

CRUSTAL GROWTH IN THE PHANEROZOIC: ND-SR ISOTOPE EVIDENCE OF GRANITOIDS FROM NORTHERN XINJIANG , NW CHINA

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The bulk of northern Xinjiang is a part of the Central Asian Orogenic Belt, which is presumably the most important site of juvenile crustal growth on Earth in the Phanerozoic. In order to examine the processes of such juvenile crustal generation and the role of Precambrian crust in the genesis of Phanerozoic granitoids, we have conducted geochemical and Nd-Sr isotopic studies on both the basement rocks and granites from the major tectonic terranes in northern Xinjiang. The North Tarim terrane is composed of an Archean (3.2-3.0 Ga) bimodal suite (TTG gneisses and amphibolites) and early Proterozoic granitic gneisses (T32 Ga). The composite terranes (Altai and Tianshan) have Proterozoic basement rocks. The ages of Tianshan basement rocks fall in the range of 0.7 to 1.8 Ga (TDM of 1.6 to 2.1 Ga). Similarly, basement rocks of the Altai terrane have ages of 1.0 to 1.4 Ga (TDM in two apparently discrete groups at 0.9 to 1.5Ga and 2.4 to 2.6 Ga). By contrast, the present data thus confirm the nature of young island arc assemblages for the Junggar terranes (TDM ages of 0.7 to 1.4 Ga). Concerning the abundant granitoids in northern Xinjiang (NW China), available age data indicate that they were emplaced in the period of 450 to 250 Ma, but culminated