

Chronology and structural properties of magmatic rocks in eastern Xinjiang

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Paleozoic magmatic rocks are widely developed in eastern Xinjiang, and record the Paleozoic tectonic environment and crust-mantle interaction mechanism of the region.

The research on the chronology and structural properties of magmatic rocks in this region not only provides a basis for establishing the tectonic chronological framework in eastern Xinjiang, but also has a great importance in restoring the tectonic evolution process of eastern Xinjiang. In recent years, researchers have performed much work on the volcanic chronology and tectonic environment of eastern Xinjiang. On the basis of summarizing previous achievements, according to the differences among the chronology and structural properties, the basite and acidic rocks in eastern Xinjiang are classified and summarized. The following are considered: 1) From the Devonian to Early Carboniferous, subduction events occurred commonly in eastern Xinjiang to form the Yemaquan island arc belt, Harlik island arc belt and Dananhu island arc belt; (2) From the Late Carboniferous to Permian, a large number of alkaline granites and gabbro veins occurred in the study area, which suggests that eastern Xinjiang fully entered the stage of collision. The Kalatage rock mass in the eastern part at the southern margin of Tuha, Dananhu island arc belt and Kangur island arc volcanic rocks show the characteristics from old to new, which may be due to the accretion of the island arc caused by the northward subduction and southward migration of the Kangur Ocean. In the meantime, the western Kangur Ocean was closed earlier than the eastern section, and the Huangshan-Jingerquan subduction events persisted for a long period of time. Up until the Permian, subduction events still existed. In general, north-eastern Xinjiang entered the post-collision stage prior to the southern section.