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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 Erendavaa 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 Erendavaa 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 Erendavaa 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

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