



Paleo-glaciations of the Shaluli Shan, southeastern Tibetan Plateau

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Reconstructing regional paleoclimates of the Tibetan Plateau is critical to understanding linkages between regional climate changes and global climate changes, and here we focus on the paleo-glaciations of the Shaluli Shan, an area of the southeastern Tibetan Plateau that receives much of its precipitation from monsoon flow. The Quaternary glacial history of the Shaluli Shan area is examined by geomorphic mapping, field investigation, and ^{10}Be terrestrial cosmogenic nuclide (TCN) dating. Our geomorphologic studies provide the first detailed glacial landform map of this region, where the glacial landforms are characterized by extensive Alpine glacial landforms centered on high mountain ranges, and zonal distributions of glacial landforms on low relief plateaus, indicating regional, polythermal ice caps. Combining the TCN ages, 5 glaciations with diminishing size are identified: Post-LGM glaciations (17-13 ka), LGM (21-17 ka) and older glaciations (>100 ka). During the older stage, significant ice caps covered the Haizishan Plateau and Xinlong Plateau with large outlet glaciers extending far down outlet valleys, and extensive valley glaciers and piedmont glaciers in the high mountains. During the global Last Glacial Maximum (LGMg), ice caps and/or ice fields were present on the Haizishan and Xinlong plateau surfaces, in marked contrast to more central regions of the Tibetan Plateau where there was very limited ice expansion during the LGMg. Given the location of the Shaluli Shan area at the margin of the Tibetan Plateau, this work provides insights into the paleo climate pattern and monsoon evolution of the Tibetan Plateau and shows that the Shaluli Shan has a glacial chronology more consistent with the Northern Hemisphere paleo ice sheets than other areas of the Tibetan Plateau.