

Did volcanic activity of the Emeishan large igneous province expand in Wuchiapingian times?

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Emplacement of the Emeishan Large Igneous Province (ELIP) in the Capitanian (Middle Permian) is associated with several environmental changes (e.g. facies change, carbon cycle perturbation and temperature rise) across the Guadalupian-Lopingian (G-L) interval in South China. However, most of the reported changes are within the Capitanian stage or close to the G-L boundary. Here, we report an episode of drastic environmental changes from the Pingtang syncline (S. Guizhou) that is similar with the previously known ones but which is significantly younger.

The studied section represents a protracted and stepwise facies change from a benthos rich, thick-bedded and light grey shallow water limestone (Unit A) to a 30 m-thick unit with thin-bedded dark (OM-rich) radiolarian-spiculitic facies (Unit B). The latter is overlain by an 8 m-thick unit of volcanoclastic sandstone and silts defining a succession of decimetric, cyclic and thinning upward layers (Unit C). The base of the overlying medium-bedded limestone unit (Unit D) contain radiolarian and sponge spicules whose abundance progressively decrease up section with a progressive replacement by abundant benthic faunas concomitant with the transition to thick bedded limestone. A total of five conodont index species (assigned to *Clarkina*) of early Wuchiapingian age were recognized from Unit A and Unit B. The observed facies transition from Unit A to Unit B indicates a drastic drowning event. Unit C represents a distal turbiditic succession and the overlying Unit D shows an upward shallowing trend back to the initial shallow marine condition.

Compilation of sedimentary records across G-L in South China reveals that such drowning events tend to cluster within three discrete time intervals. The drowning events may or may not end with deposition of either volcanics or volcanoclastics. Two first clusters display drowning events overlain by ELIP volcanic rocks or volcanoclastics of ELIP origin and are of Capitanian age. Only the first drowning event has been related to subsidence phase prior to the ELIP volcanism (e.g. Sun et al., 2010). The strikingly similar architecture of the Pingtang event with that of earlier Capitanian examples suggests a similar driving mechanism for these three phases of drowning/eruptive events. These results open up the possibility that ELIP volcanism extended into early Wuchiapingian times and further tests are currently under way.

-Sun, Y., Lai, X., Wignall, P.B., Widdowson, M., Ali, J.R., Jiang, H., Wang, W., Yan, C., Bond, D.P.G., Védérine, S., 2010. Dating the onset and nature of the Middle Permian Emeishan large igneous province eruptions in SW China using conodont biostratigraphy and its bearing on mantle plume uplift models. *Lithos* 119, 20–33.