

SEQUENCE STRATIGRAPHIC MODEL FOR AN INTRAPLATE EXTENSIONAL BASIN, HUNAN, CHINA

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On the basis of the detailed study of sedimentary characteristics and tectonic patterns of Devonian strata, the author proposes that the Devonian sedimentary basins in Hunan may be assigned to intraplate extensional basins which were developed from foreland basins created by the collision between Yangtze plate and Huaxia plate during the Caledonian tectonic cycles, and have experienced four stages of evolution.

According to fluvial rejuvenation, palaeoexposure, palaeo-solution and condensed section consist of the biostrome and bearing-Tentaculites thin-layered siliceous rocks, from bottom to top, the strata of Devonian in Hunan and part of Guangxi region could be divided into four depositional sequences. The general sequence stratigraphic model named “climbing step in step under the sedimentary patterns of platform-within-basin and basin-within-platform” for the strata of Devonian in Hunan has been constructed based on sequence features, which may represent the sequence stratigraphic model for an intraplate extensional basin. The contents of the condensed section in intraplate extensional basin are very different from that of in a passive margin basin, the former consists of the biostrome buried in-situ of shelf facies and bearing abundant fossils such as Tentaculites in interplatform deep water basins, while the later consists of the sediments of the subabyssal and abyssal facies.

The multiple effects of sea-level rising slowly, extensional action and carbonate growth have controlled the formation of depositional sequences of Devonian in Hunan and adjacent areas.