

YAN Zhen, FU Changlei, Jonathan AITCHISON, Solomon BUCHMON and NIU Manlan, 2018. Lajishan accretionary complex: Implications for Paleozoic accretionary and collisional events in the South Qilian belt. *Acta Geologica Sinica* (English Edition), 92(supp.2):41.

## Lajishan Accretionary Complex: Implications for Paleozoic Accretionary and Collisional Events in the South Qilian Belt

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### Abstract

The Qilian orogen along the NE edge of the Tibet-Qinghai Plateau records the evolution of Proto-Tethyan Ocean that closed through subduction along the southern margin of the North China block during the Early Paleozoic. The South Qilian belt is the southern unit of this orogen and dominated by Cambrian-Ordovician volcano-sedimentary rocks and Neoproterozoic Hualong complex that contains similar rock assemblages of the Central Qilian block. Our recent geological mapping and petrologic results demonstrate that volcano-sedimentary rocks show typical rock assemblages of a Cambrian-early Ordovician arc-trench system in Lajishan Mts. along the northern margin of the Hualong Complex. Island arc rocks including basalt, andesite, dacite, rhyolite, and breccia is in fault contact with ophiolite complex consisting of mantle peridotite, serpentinite, gabbro, dolerite, plagiogranite, and basalt. Accretionary complexes are tectonically separated from the ophiolite-arc rocks, with various rock assemblages spatially. They consist of pillow basalt, basalt breccia, tuff, chert, and limestone blocks with a seamount origin

within the scaly shale in Dingmaoshan and Donggoumeikuang areas, and basalt, chert, and sandstone blocks within muddy shale matrix and mélangé at Lajishankou area. Abundant radiolarians occur in red chert, and trilobite, brachiopod, and coral fossils occur within Dingmaoshan limestone blocks. Although partial basalt or chert blocks are highly disrupted, duplex, thrust fault, rootless intrafolial fold, tight fold, and penetrative foliation are well-developed at Donggoumeikuang area. Spatially, accretionary complexes lie structurally beneath ophiolite complex and above the turbidites of the Central Qilian block. Ophiolite and accretionary complexes are also overlapped by late Ordovician molasse deposits sourced from Cambrian arc-trench system and the Central Qilian block. These observations demonstrate that a Cambrian-early Ordovician trench-arc system within the South Qilian belt formed during the early Paleozoic southward subduction of the South Qilian Ocean collided with the Central Qilian block prior to the late Ordovician.