Late Permian carbon cycle and response of microbial carbonate deposition

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The history of the geological evolution of the oceanic carbon reservoir, in essence, is the history of the lithosphere and biosphere interactions. Life evolution has reformed the composition of the atmosphere□and the changes in the atmosphere and hydrosphere control the process of life evolution. All of these have a impact on the ocean carbon reservoir.

The ocean carbon storage is mainly made up by the organic and carbonate carbon pools, Their change is the response of the atmospheric and oceanic carbon cycle□and will affect the marine environment, ecological environment and climate. When the high content of CO2 in the atmosphere is absorbed by the ocean, it will lead to acidification of the oceans. Ocean acidification and its changes in the chemical system of marine carbonate have a great impact on marine life. When the C02 concentration in the atmosphere increases, the temperature will rise□and will causes a large number of microorganisms to bloom.

The Late Changhsingian microbial mounds that sequentially developed atop the skeletal reefs. Among the mounds, the most typical is the Jianshan microbial mound, which underwent three development cycles. Conodont analysis indicates that the microbial mound is located under the Permian–Triassic Mass Extinction Boundary, and that its top is located about 7.5 m below the Hindeodus parvuszone. δ13C and trace element analysis show that the C02 concentration in the atmosphere increases and unstable ecological conditions occurred from the beginning of the Late Changhsingian, suggesting that such environmental deterioration is one of the main factors that led to end-Permian extinction events. The development of the Late Changhsingian microbial mounds reflects the carbon cycle and response of carbonate deposition.