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Climate of the Past Discussions

Interactive comment on "Climate patterns in north central China during the last 1800 yr and its possible driving force" *by* L. Tan et al.

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In this manuscript two stalagmite records and two drought/flood records from China are compared and synthesized applying Principal Component Analysis. The matrix of the records delivers positive values and it is then inferred that the principal component is precipitation. The synthesized precipitation index is then compared to previously reconstructed temperature records from China. The correlations observed suggest periods of warm humid and others of dry cool climate in China. The search of the possible drivers for climate suggests that the Asian Pacific Oscillation is a main driver. It is concluded that the solar activity may be a dominant force for the in phase variations of temperature and precipitation in China in the past 1,800 years. The paper reads nicely, and the conclusions are well founded. It is rather concise, and my suggestion is

to slightly enlarge the part describing the application of the PCA. The idea of using a PCA to obtain a synthesized record is nice, and is a good suggestion to other scientists dealing with several records from one region. PCA works requires linear systems, which in case of a relationship driven by the Monsoon is probably the case. The authors should test how sensitive the PCA method is to uncertainties in the age models. A very simple test would be to run the PCA for slightly different chronologies (but not a whole Montecarlo test!) and to show how much the derived Precipitation Index varies as a function of the uncertainty of chronology.

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