

THE TECTONIC FRAMEWORK OF NORTH CHINA BLOCK (NCB) AND ITS TECTONIC EVOLUTION IN THE EARLY PRECAMBRIAN

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The tectonic division of NCB's basement and its evolution in the early Precambrian is an important issue, as many efforts are concentrated in its petrology, metamorphic geology, and isotopic chronology. Recently, many new evidences are revealed, which brings new light to its tectonic evolution in the early Precambrian. Major advances could be summarized as followed points: 1) a large area of khondalites (with protoliths of mature sediments, 2.6Ga) are identified in the western part of NCB. 2) The huge granulite-facies province (GFP) along its northern part is proven to be a composite crustal domain, the structures of GFP could be traced to interior of the block, indicated that GFP represents the deeper level of craton rather than ancient crustal cores. 3) Many high-precision age data older than 2.5Ga are widely documented across the whole block, suggesting that NCB is an Archean cratonic block. Finally, 4) the eastern part of NCB is associated with an active continental margin in the Neoarchean. Based upon preliminary tectonic analysis and isotopic age database, we subdivide NCB's basement into followed unites from west to east: 1) Ordos Neoarchean khondalites associated with a passive continental margin; 2) Hengshan-Chengde Neoarchean high-pressure granulite-bearing tectonic belt (2.5Ga); 3) Taihang Neoarchean accretionary prism (2.6Ga); 4) Taishan island arc TTG complex-greenstone belt (2.7-2.6Ga); 5) Liaoning Mesoarchean relic blocks (2.8Ga). Furthermore, Wutai rifting-genetic supracrustal belt (2.5Ga) is superimposed upon the central portion of NCB, and a huge granulite-facies province occurs along its northern margin associated with south-directed subduction accretion and reworking in the Palaeoproterozoic (2.5-2.4Ga). With plate tectonic model, the tectonic evolution of NCB in Neoarchean-to early Palaeoproterozoic could be well interpreted, i.e. Ordos passive margin underthrusts to the east in Neoarchean, leading to collision of Ordos with Taishan island-arc at the end of Neoarchean, lately, subduction belt migrates to the northern margin of NCB, resulted in the opening of Wutai rift in its central portion, and formation of GFP along its northern margin (2.5Ga). The closure of Wutai rift is associated with development of an intra-plate foreland basin in Palaeoproterozoic (2.3Ga), marked the final cratonization of NCB.