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Using Multiple Cosmogenic Nuclides to Investigate Ice Elevation Changes in the Ellsworth Mountains, Antarctica

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Well-dated geologic data points provide important indicators that can be used for the reconstruction of ice sheet dynamics and as constraints in ice sheet models predicting future change. Cosmogenic nuclides, which accumulate in rocks exposed at the earth's surface, can be used to directly date the exposure age of the rock surfaces that have been created through glacial erosion or deposition. The technique requires a detailed understanding of the local geomorphology as well as awareness of the post-depositional processes that may affect the interpretation of exposure ages. Surface exposure ages (^{10}Be, ^{26}Al, ^{21}Ne, and ^{36}Cl) from local limestone bedrock and other glacially deposited exotic lithologies provide a history spanning from 0 to more than 1 million years in the Patriot, Independence, and Marble Hills in the southern Ellsworth Mountains, Antarctica. Using the new surface exposure ages combined with geomorphological mapping, we will discuss the implications for the glacial history of the southern Ellsworth Mountains.