



Climate variations in north central China during the last two millennia and their influences on Chinese social evolution

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North central China is one of the most important cradles of Chinese civilization, and had been regarded as one of the core domination areas by the ruling dynasties of ancient China. Here we synthesized high-resolution precisely-dated stalagmite records and historical document records from this region to reconstruct a decadal resolution precipitation record during the last 1800 years (190–1980 AD). The synthesized record is in agreement with the simulated precipitation record and another precipitation record reconstructed from lacustrine sediments in north central China, indicating that it can well reflect the precipitation variations in this region. Our precipitation record shows coincident variations and significant positive correlations with the temperature reconstructions on centennial- to multidecadal-scale, suggesting warm-humid/cool-dry was the main climate pattern in north central China over the past 1800 years. When compared the climate events with the historical conflicts and wars, it is shown that most of the peak periods of warfare in dynastic transition times correspond to sharp declines in precipitation and temperature in north central China, indicating a strong connection between climatic and societal changes. Not only did the climatic deterioration in north central China cause destruction, it also sometimes promoted the development of southern China.