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TRIASSIC TERMINAL MAGMATISM IN THE SOUTHERN CENTRAL ASIAN OROGENIC BELT: IMPLICATIONS FOR OCEAN CLOSURE IN ACCRETIONARY OROGENS

Shan Li[1], Tao Wang[1], Wen-Jiao Xiao[2, 3], Sun-Lin Chung[4, 5], Simon A. Wilde[6]

[1] *Institute of Geology, Chinese Academy of Geological Sciences, Beijing 100037, China*
[2] *Xinjiang Research Center for Mineral Resources, Xinjiang Institute of Ecology and Geography, Chinese Academy of Sciences, Urumqi 830011, China*
[3] *State Key Laboratory of Lithospheric Evolution, Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100029, China*
[4] *Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan*
[5] *Department of Geosciences, National Taiwan University, Taipei, Taiwan*
[6] *Department of Applied Geology, Curtin University, Perth, Western Australia 6845, Australia*

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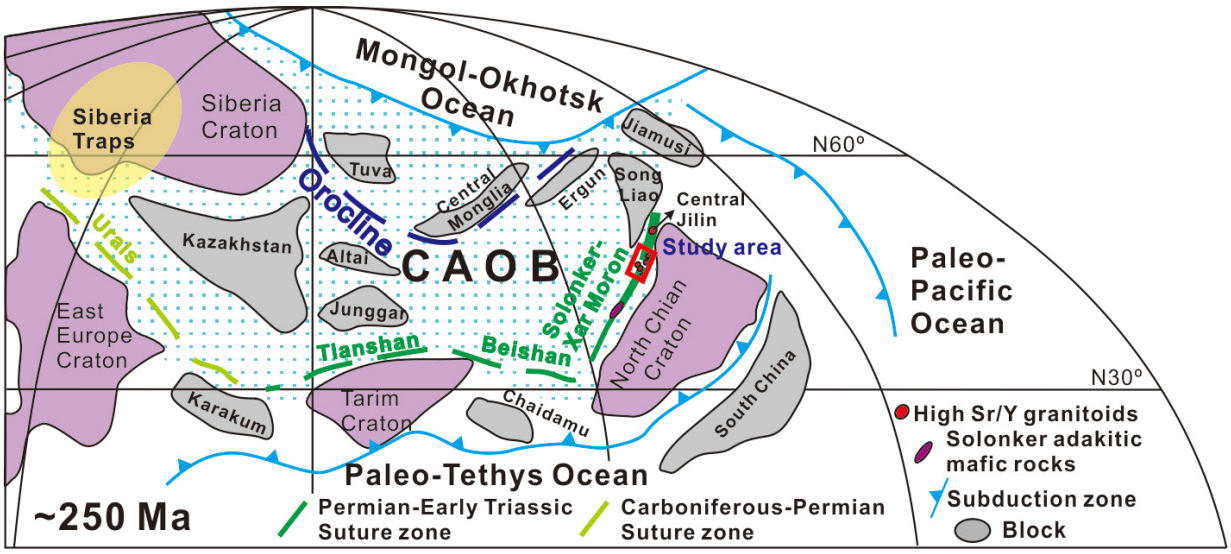
The key to defining the termination of accretion in an accretionary orogen is to recognize the initial magmatic processes that are generated at the time of ocean closure. We present new age, geochemical and isotopic data for magmatic rocks related to terminal collision along the Solonker-Xar Moron suture zone in the southern Central Asian Orogenic Belt (CAOB) that record such processes following closure of the Paleo-Asian Ocean (Figure). These magmatic rocks were emplaced in the Early-Middle Triassic (251–245 Ma) and show high Sr/Y signatures. Their low MgO, Cr and Ni contents and variable whole-rock $\varepsilon_{Nd}(t)$ values (+5.8 to –5.3), together with the range in zircon $\varepsilon_{Hf}(t)$ (+15.6 to –9.8) and $\delta^{18}O$ values (5.1 to 7.9 ‰), indicate an origin from partial melting of juvenile lower crustal rocks with some old components, including supracrustal recycling under garnet amphibolite facies conditions. Early Permian subduction-related granitoids with geochemical and Nd–Hf–O isotopic systematics distinct from those of the Early-Middle Triassic high Sr/Y granitoids establish that there was a change in tectonic setting in the latest Permian, from a waning continental



Schematic paleogeographic model of final amalgamation and terminal accretion of the archipelago-type CAOB in the earliest Triassic (~250 Ma) (after [*Li et al., 2013, 2016, 2017*]).

This period is undoubtedly an important milestone on earth's history from Paleozoic to Mesozoic. It coincides with eruption of the Siberian Traps Large Igneous Province, Mongolia and Kazakhstan orocline rotation [*Xiao et al., 2015*]. The linear generation of high Sr/Y melts (granitoids, Solonker mafic rocks and Central Jilin granitoids) along the Solonker-Xar Moron suture zone defining the onset of post-subduction processes in the southern CAOB.

arc to oceanic closure and final collision, initiating magma generation under garnet amphibolite-facies conditions along the suture zone. Ongoing weak compression gave rise to limited stacking of crustal rocks that involved underplating of the remnant slab.

Our data, along with available geological and geophysical evidence, lead us to propose a model of final oceanic contraction in the southern CAOB, resulting in sub-linear distribution of high Sr/Y melts along the resultant collision zone, thus defining the onset of post-accretionary processes in the southern CAOB. The identification of collision-related high Sr/Y granitoids from the southern CAOB not only reveal the magmatic process in response to the final episode of orogenic evolution in the CAOB accretionary collision zone, but also constrain how and when an archipelago-type accretionary orogen terminated. The southern CAOB is thus a prime example of minor, yet tell-tale high, Sr/Y magmatism generated after final ocean closure by moderate crustal thickening and the onset of mountain building. As such, it provides a snapshot of the final fate of archipelago-type systems, such as in the present-day western Pacific of southeast Asia.

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