Carbon cycle and runaway glaciation of the Earth

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The net rate of CO2 release to the atmosphere-ocean system via volcanism may have changed greatly during the history of the Earth. If the CO2 release may cease or weaken suddenly, a carbon geochemical cycle model coupled with ocean chemistry and the climate model predicts that the Earth should cool very rapidly on the order of 0.1 million years, and, at last, fall into the globally ice covered state. The time required for this is estimated to be on the order of million years throughout the Earth's history. In order to escape from the ice covered state, it is necessary for CO2 to build up on the order of 0.1 bar via volcanism.