



Paleozoic structure of Middle Tien Shan (Kyrgyzstan Central Asian Orogenic Belt): Insights on the polarity and timing of tectonic motions, subductions, and lateral correlations

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The structure and Palaeozoic tectonic evolution in Kyrgyz and Chinese Tien Shan Central Asian Orogenic Belt (CAOB) are still a matter of debate. There are numerous and conflicting models about the polarity of tectonic motions in the Paleozoic, the number of continental blocks and oceanic basins involved and the timing of tectonic events.

In this study we propose new maps and structural cross-sections of Middle and South Kyrgyz Tien Shan (TS). These cross-sections allow us to highlight an overall South-verging structure in the Middle TS, with a thick-skin style involving the crystalline basement. This deformation occurred during the Early Carboniferous, and is sealed by an Upper Carboniferous unconformity. We ascribe this structure to an Upper Plate deformation linked to north-dipping subduction below Middle TS. In contrast, the South TS exhibits a north-verging structure, linked to south-dipping subduction, which is evidenced by an accretionary prism, a volcanic arc, and high-pressure rocks (Loury et al., 2015), and is correlated to similar structures in the Chinese TS (e.g., Charvet et al., 2011).

Based on these observations, we propose a new interpretation of the tectonic evolution of the Middle and South TS CAOB. The resulting model comprises a long-lived north-dipping subduction of the Turkestan Ocean below the Middle TS-Karazakh Platform and a short-lived south-dipping subduction of a marginal back-arc basin below the Tarim. Consequently, the South TS is interpreted as a rifted block from the Tarim.

Finally, the docking of the large Tarim Craton to the CAOB corresponds to a rapid collision phase (320-300 Ma). This put an end to the long-lived Paleozoic subduction history in the CAOB.

Charvet, J., Shu, L., et al., 2011. Palaeozoic tectonic evolution of the Tianshan belt, NW China. *Science China Earth Sciences*, 54, 166–184.

Loury, C., Rolland, Y., Guillot S., Mikolaichuk, A.V., Lanari, P., Bruguier, O., D.Bosch, 2015. Crustal-scale structure of South Tien Shan: implications for subduction polarity and Cenozoic reactivation. *Geological Society London Special Publications*, in press.