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Climate of the Past Discussions

Interactive comment on "Variability of the Asian summer monsoon during the penultimate glacial/interglacial period inferred from stalagmite oxygen isotope records from Yangkou cave, Chongqing, Southwestern China" *by* T. -Y. Li et al.

Anonymous Referee #1

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MS #: cpd-9-6287-2013 Title: Variability of the Asian summer monsoon during the penultimate glacial/interglacial period inferred from stalagmite oxygen isotope records from Yangkou cave, Chongqing, Southwestern China Author: T.-Y. Li et al.

General comments:

The manuscript by Li et al. presents a stalagmite oxygen isotope (δ18O) record from Yangkou Cave, Chongqing, Southwestern China, to infer Asian summer monsoon (ASM) variability during the penultimate glacial/interglacial period. With high-precision 230Th dating, the authors have found that the Asian summer monsoon variability was

dominated by strong precessional cycles, consistent with previous stalagmite results from Sanbao and thus suggesting that the stalagmite records indicate a large-scale phenomenon. The authors further suggest that the ASM intensity was strongest at MIS 6.5 during the penultimate glacial period. The authors then compared their records with marine SST and salinity records from the tropical Pacific and suggest that larger zonal SST gradient, and thus intensified Walker Circulation (a La Nina-like state), would have contributed to the stronger ASM intensity at MIS 6.5.

I believe that it is an excellent contribution to CPD and recommend its publication.

Specific comments:

The authors specifically picked MIS 6.5 as an example to illustrate the role of tropical Pacific thermal state in affecting the ASM intensity. However, it appears to me that the ASM intensity at MIS 6.5 is largely comparable to other periods such as MIS 6.3, 5.5, and 7.1 (MIS 7.3 and 7.5 as well as inferred from the Sanbao record). If the tropical Pacific thermal state (zonal SST gradient) were so important at orbital timescales, based on the authors' reasoning, much weaker ASM intensity would have occurred at MIS 5.5, 7.1 and 7.3. However, the stalagmite records do not support this argument. Thus, in my opinion, the ASM variability at orbital timescales, as inferred from stalagmite records, is largely independent of the thermal state of tropical Pacific. Why this is the case is still a mystery to most of us. However, the stalagmite records suggest that the δ18O signal is dominantly controlled by the northern hemisphere summer insolation. The thermal state of tropical Pacific, if there is any role at orbital timescales, would be at most secondary.

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