

**Age and Provenance of the Late  
Paleozoic Strata in Lesser  
Xing'an Rang, NE  
China: Evidence from Field  
Geology and Detrital Zircon U-  
Pb Ages**

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The paper reports LA-ICP-MS U-Pb dating results of detrital zircons from the Hongshan and Heilonggong formations in the Lesser Xing'an Rang of NE China in order to constrain their formation timing and provenance. Most of detrital zircons are euhedral-subehedral in shape and display striped absorption or oscillatory zoning in CL images, implying their magmatic origin. The dating results on magmatic zircons indicate that 42 detrital zircons from clayslate stone in the Hongshan Formation yield age populations of 747 Ma, 807 Ma, 849 Ma, 903 Ma, 956 Ma, 1167 Ma, and 1811 Ma, implying that the sedimentation of the Hongshan Formation could take place after 747 Ma. 97 detrital zircons from clayslate stone in the Heilonggong Formation from Yichun yield age populations of 805 Ma, 902 Ma, 1764 Ma, 2446 Ma, and 2467 Ma, it suggests that the sedimentation of the Heilonggong Formation could take place after 805 Ma. Combined with the detrital zircon dating results (widespread occurrence of 561Ma age population) from late Paleozoic strata in study area and adjacent area, we conclude that the formation ages of the Hongshan and Heilonggong formations are between 747 and 561 Ma and between 805 and 561 Ma, respectively; i.e., Neoproterozoic rather than the late Paleozoic as previously believed. Based on the comparison between the age populations of detrital zircons from the two formations and geochronological data in the study area, it is suggested that the sediments of the two formations mainly sourced from the Neoproterozoic terrane. Furthermore, the Neoproterozoic magmatic zircons have identified in this study, providing evidence of Neoproterozoic magmatic events in the area. Meanwhile, the presence of detrital zircon with Meso-Paleoproterozoic ages reveals the existence of ancient Precambrian remnants at or near the surface.

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