



Spatial and temporal patterns of paleoglaciation across eastern Tibet and Central Asia

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Cosmogenic nuclide dating has emerged as a key tool in reconstructing the timing and impacts of past glaciation. Dates from glacial deposits such as moraines and erratics typically provide constraints on the minimum ages of glacial stages. As an international team, we are reconstructing glacial histories of several areas in Central Asia, including parts of the eastern Tibetan Plateau and along the Tian Shan, Altai and Kunlun Mountains. Results to date show significant variations in the timing and extent of glaciation, including areas in the southeast Tibetan Plateau and Tian Shan with extensive valley and small polythermal ice cap glaciation during the global last glacial maximum, in contrast to areas in central and northeast Tibetan Plateau that had very limited valley glacier expansion during the global last glacial maximum. Polythermal ice cap glaciation is inferred for the Haizi Shan area in the southeast Tibetan Plateau on the basis of patterns of glacial and relict landforms, as well as only partial resetting of ages on some erosional features. Numerical modelling attempting to simulate mapped and dated paleoglacial extents predicts limited cooling to attain former maximum glacier extents.