

## Precambrian glaciations and the evolution of the atmosphere

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**Abstract.** Precambrian glaciations appear to be confined to two periods, one in the early Proterozoic between 2.5 and 2 Gyears BP (Before Present) and the other in the late Proterozoic between 1 and 0.57 Gyear BP. Possible reasons for these broad features of the Precambrian climate have been investigated using a simple model for the mean surface temperature of the Earth that partially compensates for the evolution of the Sun by variations in the atmospheric CO<sub>2</sub> content caused by outgassing, the formation of continents and the weathering of the Earth's land surface. It is shown that the model can explain the main changes in the Precambrian climate if the early Proterozoic glaciations were caused by a major episode of continental land building commencing about 3 Gyears BP while the late Proterozoic glaciations resulted from biologically enhanced weathering of the land surface due to the proliferation of life forms in the transition from the Proterozoic to the Phanerozoic that began about 1 Gyear BP.

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