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LATE CENOZOIC HISTORY OF THE RENNICK GLACIER, NORTHERN VICTORIA LAND, ANTARCTICA

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Detailed mapping and dating of fluctuations of the Rennick Glacier from the Northern Victoria Land sector of the Transantarctic Mountains provides new information pertaining to the late Cenozoic behaviour of this system. The Rennick Glacier flows into the Southern Ocean, rather than being buffered by an expanded Ross Ice Sheet during phases of ice sheet expansion. Consequently, the lower Rennick Glacier responds sensitively to glacioeustatic sea-level fluctuations through movement of the position of the grounding line, with the outcome being changes in glacier thickness that are represented by well-preserved lateral moraine remnants.

^{10}Be and ^{26}Al exposure age dating were used to constrain the timing of these events, with further age refinement via multi-collector ICP-MS U-series dating of subglacial calcite collected from adjacent ice-moulded bedrock surfaces. Over 100 samples were collected for ^{10}Be and ^{26}Al dating from critical sites, the processing and analysis of which is ongoing. The combination of ^{10}Be, ^{26}Al, and U-series dating with glacial geomorphological and morphostratigraphic mapping provides important new data pertaining to the late Cenozoic history of the Rennick Glacier system. In particular, it is apparent that rather than a simple sequence of two glacial events as suggested by earlier workers, we are able to demonstrate that during the late Quaternary, a complex suite of lateral moraines and ice-abraded bedrock surfaces were generated by multiple glacier level fluctuations throughout the upper as well as the lower part of the Rennick Glacier system. Furthermore, the MC-ICP-MS U-series dating of the subglacial calcite precipitates indicate growth during Oxygen Isotope Stages 2, 6, 7c, 8 and 10. Tthe implications of these ages for understanding the controls on late Quaternary behaviour oif the Rennick Glacier, suglacial hydrology and interpretation of the cosmogenic exposure ages will be discussed.