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Interactive comment on "Lagged variation of moisture conditions in central Asia compared with monsoonal Asia during the last four interglacials" *by* Jia Jia et al.

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Using high quality, high resolution grain size/magnetic susceptibility records of the Darai Kalon/Chasmanigar (DK, Tajikistan) and Xifeng (XF, China) loess sequences Jia et al. suggest that moisture variations in Arid Central Asia (ACA) lagged those in monsoonal Asia by 2-5 ka over the last 4 interglacials. These lags were quantified using chronologies that were developed via tuning the loess records to the SPECMAP (and partly NorthGRIP-Greenland) curves, i.e. the authors do not provide independent absolute chronologies for the investigated records. This implies that they effectively disregard potential regional differences in climate response during the tuning procedure

(this is a fundamental assumption of tuning), and yet they then use the tuned records to quantify lags between the records, i.e. the difference in moisture response of these two regions. In my opinion, while the authors provide great proxy records from the DK/XF sections, the methodology is circular and flawed. Leads-lags between records can only be properly estimated using high-resolution, absolute independent loess chronologies such as those presented in Stevens et al. (2018) and very few other papers. The authors should also consider the uncertainties inherent in the tuning process, which are not assessed at all in this manuscript. Clearly, the SPECMAP chronology has a non-negligible uncertainty, and the tuning procedure as well, and the resultant combined error will no doubt exceed many of the 'lags' reported here. Furthermore, taking the mean values of maxima and minima to identify tie-points does not seem to be the best choice in this case, or at least this approach has not been justified. Usually the first derivatives of the proxy records are taken as tie-points, as this effectively reveals the inflection points of the "proxy function", where the proxy time series changes the most.

In short, the method of age model construction does not permit the interpretation presented here. Considering these purely methodological concerns, I would not recommend this manuscript for publication in CP in its present form.

References

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