

Age, source and setting of the Late Neoproterozoic conglomerate in the S-OB, North China Block

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*These authors contributed equally to this work, sponsored by the MOST Special Fund (BJ14252) of SKLCD.

The south margin of Ordos basin (S-OB) is located at the west part of the South-sector of North China Block (S-NCB), involved in the multiple orogeny of the North Qinling Belt (NQB) that is composed of the S-NCB to the north and the north Qinling terrain (NQT) to the south. The pre-Ordovician tectonic correlation between the NQT and NCB has long been controversial. Here, detrital zircon U-Pb dating and geochemical analysis of 6-sample clastic rocks from the Neoproterozoic conglomerate assemblage, outcropped in the S-OB, are carried out at the State Key Lab. of Continental Dynamics, China. All the concordant zircons (n=396) from 4-sample sandstones show broadly similar age patterns with a wide range of 744~2696 Ma. The largest population exhibits ages of 1618~2120 Ma (n=268) with a peak at 1.8 Ga ±; and the subordinate populations display ages of 2364~2531 Ma (n=25), 940~1230 Ma (n=29) and 744~905 Ma (n=10) with the peaks of 2.44 Ga ±, 1.09 Ga ± and 0.81 Ga ±, respectively. It indicates that the detritus of the conglomerate were mainly sourced from the metamorphic basement rocks of the NCB and subordinately from the complex and igneous rocks of the NQT. Besides, there are 3 youngest zircon ages of 744±8Ma, 825±17Ma and 829±11Ma, suggesting the age of the conglomerate deposits to be no more than 810~744 Ma. Also, all of geochemical analyzed samples clearly fall in a passive continental margin setting in the charts of SiO₂ vs. K₂O/Na₂O and SiO₂/Al₂O₃ vs. K₂O/Na₂O. The most content ratios of the major and rare elements of the samples indicate a neritic-littoral volatile setting, eg.: CaO/(CaO+MgO)=0.38~0.64, V/(V+Ni)=0.6~0.84, Ce/La=1.91~2.19, and δCe=1.05~0.94. All of the above data reveal that the conglomerate, sourced bidirectionally from the NCB and NQT, was developed in an extensional continental margin along the S-NCB during the late Neoproterozoic. It can be therefore supported that the S-NCB amalgamated with the NQT as a whole experienced a post-collisional extension after *ca.* 0.81Ga, corresponding to the Rodinia break-up event succeeded by the Grenvillian collision to uplifting process.