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# Episodic crustal growth in the southern segment of the Trans-North China Orogen across the Archean-Proterozoic boundary

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## Abstract

The Dengfeng and Taihua complexes are well-exposed Neoarchean to Paleoproterozoic units in the southern segment of the Trans-North China Orogen (TNCO). Zircon U-Pb dating shows that the Dengfeng Complex records two episodes (2568±11 Ma and 2306±6 Ma) of tonalite–trondhjemite–granodiorite (TTG) magmatism. All of the TTG rocks are characterized by high $SiO_2$ (66.7−75.4 wt%), $Na_2O$ (3.20−5.06 wt%) and relatively low MgO (0.40−1.78 wt%). The Late Neoarchean TTG gneisses have very low contents of HREE ($Yb_N$ = 0.69−2.75) and Y (1.73−7.07 ppm), with moderate $[La/Yb]_N$ (24.1−53.8) and high Sr/Y (65.1−291.3) ratios. The Early Paleoproterozoic TTG gneisses have low contents of HREE ($Yb_N$ = 2.93−6.37) and Y (6.7−11.0 ppm), with moderate $[La/Yb]_N$ (10.1−27.0) and Sr/Y (10.6−52.1) ratios. Both suites show pronounced negative Nb-Ta, P and Ti anomalies but positive Sr and Pb anomalies. The Late Neoarchean TTG gneisses all have similar bulk-rock Nd and zircon Hf model ages with mainly positive $\varepsilon_{Nd}(t)$, and are

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