

CHENG Feng and GUO Zhaojie, 2013. Northward Migration of the Western Segment of Eastern Kunlun Strike-slip Fault Implications for Late Cenozoic Evolution of the Qimen Tagh Range and Southwestern Qaidam Basin, North Tibet, China. *Acta Geologica Sinica* (English Edition), 87(supp.): 205.

Northward Migration of the Western Segment of Eastern Kunlun Strike-slip Fault Implications for Late Cenozoic Evolution of the Qimen Tagh Range and Southwestern Qaidam Basin, North Tibet, China

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Forming the western branches of the East Kunlun Mountains, the bow-like Qimen Tagh Mountains separate the southwestern Qaidam basin to the north from the Kumukol basin and the Hoh Xil basin to the south. The precise tectonic pattern and the late Cenozoic tectonic evolution in both the Qimen Tagh range and the southwestern Qaidam basin are still highly discussed. Field work investigation, seismic reflection profiles in southwestern Qaidam Basin, remote sensing images and focal mechanisms and earthquake epicenter distribution are used to precise the Cenozoic evolution of the SW Qaidam Basin. Our work implies that (1) the tectonic pattern of the East Kunlun Range, Qimen Tagh Range and SW Qaidam Basin changed from a mainly left lateral

strike-slip component to an actual nearly pure compressional setting; (2) The left lateral strike-slip tectonism prevailed during the Early Miocene in the southwestern Qaidam basin and during the early Pleistocene in the Qimen Tagh range with the switch in tectonic pattern towards a compressional setting gradually. (3) As the onset age of Tertiary strike-slip deformation within the Eastern Kunlun Range, the Qimen Tagh Range and the southwestern Qaidam basin increases gradually northwards, we suggest that the western segment of the Kunlun fault migrated northeastward and that the faults motion changed gradually from left lateral strike-slip to compressional during the migration.

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