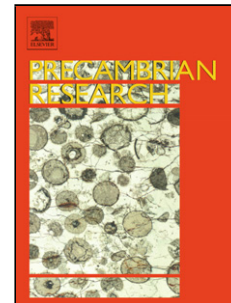


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## Episodic crustal growth in the southern segment of the Trans-North China

### 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<sub>2</sub> (66.7–75.4 wt%), Na<sub>2</sub>O (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<sub>N</sub> = 0.69–2.75) and Y (1.73–7.07 ppm), with moderate [La/Yb]<sub>N</sub> (24.1–53.8) and high Sr/Y (65.1–291.3) ratios. The Early Paleoproterozoic TTG gneisses have low contents of HREE (Yb<sub>N</sub> = 2.93–6.37) and Y (6.7–11.0 ppm), with moderate [La/Yb]<sub>N</sub> (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 ε<sub>Nd</sub>(t), and are

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