

3.环境变化与人地关系历史

阿尔泰山全新世适宜气候促进欧亚草原带史前人类扩张

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摘要: How climate change in the middle to late Holocene has influenced the early human migrations in Central Asian Steppe remains poorly understood. To address this issue, we reconstructed a multiproxy-based Holocene climate history from the sediments of Kanas Lake and neighboring Tiewaike Lake in the southern Altai Mountains. The results show an exceptionally warm climate during ~6.5–3.6 kyr is indicated by the silicon isotope composition of diatom silica ($\delta^{30}\text{Si}_{\text{diatom}}$) and the biogenic silica (BSi) content. During 4.7–4.3 kyr, a peak in $\delta^{30}\text{Si}_{\text{diatom}}$ reflects enhanced lake thermal stratification and periodic nutrient limitation as indicated by concomitant decreasing BSi content. Our geochemical results indicate a significantly warm and wet climate in the Altai Mountain region during 6.5–3.6 kyr, corresponding to the Altai Holocene Climatic Optimum (AHCO), which is critical for promoting prehistoric human population expansion and intensified cultural exchanges across the Central Asian steppe during the Bronze Age.

关键词: 气候适宜期、硅藻硅同位素、生物硅、史前人类迁徙、欧亚草原带