comment on “Water vapour source impacts on oxygen isotope variability in tropical precipitation during Heinrich events” by S. C. Lewis et al.***

### **Anonymous Referee #2**

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This study focuses on stable water isotopic excursions observed in speleothem records from the tropics during Heinrich events using an isotope-enabled GCM, the GISS ModelE-R. The paper provides interesting new results regarding the climatic interpretation of tropical speleothems and shows that the results can be very site-specific and that caution should be exercised when simply interpreting isotopic departures as changes in local precipitation amount (although this interpretation still seems to hold at some sites). The results presented here are likely somewhat model-dependent and they will eventually have to be confirmed using different models, but this analysis nonetheless provides an important first step in the right direction.

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I have some doubts about the choice of the domains used for the monsoon indices shown in Figure 5. If I understood the authors work correctly, they apparently mix two different indices by choosing the domains as in Li and Zeng (2002) (note Zeng, not Zheng as spelled in the paper) and the type of index as in Webster and Yang (1992). By doing this they miss that the Li and Zeng (2002) index is based on the strength of the seasonal changes in the wind vector and not on vertical shear. Hence these monsoon domains are not necessarily appropriate for deriving a wind shear index. In fact Webster and Yang (1992) use a very different region to define the strength of the Asian monsoon and studies based on vertical shear indices over S. America also used different domains from what is shown here. It is fine, of course, to use the Li and Zeng monsoon domains, but then one should also stick with their definition of monsoon strength.

Caption Figure 5: change JFD to DJF

I can't see much of a decrease in the zonal wind shear over the Asian monsoon region in the hosing experiment as claimed on page 102 (lines 21-23). Maybe I am missing something but Figure 5 does not seem to show this.

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Interactive comment on Clim. Past Discuss., 6, 87, 2010.

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