A change of arc magma composition at ca. 450 Ma in the Bainaimiao arc, southern Central Asian Orogenic Belt

M. LIU[1], S.C. LAI[1]*, D. ZHANG[2], R.Z. ZHU[1], J.F. QIN[1], G.Q. XIONG[3] AND H.R. WANG[2]

[1] State Key Laboratory of Continental Dynamics, Department of Geology, Northwest University, Xi'an 710069, China (*correspondence: shaocong@nwu.edu.cn)

[2] School of Earth Sciences and Resources, China University of Geosciences, Beijing 100083, China

[3] Geophysical and Geochemical Exploration Party, Jiangxi Bureau of Geology and Mineral Resources, Nanchang 330201, China

Identification of a Compositional Change at ca. 450 Ma in the western Bainaimiao arc

The Bainaimiao arc comprising abundant Early Paleozoic intermediate to felsic calc-alkaline intrusions constitute a major component of the Central Asian Orogenic Belt (CAOB) [1, 2]. As shown in Figure 1, a significant changing of arc magma composition was identified at ca. 450 Ma in western Bainaimiao arc, which indicates that distinct deep mantle processes may have contributed to the formation of the Bainaimiao arc.

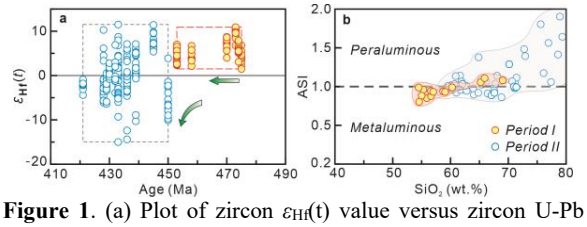

Figure 1. (a) Plot of zircon $\varepsilon_{Hf}(t)$ value versus zircon U-Pb age. (b) Plot of ASI value versus SiO_2 content.

Two Early Paleozoic arc systems flanking the Bainaimiao arc

Our results, in combination with the formation ages of the two Early Paleozoic tectonic mélange zones flanking the Bainaimiao arc [2, 3, 4], suggest that two Early Paleozoic arc systems (namely Period I and II) may have successively developed along the northern and southern Bainaimiao arc. The Period I and II arc systems were likely corresponding to the south-dipping subduction of the Solonker ocean and the north-dipping subduction of the South Bainaimiao ocean in southeastern CAOB, respectively.

[1] Eizenhöfer & Zhao (2018) *Earth-Sci. Rev.* **186**, 153-172. [2] Zhang et al. (2014) *Geol. Soc. Am. Bull.* **126**, 1275-1300. [3] Jian et al. (2008) *Lithos* **101**, 233-259. [4] de Jong et al. (2006) *Am. J. Sci*. **306**, 799-845.