

LATE PLEISTOCENE PALEOENVIRONMENTAL CHANGES IN HIGH-MOUNTAIN RANGES OF NORTH CHINA

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During the last decades several efforts were made to study characteristic loess-paleosol sequences on the Loess Plateau and adjacent areas, to infer Quaternary climatic changes with particular references to alternations in the Asian monsoon circulation. However little is known about the spatial and temporal morphodynamic and environmental changes in the mountain ranges and their forelands at the margins of the Loess Plateau. According to the latest results, a Late Pleistocene glaciation was limited to the more than 3000 m a.s.l. high ranges Qinling Shan, Wutai Shan, and Helan Shan at the Loess Plateau's southern, north-eastern and western margins. The LGM snowline shows a general westward rise from around 2600 to 2700 m a.s.l. (Wutai Shan) to 3100 m a.s.l. (Helan Shan), respectively 3300 m a.s.l. (Qinling Shan), with a snowline depression of about 900 to 1200 m. There are also indicators that prove a Late Pleistocene descent of the periglacial altitude belt in these ranges of at least 800 to 1000 m. In the lower altitudes an increased sediment yield resulted in increased aggradation in the valleys and an intensified formation of alluvial fans. Loess-mantled alluvial terraces point to an increased alternation of alluvial aggradation and dissection. There is evidence that a major glacier advance and the main alluvial aggradation took place during a cool-humid period (c. 30 to 21 ka BP), which was followed by a cold-dry period (c. 21 to 13 ka BP), with a climate being rather unfavourable for the mass balance of the small glaciers in the ranges of North China.