



Geochemical and geochronological constrains from the Heilongjiang Complex, NE China and its tectonic implication

Yanlin Zhu and Guochun Zhao

Department of Earth Sciences, the University of Hong Kong, Hong Kong, China (zhuyanlin316@gmail.com)

The Heilongjiang complex, a sequence of high-pressure metamorphic rocks belt, is located along the suture zone that separates the Jiamusi and Songliao-Zhangguangcai Range blocks in NE China. The complex consists of mafic-ultramafic rocks, mainly has been metamorphosed to blueschists and greenschists and mica schists. Controversy has long surrounded the Helongjiang complex relating to when and how this complex has formed. The lithological association and geochemical features of the mafic rocks indicate that they were mostly generated in a rifting and oceanic islands settings with OIB and E-MORB affinities. Magmatic zircons from several mafic samples indicate that they yielded protolithic ages ranging from 275 Ma to 140 Ma. The micaschists outcrop extensively in the Heilongjiang complex interlayered with blueschists, greenschists and amphibolites, but few study were focused on them. Our results about the U-Pb and Hf isotope compositions of the detrital zircons derived from these meta-sedimentary rocks reveal that the youngest concordant $^{206}\text{Pb}/^{238}\text{U}$ age is $\sim 170\text{Ma}$, suggesting that the latest depositional age of the mice-schists happened later than $\sim 170\text{Ma}$. These data suggest that the rifting between the Jiamusi and Songliao-Zhuangguangcai Range Blocks happened during Permian to Triassic time and this rift further developed into an ocean. The closure time of the ocean between the two blocks is not earlier than 140 Ma.

Key words: Heilongjiang Complex, mafic rocks, micaschists

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