

Reappraisal of the Changning-Menglian Belt as a Suture Zone for the Tethys in Western Yunnan, China: Late Paleozoic faunal and sedimentary evidence

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The Changning-Menglian Belt in western Yunnan, China has long been considered a major Tethyan suture in SE Asia, based mainly on fragmented Paleozoic ophiolites, slices of Devonian-Triassic radiolarian cherts and possible seamount

limestones of Permo-Carboniferous age (Fig. 1). However, some students also argued for a setting of passive continental margin for this belt and a cryptic suture further east representing the vanished Tethyan Ocean (Ridd, 2015).

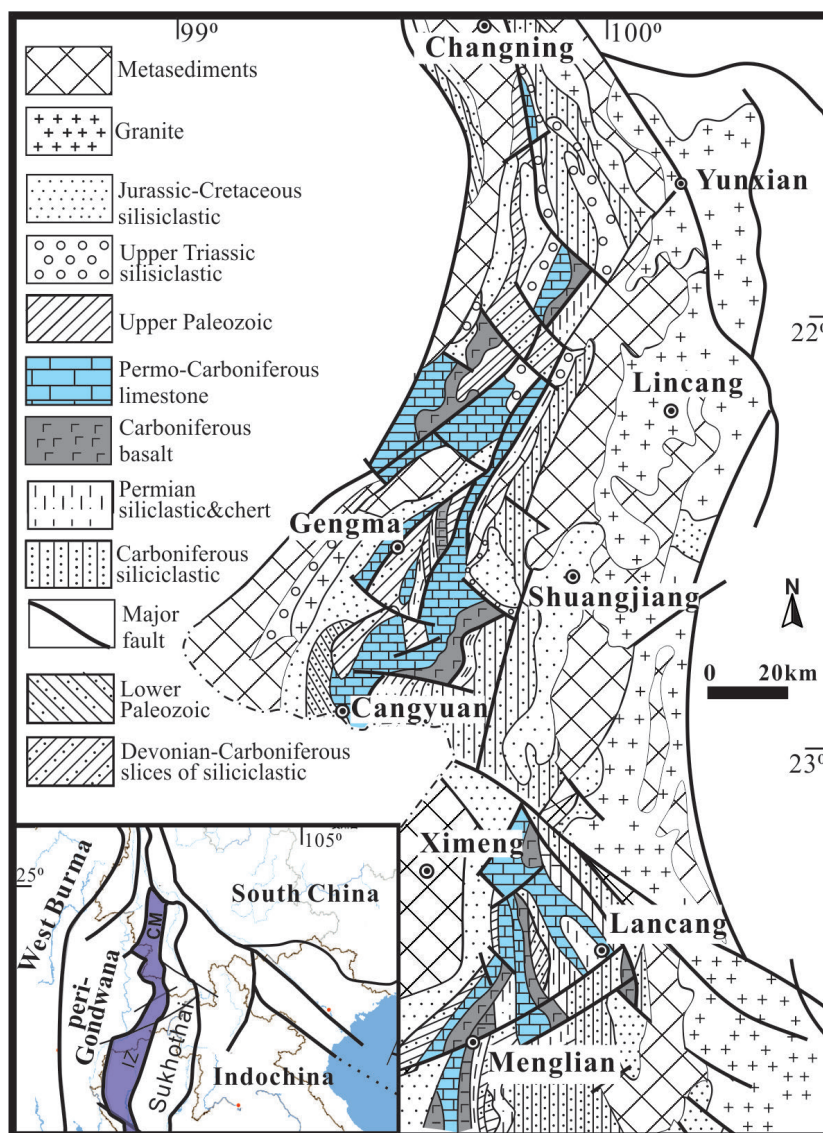


Fig. 1. Simplified geological map of the Changning-Menglian Belt in western Yunnan, China (modified after Zheng *et al.*, 2019)

To evaluate this hypothesis, we have been studying late Paleozoic strata and fusulinids in this belt for years. We recently collected late Carboniferous to Middle Permian fusulinids from various sections in this belt, including ascendingly *Triticites* assemblage, *Sphaeroschwagerina sphaerica* assemblage, *Eoparafusulina* assemblage, *Chalartoschwagerina solita* assemblage and *Neoschwagerina* assemblage. Further comparison reveals that the fusulinid taxonomy in this belt still differs from that in S China. For instance, the Early Permian fusulinids in this belt generally lack *Pseudoschwagerina*, a typical Cathaysian element. Moreover, quantitative analysis (Rarefaction) confirms that the generic diversity in this belt remains lower than in S China. These results supports that a substantial portion of the Permo-Carboniferous limestones in this belt originated from seamounts located far from the northern Gondwana margin, meanwhile slightly south of the equatorial region, also considering the couplet of carbonates and underlying basalts (OIB type).

Furthermore, petrographic and geochemical analyses of the Carboniferous siliciclastic Nanduan Formation demonstrate a mature continental provenance and two peaks of detrital zircon ages (ca. 950 Ma and ca. 550 Ma) (Zheng *et al.*, 2019). Notably, these two peaks are also shared by metasedimentary rocks (e.g., the Ximeng and Lancang Groups) widespread in this belt as well as peri-Gondwana blocks. These data suggest that the Paleozoic siliciclastics covering this belt's eastern and western parts were derived from the Gondwana margin. Therefore, significant siliciclastic inputs from the Gondwana margin over much of this belt contradict the

implied vast Paleozoic ocean in this belt. In contrast, the siliciclastic Nanpihe Group (Devonian-early Carboniferous) in the central part demonstrates a detritus source from continental arcs and clusters of detrital zircon ages of ca. 435 Ma and ca. 950 Ma, which correlates well to Silurian magmatism in the Simao and S China blocks.

In conclusion, we propose that the Changning-Menglian Belt was part of the passive continental margin on the eastern flank of the Baoshan-Shan Block during the late Paleozoic, while and tectonostratigraphic slices of seamount limestones, Nanpihe Formation or even ophiolites are allochthonous and were displaced to their present position during the Late Triassic closure of the Tethys.

Financial support from the National Science Foundation of China (41872036, 92255301) are gratefully acknowledged.

References

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