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The Oldest Paleo-Tethyan Ophiolitic Mélange in the Xizang (Tibetan) Plateau

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An Early Paleozoic ophiolitic mélange has recently been documented in the W. Gangma Co area, north-central Tibetan Plateau. It is composed of serpentinite, isotropic and cumulate gabbros, basalt and plagiogranite. Whole-rock geochemical data suggest that these rocks were formed in an oceanic ridge setting and the depletion in Nb and Ti indicates their SSZ (suprasubduction zone) nature. Furthermore, whole-rock $\epsilon_{Nd}(t)$ (+3.5 to +10.6) and zircon $\epsilon_{Hf}(t)$ values (+11.4 to +14.5) suggest that these rocks were derived from a long-term depleted mantle source. These geochemical features, combined with the rock types and their field relationships, suggest the rocks represent an ophiolite suite. Zircon U-Pb dating of isotropic gabbros and plagiogranites yield weighted mean ages ranging from

437 to 501 Ma, which makes the W. Gangma Co ophiolitic mélange the oldest Paleo-Tethys ophiolitic mélange in the Tibetan Plateau. The main Paleo-Tethys Ocean basin probably opened in the Middle Cambrian; it continued to grow throughout the Paleozoic and closed in the Later Triassic. The Paleo-Tethys Ocean was formed by the breakup of the northern margin of Gondwana, with southward subduction of the Proto-Tethys oceanic lithosphere along the northern margin of the supercontinent.

Detailed data have been published in Geological Society of America Bulletin (Zhai et al., 2016, v. 128, no. 3-4, p. 355-373).

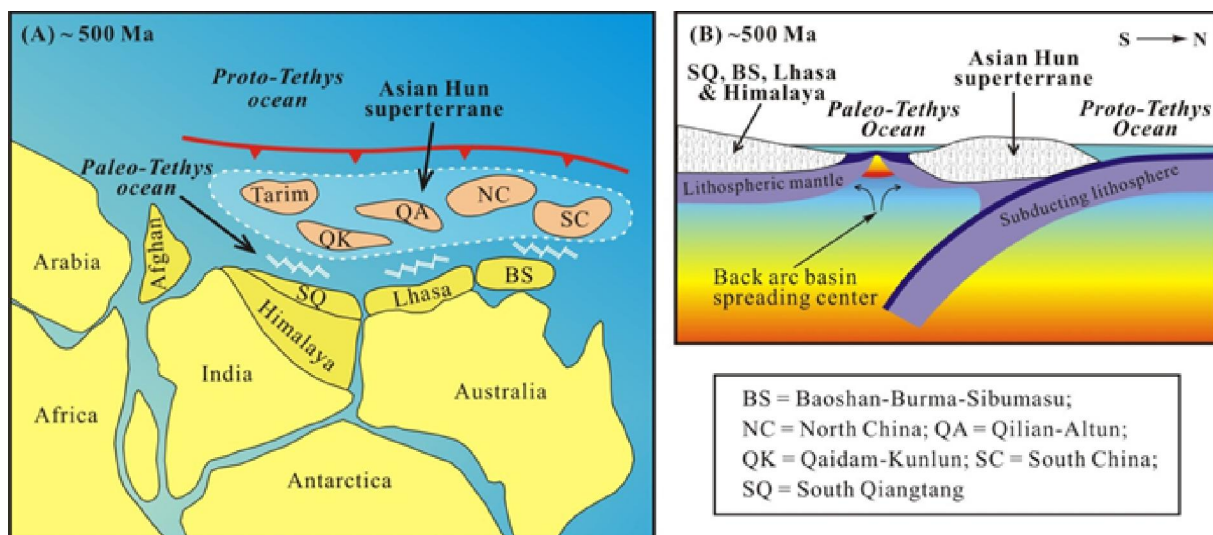


Fig.1 Tectonic reconstruction of the northern margin of Gondwana in the Middle Cambrian.

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