



0.1 Millennial temperature reconstruction and simulation for China based on annually resolved multi-proxies and ECHO-G model

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We present here the first reconstructed large-scale temperature patterns with annual-resolution over the last millennium (1000 -1985AD) for China via combining two annually resolved proxy records, the Beijing stalagmite layer series (Tan et al. Geophysical Research Letters, 2003) and the Qilian tree ring sequence (Liu et al. Science in China, 2005). In this study, we attempt to find a way to synthesize the climatic proxies which are affected by different seasonal temperatures.

Meanwhile, a 1000-year climate simulation with the ECHO-G model is made for whole China to compare the synthetic temperature reconstruction as well as to understand the causes of climate change over the last millennium. The correlation coefficient between the simulated and reconstructed time series is 0.44, 0.58 and 0.61 for yearly data ($n=986$), 11-year running mean and 31-year running mean, respectively. And the range of the simulated anomalies (1.55 K) is comparable with that of the reconstructed (1.86 K).

This result, in general, shows a rather strong coherence between the two time series although some discrepancies still exist.