

## **Evaluating the timing of past glaciation across the Tian Shan, Central Asia**

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Reconstructing the timing of past glaciation across the Tian Shan has received increased attention over the last 10 years because mapped paleoglacier extents provide a proxy for past climate change. The aim of this study is to use  $^{10}\text{Be}$  surface exposure ages from glacial moraines across the Tian Shan to provide a robust regional glacial reconstruction. In order to quantify the robustness of the dating control, we compile, recalculate, and perform statistical analyses of 179 new and previously published  $^{10}\text{Be}$  surface exposure ages. However, correlating glacial stages across the region remains a difficult task due to the large observed scatter in  $^{10}\text{Be}$  surface exposure data. Our analysis shows that we can only clearly define/correlate glacial stages at and later than early Marine Isotope Stage (MIS) 2 (after 29 ka). Synchronous glacial stages occurred during early MIS 2 and late MIS 2/early Holocene. Paleoglacier extents during these time intervals are restricted to valley glaciation across the region. Correlation between glacial stages prior to MIS 2 is less reliable because of the low resolution of the dating control and fewer data points. There are, however, examples of reliable local indicators of glacial stages during MIS 3 (30 - 56 ka) in the Chinese Tian Shan and during MIS 5 (72 ~ 130 ka) in the Kyrgyz Tian Shan. These stages cannot be correlated across the region and the resolution of the dating control still remains too poor to infer their relevance against other climate proxies.