

## **Volcanism as an Agent of Little Ice Age Cooling**

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A number of previous studies have suggested a role for volcanism in the Little Ice cooling. Here we revisit this problem with a new ice-cored based compilation of volcanism, two new climate reconstructions, and a new 2D energy balance climate model that allows the model field to be sampled over the same space and time represented by the paleo data. The new ice core chronology was scaled initially to the 1883 Krakatau eruption and validated against 20th century observations. This reconstruction indicates that three of the largest 12 eruptions in the last 600 years occurred over the last 40 years. Climate model results indicate that volcanism accounts for 40% of the variance of reconstructed 30-90N temperatures from 1400-1850 -- about four times more variance than solar forcing. Testing this conclusion against a 30S-90N reconstruction back to 1778 that includes coral data confirms the good agreement between model and data, especially for the volcano-dominated interval 1809-1836.