

## Supplement

Table S1: Sample information. Photographs for samples (where available) available in ICE-D at <http://antarctica.ice-d.org>.

Table S2: In situ  $^{14}\text{C}$  analytical data and exposure ages. TUCNL column contains the Tulane University Cosmogenic Nuclide Laboratory code for each sample.

Figure S1: Sample locations at Mount Skidmore. Landsat 8 imagery courtesy of the U.S. Geological Survey. Contours at 100 m interval generated using the Reference Elevation Model of Antarctica (REMA; Howat et al., 2019).

Figure S2: Sample locations at Mount Provender. Landsat 8 imagery courtesy of the U.S. Geological Survey. Contours at 100 m interval generated using the Reference Elevation Model of Antarctica (REMA; Howat et al., 2019).

Figure S3: Sample locations on Mount Lampert and an unnamed nunatak, Lassiter Coast. Landsat 8 imagery courtesy of the U.S. Geological Survey. Contours at 100 m interval generated using the Reference Elevation Model of Antarctica (REMA; Howat et al., 2019).

Figure S4: Sample locations in the Schmidt Hills, Pensacola Mountains. Landsat 8 imagery courtesy of the U.S. Geological Survey. Contours at 200 m interval generated using the Reference Elevation Model of Antarctica (REMA; Howat et al., 2019).

Figure S5: Sample locations in the Thomas Hills, Pensacola Mountains. Two samples were collected within close proximity such that their markers overlap. Landsat 8 imagery courtesy of the U.S. Geological Survey. Contours at 200 m interval generated using the Reference Elevation Model of Antarctica (REMA; Howat et al., 2019).

Figure S6: Elevation versus in situ  $^{14}\text{C}$  age of samples from the Shackleton Range. Samples with in situ  $^{14}\text{C}$  concentrations equivalent to saturation are not shown.

Figure S7: Elevation versus in situ  $^{14}\text{C}$  age of samples from the Lassiter Coast.

Figure S8: Elevation versus in situ  $^{14}\text{C}$  age of samples from the Schmidt Hills. Only measurements yielding exposure ages  $\leq 20$  ka are presented.

Figure S9: Elevation versus in situ  $^{14}\text{C}$  age of samples from the Thomas Hills.

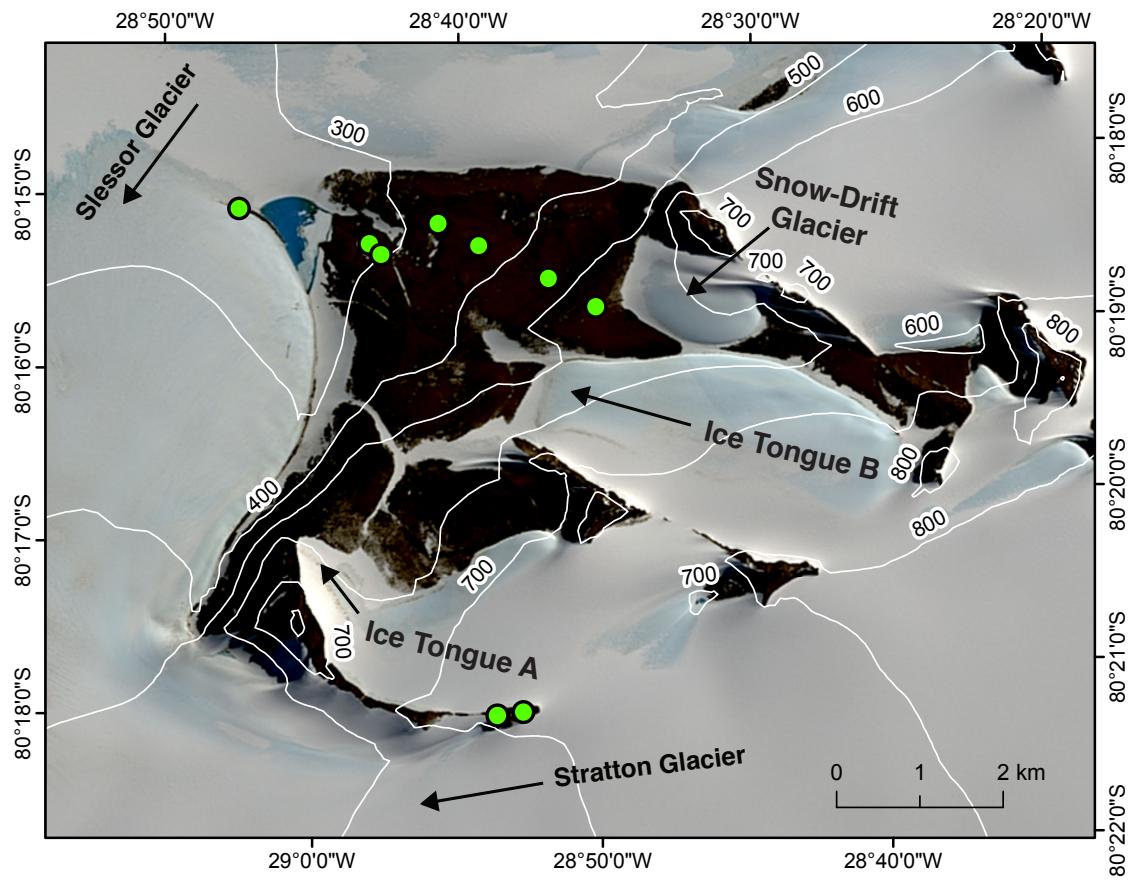


Fig. S1

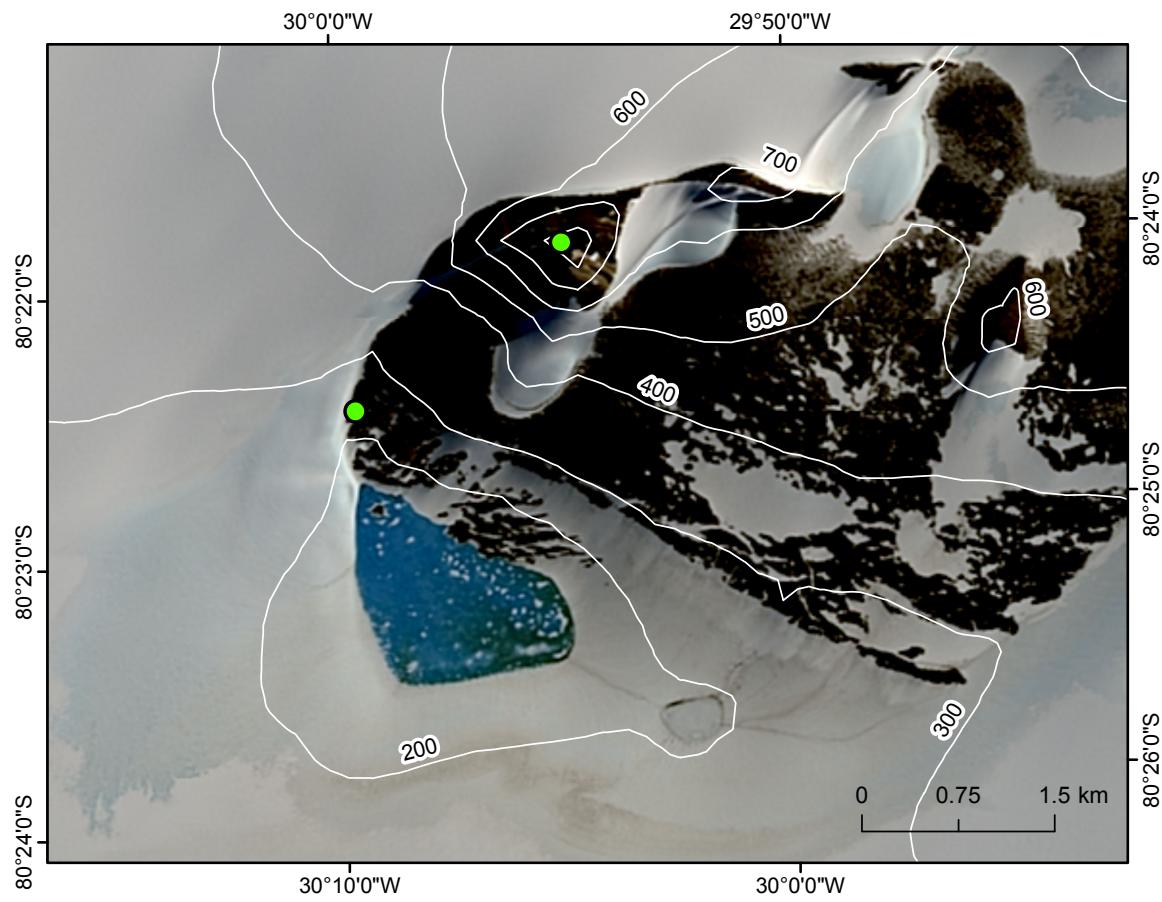


Fig. S2

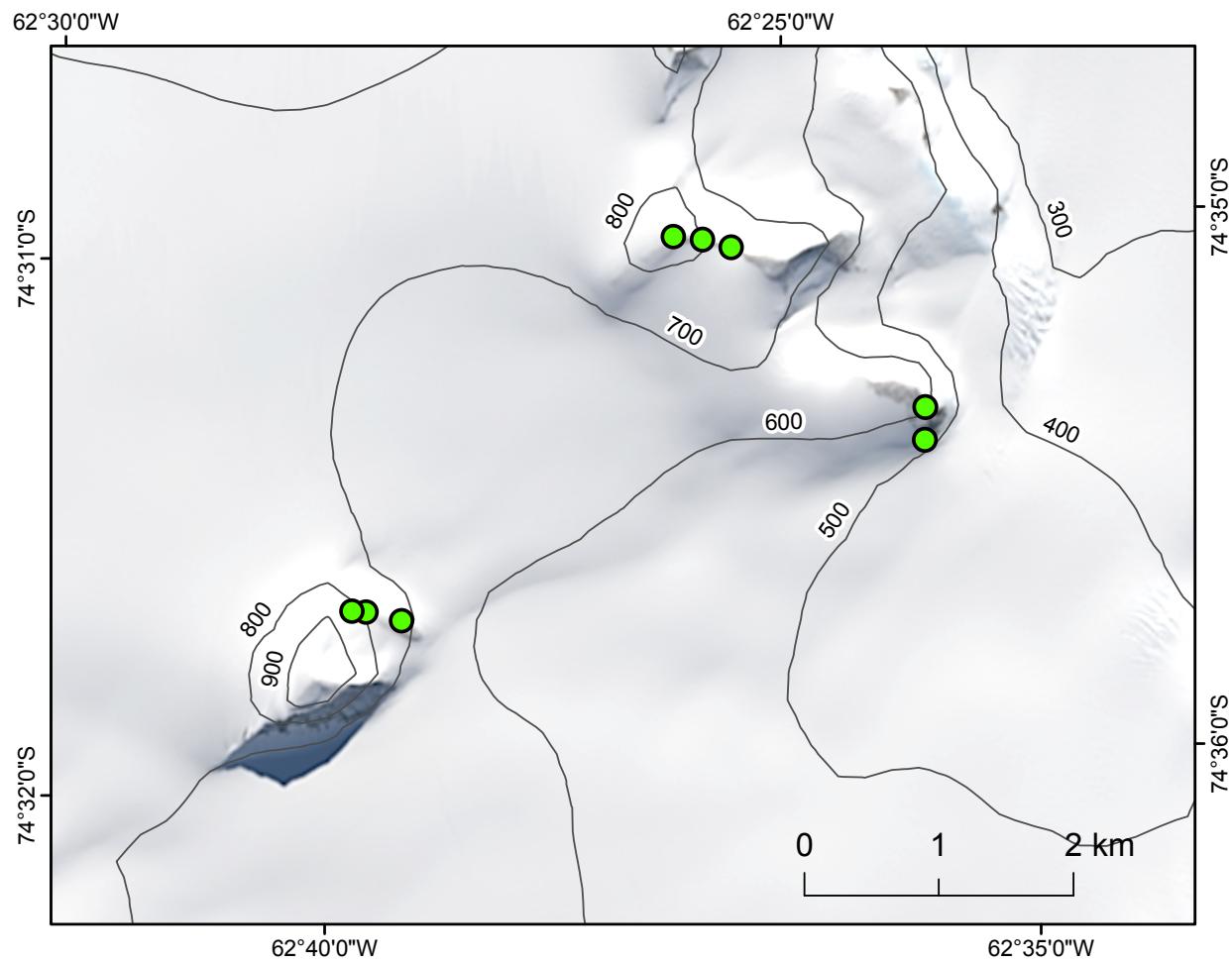


Fig. S3

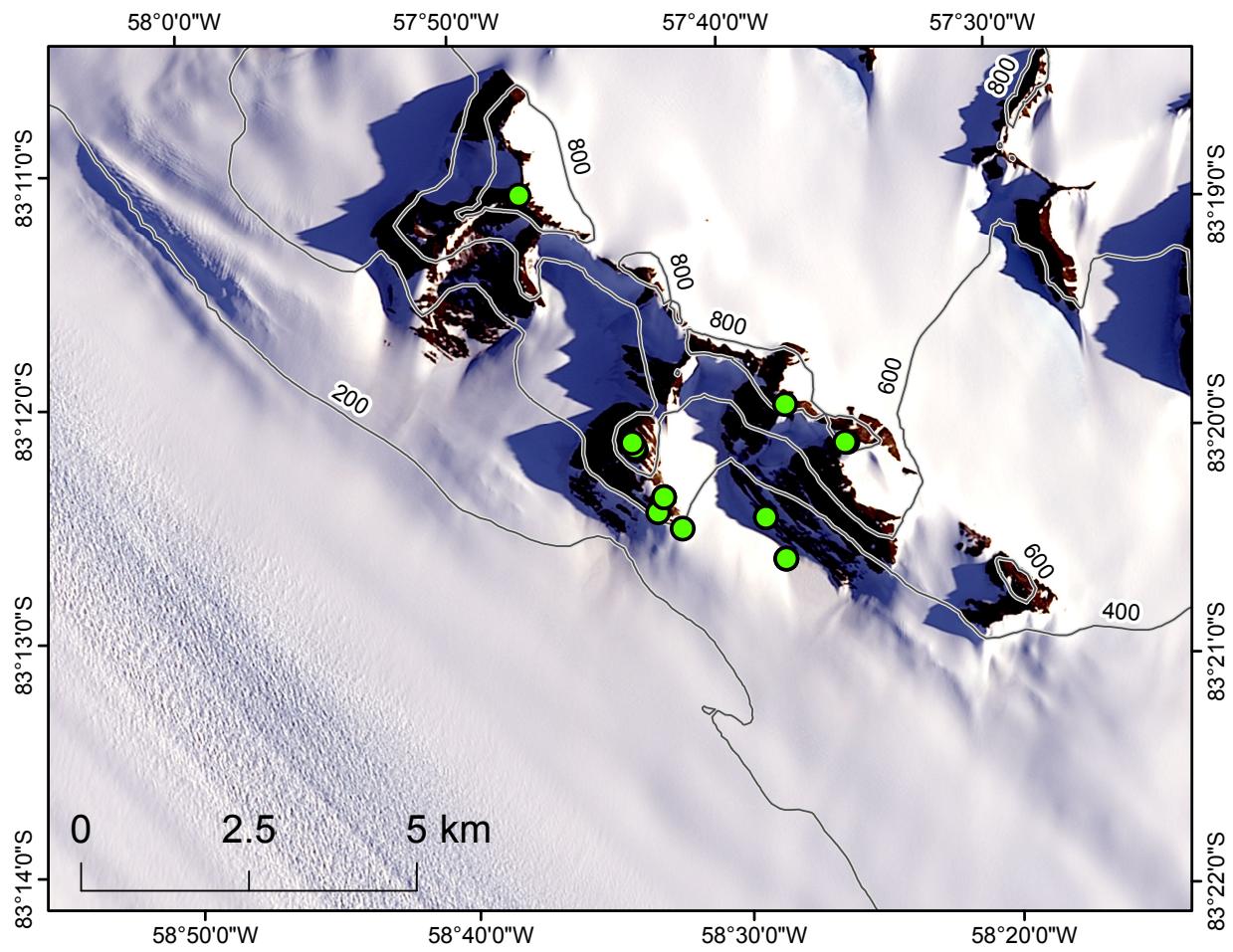


Fig. S4

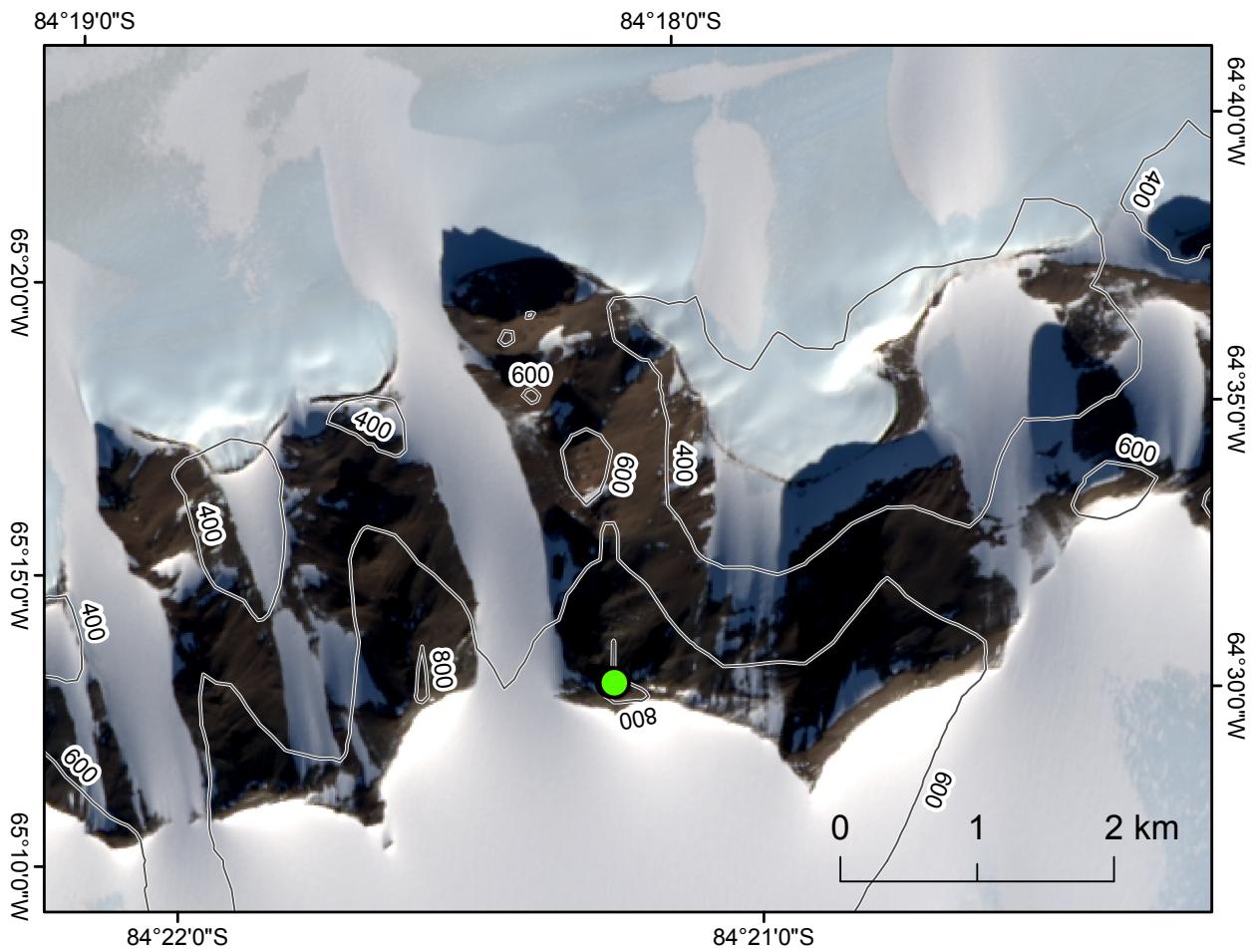


Fig. S5

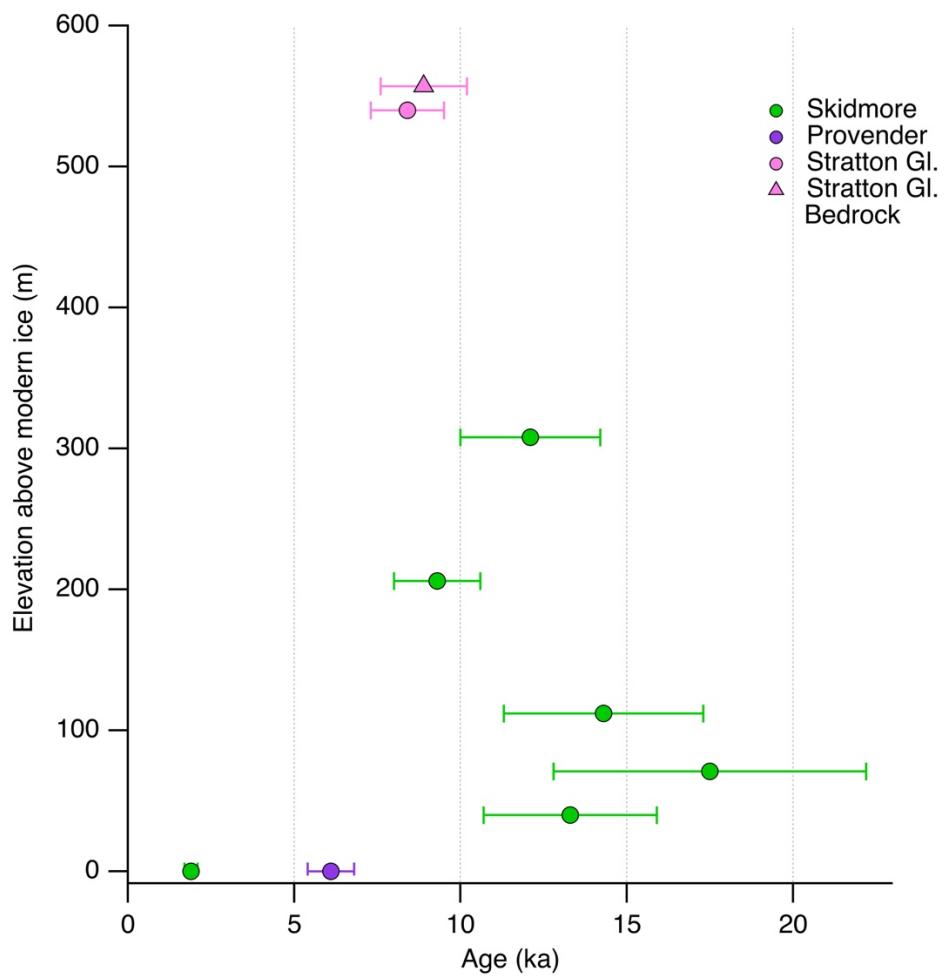


Fig. S6

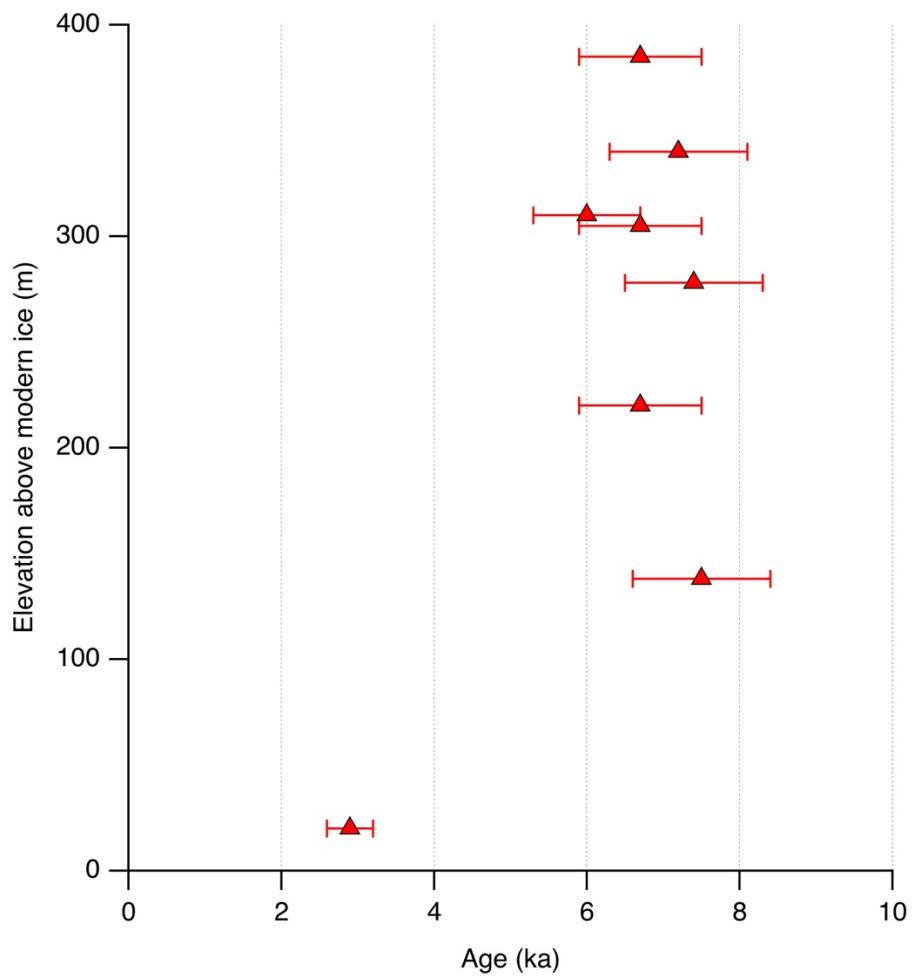


Fig. S7

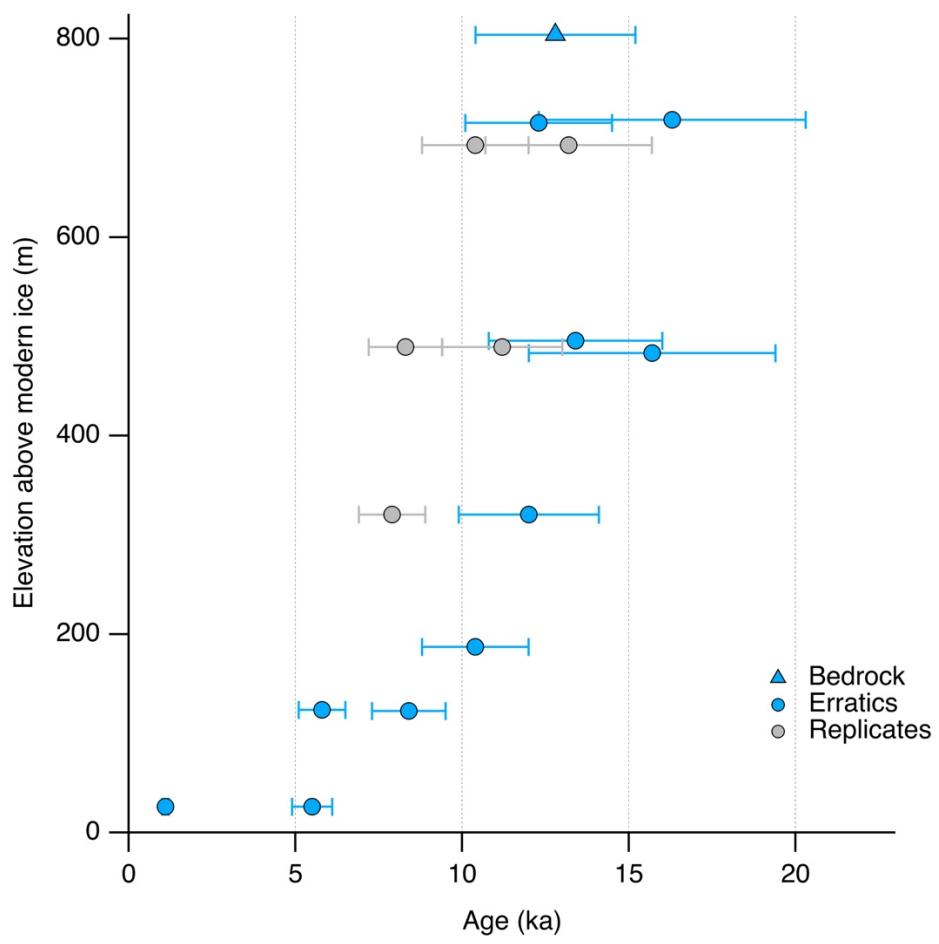


Fig. S8

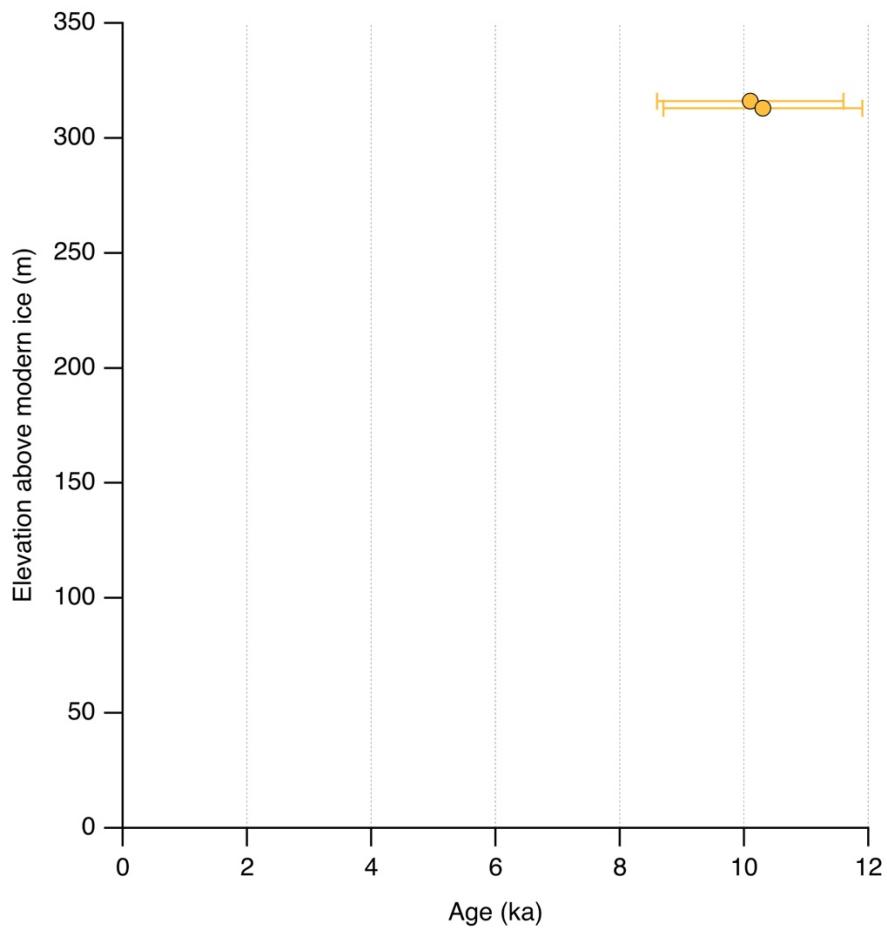


Fig. S9