

The continental weathering processes during the late Paleozoic: insight from the perspective of long-time scale continental weathering in South China

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Continental silicate weathering has been widely considered as a thermostat for our habitable planet. How change in weathering intensity drive and response to paleoclimate change has not been fully understood. South China was located isolatedly around the paleo-equator with a stable tectonic setting during the late Paleozoic, which a vibrant geological time interval, making it an ideal region for research. Here, we conducted major- and trace-element, and clay-mineral compositions of calcareous shale and argillaceous limestones from a continuously deposited succession in the Naqing section. The regional continent weathering intensity of South China displayed a distinct four-stage evolution processes over a time interval of 60 Myr. It overall reflects a combined effect related to changes in the paleotropical forests and atmospheric $p\text{CO}_2$, and could serve as an indicator of global chemical weathering rate, thereby an integrated regional and global average silicate weathering evolution model during late Paleozoic has been promoted.