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## Relationship of Tarim Craton to Central Asian Orogenic Belt: insights from Devonian intrusions in northern margin of Tarim Craton, China

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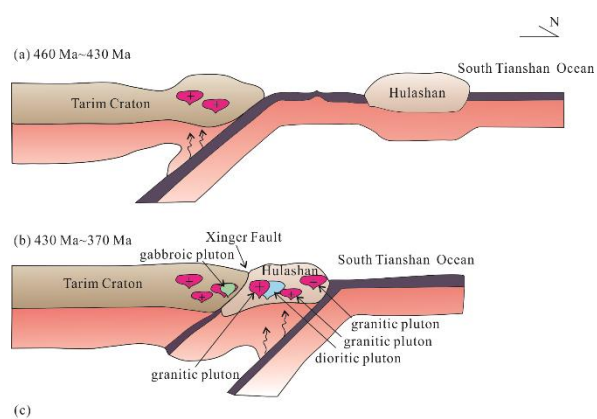
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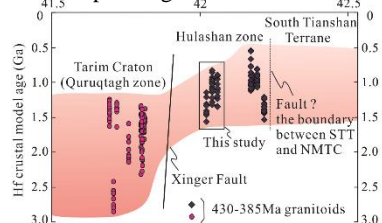
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The boundary and relation of the Tarim Craton to the Central Asian Orogenic Belt (CAOB) and its role on the formation history of the CAOB remain controversial. This paper presents ages, Hf-in-zircon isotopic and geochemical results for gabbroic, dioritic and granitic plutons from the northern margin of Tarim Craton (NMTC), and discusses their petrogenesis and tectonic regimes as well as boundary between the Tianshan orogen and Tarim Craton. These plutons yield zircon ages of 424 to 385 Ma. In the Quruqtagh zone south of the Xinger Fault, the gabbroic pluton shows enrichment in light rare earth element (LREE) and large ion lithophile element (LILE), depletion in high field strength element (HFSE) and positive  $\epsilon_{\text{Hf}}(t)$  values (+4.0 to +11.4), suggesting that parental magmas of gabbros were likely derived by partial melting of a depleted mantle wedge previously metasomatized by slab-derived aqueous fluids. In the Hulashan Zone north of the Xinger Fault, the studied rocks include one dioritic pluton and three granitic plutons.



The geochemical characteristics and petrogenesis of dioritic pluton are similar to those of the studied gabbroic with positive  $\epsilon_{\text{Hf}}(t)$  values (+3.1 to +9.2). The three granitic plutons also display relative depletion in HFSE and enrichment in LILE. Their variable  $\epsilon_{\text{Hf}}(t)$  values range from -2.1 to +9.0, with  $T_{\text{DM2}}$  ages of 858 to 1503 Ma, suggesting complex crustal sources with different proportions of juvenile and ancient materials. This paper confirms

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and evidences an Andean-style active continental margin of Tarim Craton due to southward subduction of the South Tianshan Ocean. Furthermore, our Hf isotopic data, together with regional data from literatures, display that the Hulashan zone to the north to the Xinger Fault has much younger continental materials in deep than these of NMTC south of the fault, and is similar to microcontinental fragments in the CAOB. This suggests that the Xinger fault may be the boundary between Tarim Craton and Tianshan orogen (Figure 1).

*Figure 1: (a, b) Carton showing the southward subduction of South Tianshan Ocean during Early-Middle Paleozoic. (c) Section across Hf crustal model age maps for granitoids of the Northern Margin of the Tarim Craton.*

