Geologic evidence for how volcanoes have driven climate change throughout Earth history

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Several major explosive volcanic eruptions each century, for periods of tens of thousands of years, are observed to cool the ocean incrementally into ice-age conditions. Voluminous, effusive, basaltic volcanism, on the other hand, is observed to warm the atmosphere out of ice-age temperatures within years and to warm the ocean, containing nearly all of Earth's surface heat capacity, out of ice-age temperatures when these effusive eruption rates remain high for a couple of thousand years. Cycles of sudden warming followed by slower cooling, as frequently as every 4000 years, are recorded in glacial ice, in many thin sedimentary layers, and in certain types of finely layered rocks. The relative importance, at any moment, of subduction-related explosive volcanism versus subaerial-ridge-related effusive volcanism is determined by plate tectonics.

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Book: *What really causes climate change? Greenhouse gases or ozone depletion?* (2016)
Paper: *Ozone depletion explains global warming*, Current Physical Chemistry, volume 6, 2016