



Carbon isotopic excursion couples with sedimentary facies change from Wuchiapingian to Changhsingian of Late Permian in South China: caution for the application of geochemical parameters as global change

Fen Yang, Yongbiao Wang, Zhixing Yi, Tan Wang, and Yafei Huang
China University of Geosciences(Wuhan), School of Earth Science, China

The variation of carbon isotope signals in the geological record has widely been used as an indicator for global environment change. Previous studies found prominent negative excursions of carbon isotope near the Wuchiapingian-Changhsingian boundary (WCB) in some sections in South China, and suggested that the major global carbon cycle perturbations during the Paleozoic-Mesozoic transition may have occurred during Late Permian time, long before the end-Permian mass extinction. Here we present detailed carbon isotopic results throughout the Late Permian in South China. The results show that the variation of carbon isotope values is apparently related to sedimentary facies change. In shallow platform sections, both sedimentary facies and carbon isotopic values remain stable throughout the Late Permian. In contrast, there was a sudden sedimentary facies transformation near the WCB in the sections located in basin environments. Carbon isotopic values drop significantly from 3.61‰ to -1.11‰ along with this dramatic facies transition from shallow water to deep water facies, displaying coupling relationship between change of carbon isotope and sedimentary facies. Completely different isotopic excursion patterns in different water depth sections during the same stage of Late Permian suggest that the carbon isotopic excursions around the WCB recorded in these sections should have resulted from local environmental change and have no relations to the global carbon cycle perturbation happened across the Permian-Triassic boundary.