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PII: S1367-9120(17)30102-5
DOI: http://dx.doi.org/10.1016/j.jseaes.2017.03.005
Reference: JAES 3002

To appear in: *Journal of Asian Earth Sciences*

Received Date: 8 November 2016
Revised Date: 1 March 2017
Accepted Date: 2 March 2017

Please cite this article as: Miao, L., Zhang, F., Baatar, M., Zhu, M., Anaad, C., SHRIMP zircon U-Pb ages and tectonic implications of igneous events in the Erendavaa metamorphic terrane in NE Mongolia, *Journal of Asian Earth Sciences* (2017), doi: http://dx.doi.org/10.1016/j.jseaes.2017.03.005

SHRIMP zircon U-Pb ages and tectonic implications of igneous events in the Erendavaa metamorphic terrane in NE Mongolia

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Abstract The Ereendavaa metamorphic terrane in NE Mongolia has long been considered as a Pre-Altaid block or a Precambrian cratonic terrane with a Paleoproterozoic basement overlain by Neoproterozoic-Cambrian rocks, but the idea has not been supported by any isotopic dating. Sensitive high resolution ion microprobe (SHRIMP) zircon U-Pb dating on gneisses, amphibolite and schists (mylonites) of the Ereendavaa terrane suggests that the terrane mainly formed during Early Paleozoic (495-464 Ma) and Late Paleozoic-Early Mesozoic (295-172 Ma). A minor amount of Precambrian rocks might have been involved in the formation of the protoliths of these rocks, as shown by Precambrian inherited zircons (1796-794 Ma). The new age data also suggest that the Ereendavaa terrane experienced at least two periods of magmatism: (1) Early Paleozoic (495-464 Ma) and (2) Late Paleozoic-Early Mesozoic (295-172 Ma), which are probably produced by the subduction of the Paleo Asian Ocean in the south and the subduction of the Mongol-Okhotsk Ocean in the north, respectively. The mylonitized granite (172 Ma) and undeformed pegmatite (163 Ma) are interpreted to be syn- and post-kinematic products. The new age data constrain the closure of the Mongol-Okhotsk Ocean at mid-Jurassic.

***Keywords*:** SHRIMP zircon U-Pb age; Erendavaa metamorphic terrane; central Asian