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Continental weathering during the latest Carboniferous to earliest Permian

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Perturbation in carbon cycle processes brings paleoclimate evolution during Earth evolution history, which is linking with volcanic gassing, continental weathering and organic burial processes. As the longest and the most severe ice-house interval during the Phanerozoic, the evolution of Late Paleozoic Ice Age (LPIA) is associated with significant carbon cycle variation during a revolutionary stage in terms of both paleogeography and terrestrial ecosystem. The apex of the LPIA is characterized by a stable carbonate isotope positive excursion, a process remains unsettled. Here, lithium and barium isotopes are conducted for deep-water carbonate slope succession in South China, aiming to revealing the contributions from changes in continental weathering and marine primary productivity. A gradually decreasing continental weathering rate and relatively stable marine primary production during the latest Carboniferous to the earliest Permian suggest that terrestrial organic burial played the dominant role in driving the positive carbon isotope shifting and the apex of the late Paleozoic ice age.