

A late Neoproterozoic stratigraphic sequence in the northern margin of the Qaidam Basin, Northwest China

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The Quanji Group, which was considered as the Sinian System from 800Ma to 540Ma, rests unconformably upon the metamorphosed Dakendaban Complex. The Complex is mainly composed of granitic gneisses with minor supracrustal rocks and eclogites as enclaves. The protolith of the orthogneiss includes almost all types of granites, but granodiorites, quartz monzonites and granites are predominant. The tonalite and trondhjemite are discovered in a small area. The emplacement of these plutonic rocks took place from ca.1000Ma to 750Ma. In addition, 559 ± 6 Ma of muscovite ^{40}Ar - ^{39}Ar age and 545 ± 8 Ma of Sm-Nd isochron age from eclogites have been reported. A reference zircon U-Pb age of the eclogite is 763 ± 10 Ma. The fluvial conglomerate of the Quanji Group immediately occurs upon the unconformity between the Quanji group and the Dakendaban Complex. Sandstones deposited in a nearshore environment rest upon the conglomerate and are followed by three layers of mafic volcanics. Upon the volcanics, shallow marine carbonate rocks with a large thickness crop out. The top sequence of the group is diamictites considered as glacial deposits. The stratigraphic sequence of the group shows features deposited in an aulacogen basin or passive continental margin. It is noteworthy that 680 ± 26 Ma of single zircon U-Pb age has been preliminarily measured. Based on available isotopic data, the unconformity between the Quanji Group and the Dakendaban Complex took place ca. 700-750Ma. Obviously, the Quanji Group is the product during the late Neoproterozoic, representing the middle-upper part of the conventionally-defined Sinian System in China.