

## PRECAMBRIAN METAMORPHIC EVOLUTION AND GEODYNAMICS IN NORTH CHINA PLATFORM

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Three styles of early Precambrian metamorphic evolution and their PTt-D paths have been distinguished in four independent metamorphic terrains. The first style was found in Jining-Huaian Archaean high-grade terrain of Inner Mongolia. This district is characterized by widespread Al-rich para-gneiss (Khondalite suite) and some hypersthene plagioclase gneisses of granulite facies. The metamorphic PTt-D path of this terrain is clockwise with  $T=800\pm 850^{\circ}\text{C}$ ,  $P=9\sim 10\text{Kb}$  in peak stage and a typical isothermal decompression process in post-peak stage. It reflects double thickening of crust by geodynamic process such as A-subduction and tectonic stacking in a collisional belt, followed by tectonic thinning and uplifting in the later stage.

The second style has been established in eastern Hebei-western Liaoning Archaean high-grade terrain which is mainly composed of late Archaean grey gneiss and other granitic rocks. The metamorphic PTt-D path is counter clockwise with  $T=800\pm 850^{\circ}\text{C}$ ,  $P=7\sim 8\text{Kb}$  in peak stage and a nearly isobaric Cooling process in post-peak stage. It indicates the tectonic environment of vertical crustal thickening by magmatic accretion.

The third style was constructed in eastern Liaoning-southern Jilin early Proterozoic metamorphic belt. Three deformational episodes and five stages of metamorphism were developed in the district. Its PTt-D Path is also counter clockwise, but it is distinguished from the second style by rapid raising pressure in its early stage and succeeded by a nearly isobaric heating process and lower pressure in peak stage. The PTt-D path may be related to the closing process of a rifted depression within a rather stable continental massif.