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Neogene climates near the South Pole: fossil evidence for interglacial warming during Sirius Group times, Transantarctic Mountains

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Since the initiation of glaciation in the early Oligocene the Antarctic ice sheets have been an important driver of our global oceanic and atmospheric systems. The ice sheets have been considered as inherently stable, keeping Antarctica in a state of deep freeze. However, the discovery of fossil plants and insects interbedded with glacial tillites of the Sirius Group at 85°S indicates that the climate must have warmed dramatically during the Neogene and caused the ice sheets to retreat. New fossil discoveries indicate that tundra vegetation of in situ dwarf beeches, cushion plants and moss, with beetles and molluscs, colonised periglacial landscapes only 300 miles from the South Pole. Palaeoclimatic analysis of the fossils suggests that the mean annual temperature was \sim -12°C, with short summers of temperatures up to +5°C and long freezing winters. This implies that the Antarctic ice sheets are not stable but may respond to future climate warming more dramatically than once thought.

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