

Scientists study 'Snowball Earth'

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Canadian scientists have determined the factors involved in ending a severe ice age 750 million years ago that nearly completely froze Earth's oceans.

Since the factors initiating a so-called "Snowball Earth" era have been the subject of much study, Jeffrey Lewis and colleagues at the University of Victoria focused on determining the factors that pulled Earth from its snowball state.

Noting that accepted values for both snow and ice albedo -- the ratio of incident to reflected solar radiation -- cover a wide range, the researchers sought to quantify the relative sensitivity of various surface albedos on the same climate model as it emerges from a snowball state.

They found the range of ice, snow, and land albedos and the resulting minimum carbon dioxide greenhouse forcing required for deglaciation of the Neoproterozoic snowball Earth. They also found greenhouse forcing can vary by nearly an order of magnitude within the accepted albedo ranges, suggesting the physics of deglaciation in terms of radiation budgets, snow and ice dynamics, and atmospheric processes needs to be better modeled.

The study is detailed in the journal *Geophysical Research Letters*.

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