

Geochemical and Geochronological records from South section of the Kongling Complex: Implications for the complex growth and reworking process of the Yangtze Craton nucleus

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The Archean Kongling Complex is an ideal target to investigate the Precambrian accretion and evolution process of the Yangtze Craton, for it experienced multiple episodes of growth and reworking events. This study aims to provide systematical understanding of the formation and evolution process of the South section of the Kongling Complex (SKC) and contrasting geochemical and geochronological records from both sections of the Complex (SKC and NKC). Basement rocks and supracrustal rocks were picked from the SKC, in where the geological process was unknown during 2.9 Ga to 1.0 Ga. Zircons from the biotite plagioclase gneiss, biotite two-feldspar gneiss, biotite amphibolite plagioclase gneiss, plagioclase-amphibolite suggest that the basement rocks of the SKC involved with Archean 2.9 Ga and 2.7–2.6 Ga growth and reworking events, followed by latter ~2.4 Ga and ~1.7 Ga geological events. The major and trace elements of the SKC metasedimentary rocks imply their protolith are Archean Kongling TTG and amphibolite. The zircon U-Pb-Hf data from the SKC are similar with those in the NKC during 2.9–2.6 Ga and 1.8–1.7 Ga, indicating both the SKC and the NKC have Archean basement rocks and suffered from the Paleoproterozoic extension event. However, the SKC is not the miniature of the NKC for it had no response to the Paleoproterozoic ~2.0 Ga collisional event. Compiled with all available data of the formation and reworking ages of entire Kongling Complex, the NKC could be further divided as west NKC, middle NKC and east NKC while the SKC is as same as the west NKC. Based on our new analyzed data and comparative study of the SKC and NKC, all previous files were put into order to understand the formation and evolution process of the Craton nucleus.

Keywords: Yangtze Craton, Kongling Complex, Craton nucleus, Formation and evolution