Post Mortem in Guizhou: Rates and Reasons of Post-drowning Deposition

The Yangtze platform in southwestern Guizhou, China, drowned abruptly in the Triassic after a long history of shallow-water carbonate deposition. A high-resolution, biostratigraphically constrained, magnetostratigraphy has been developed at Yongningzhen, Guizhou, that can be correlated to the Newark Basin magnetostratigraphic time-scale providing a chronostratigraphic framework for the Yangtze platform’s demise.

Latest Ladinian rocks consist of shoaling-upward carbonate cycles with peritidal caps, overprinted by subaerial diagenesis. In the early Carnian (Cordevolian) a rapid transition to grey nodular lime mudstone containing pelagic biota signals the drowning of the platform. Deposition of nodular limestone continued at an average rate of 17 m/my during the Julian and Tuvalian; slightly bored and encrusted intraclasts suggest incipient cementation and reduced final depositional rates. The latest Tuvalian/earliest Norian deposits are condensed black shale with interbeds of dark-grey, manganiferous lime mudstone near the base.

Graphical correlation of our magnetostratigraphy with the Newark basin indicates two declines in pelagic sedimentation rate during the Carnian: early Julian, from 45 to 14 m/my, and late Julian-Tuvalian, from 23 to 6-7.5 m/my. These may correspond to the deepening events of sea-level cycles UAA-3.1 and UAA-3.2. Small fluctuations in global sea level possibly influenced depositional rates in the pelagic realm. Prior to the advent of rock-forming pelagic biota, periplatform sedimentation apparently dominated deep-water carbonate sedimentation.