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Timing and Extent of Late Quaternary Glaciation in the Ahuriri River Valley, Southern Alps, New Zealand

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Some valleys in South Island, New Zealand already have a number of well-dated glacier records. However, understanding of the precise timing of old glacial events in many valleys still remains poor. For this purpose, the cosmogenic ¹⁰Be surface exposure dating technique was used to constrain the timing and extent of late Quaternary glaciation in the Ahuriri River valley, Southern Alps, New Zealand. The 33 ¹⁰Be surface-exposure ages from two different moraine complexes range from 16.6±0.4 ka to 19.7±0.5 ka suggesting rapid glacier recession (~17 km) during the last deglaciation.

Field observation and geomorphological mapping were also used to investigate the extent and drivers of glaciation in this valley. For the final step, we created detail and comprehensive map of the glacial geomorphology in an area covered by palaeo Ahuriri Glacier, in the central Southern Alps. Geomorphological mapping from high-resolution aerial imagery, large scale topographical maps, average resolution DEM, and several field investigations allowed us to produce the 1:38,000 scale map for the entire study site covering an area of about 532 km².

This newly created map along with the new ¹⁰Be surface exposure dataset will help us in better understanding of past glacier-climate interactions in the Southern Alps and in the Southern Hemisphere in general.