天山造山带古生代增生、碰撞构造作用

ABSTRACT

The Tianshan is a major orogen located in the southernmost part of the Central Asian Orogenic Belt. It underwent a complicated tectonic evolution characterized by lateral polyphase accretion/collision of continental blocks with arc complexes, and vertical accretion represented by mantle-involved juvenile crust growth. Ordovician to Silurian bidirectional subduction of the oceanic lithosphere of " Terskey Ocean" (locally named " South Tianshan Ocean") produced continental arcs both in the Yili-Kazakhstan block to the north and Tarim block to the south. Back-arc extension in the northern margin of Tarim induced the opening of the southern Tianshan back-arc basin that rifted the Central Tianshan arc from the Tarim. During Mid-Late Devonian, closure of the southern Tianshan back-arc basin led to the accretion of the Central Tianshan arc to the Tarim block associating with ductile deformation and greeschist-facies metamorphism due to the obduction of the southern Tianshan ophiolites. In Late Devonian to Early Carboniferous, closure of the Southern Tianshan Ocean was followed by a collision between the Yili-Kazakhstan and the Central Tianshan-Tarim blocks, resulting into eclogite- and blueschist-facies high pressure metamorphism and ductile deformation. Post-collisional extension occurred during Late Carboniferous to conduce the exhumation of HP metamorphic complex and extensive retrogressive metamorphism. From Late Devonian to Early Permian, arc magmatism occurred in the Yili block due to the south-directed subduction of the Junggar-North Tianshan oceanic basin to the north. Final closure of this basin accreted the Junggar island arc system to the Yili-Central Tianshan-Tarim assemblage. Permian intraplate transcurrent event terminated the Paleozoic accretion and collisional tectonics.