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# BIOLOGICAL, SEDIMENTARY AND GEOCHEMICAL EVENTS ACROSS FRASNIAN-FAMENNIAN BOUNDARY IN A SECTION OF DEEP-WATER FACIES IN GUANGXI, SOUTH CHINA

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Detailed event-stratigraphical research revealed a sequence of dynamic, anoxic, shallowing and geochemical events represented by limestone breccias (bed Ca), bioclastic limestone (bed Cb), black shale and limestone (bed D) and mudstone (bed E) in a deep-water succession of the latest Frasnian (Up. *gigas* to L. *triangularis* Zones) at Luoxiu of Guangxi, South China. Two moderate iridium anomalies of  $226 \times 10^{-12}$  and  $316 \times 10^{-12}$  accompanying the enrichment of Al, V, Cr, Fe, Co, As and U occur in the upper part of the 20cm thick bed E between the Frasnian-Famennian boundary and the 2cm thick black shale below bed D of the *linguiformis* Zone. A strong carbon isotope ratio shift is linked closely with bed E. The  $\delta^{13}\text{C}$  value is positive below and above bed E and negative in bed E, ranging from +1‰ to -0.35‰ in average. Bed E is a barren zone without any fossils. Almost all previous species of palmatolepid conodonts became extinct below bed E, while the abundant coral *Sinodisphyllum* and atrypid brachiopods disappeared below the *linguiformis* Zone. No shocked mineral grains and spherules have been observed. These data support the hypothesis that the F-F extinction could be cumulative as a whole, and not simply a single event. The concentrations of iridium and most other trace elements in the section are apparently related to the alumina-rich rocks. However, there is still a small excess of Ir to support an extra-terrestrial origin for the F-F mass extinction. If so, the occurrence of excess Ir in the two levels supports strongly Sandberg *et al.* (1988) who presumed that bolied impacts could have happened two times, below and above the *linguiformis* Zone respectively.