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CO-EVOLUTION OF PROTEROZOIC CRATONIC FRAGMENTS IN WESTERN AND NORTHERN MONGOLIA

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CAOB occupies a vast area that extends from the Urals to the Far East Asia and from the Siberian craton to the North China and Tarim cratons (Fig. 1, A). In order to better constrain Precambrian tectonic evolution of the CAOB, it is important to revisit Precambrian terranes of Mongolia as outlined in *Badarch et al. [2002]* that contain Archean to Proterozoic metamorphic basement and Neoproterozoic metasedimentary and volcanic rocks.

The Zavkhan terrane (Fig. 1, B) is located in the southwestern part of Mongolia and it is well known for its rich exposures and preservation of Precambrian

rocks (for example [*Bold et al., 2013; Bold et al., 2016b; Macdonald et al., 2009; Smith et al., 2015*]). The Tuva-Mongolia zone ([*Dergunov, 2001*]; referred to as the Khubsugul Terrane in *Macdonald and Jones [2011]*) is located directly north of the Zavkhan terrane and comprised of Agardag, Sangelin, Hug, Darhad, and Gargan terranes [*Badarch et al., 2002*]. Boundary is defined by ~375 km long, left-lateral strike slip fault, Bulnay Fault [*Rizza et al., 2015*].

Methods. Neoproterozoic siliciclastic units of the Darkhad and Khuvsgul groups of the Tuva-Mongolia zone were sampled for U-Pb zircon geochronology

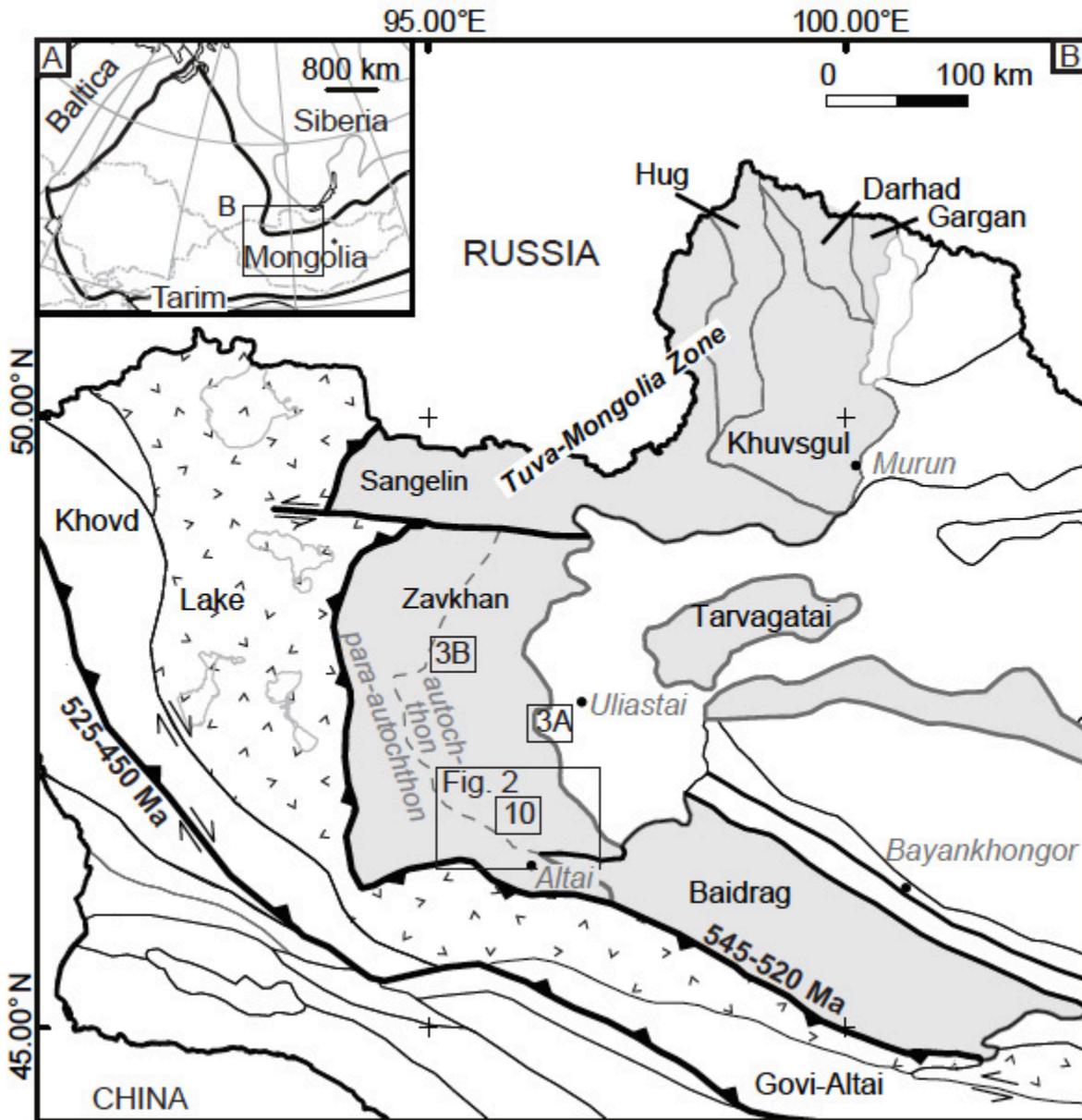


Fig. 1. A – Simplified map of the Central Asian orogenic belt; B – Simplified terrane map of Mongolia [Bold et al., 2016a]. Proterozoic cratonic fragments are grey.

during a geologic mapping work in 2013. Using standard techniques, zircon grains were separated at the Department of Earth Sciences and Astronomy of the University of Tokyo and were analyzed by laser ablation inductively coupled plasma mass spectrometry (LA-ICPMS) at the Gakushuin University of Japan.

Discussion. Detrital zircon studies have been minimally incorporated into origination questions of the Proterozoic cratonic fragments of Mongolia except what is discussed in *Salnikova et al. [2001]* from meta-sediments of the Tuva-Mongolia zone, *Bold et al. [2016a]* from the Zavkhan terrane, and *Rojas-Agramonte et al. [2011]*. Detrital zircon spectra of the Neoproterozoic siliciclastic rocks of the Zavkhan terrane yielded

prominent age peaks at 2600–2400, 2100–1950, and 950–700 Ma [Bold et al., 2016a]. Detrital zircon spectra of the same age siliciclastic rocks of the Tuva-Mongolia zone also yielded major age peaks at 2100–1950 and 950–700 Ma (Fig. 2).

These detrital zircon spectra suggest that Tuva-Mongolia zone and Zavkhan terrane may have co-evolved in the Precambrian and are most similar to detrital zircon data from Tarim. This data suggest that the bounding Bulnay fault is not as old as suggested in (modified from [Bold et al., 2016a]) and that the Precambrian terranes in Mongolia all may be exotic to Siberia. Furthermore, orogenesis began around these cratonic fragments, which were later trapped between

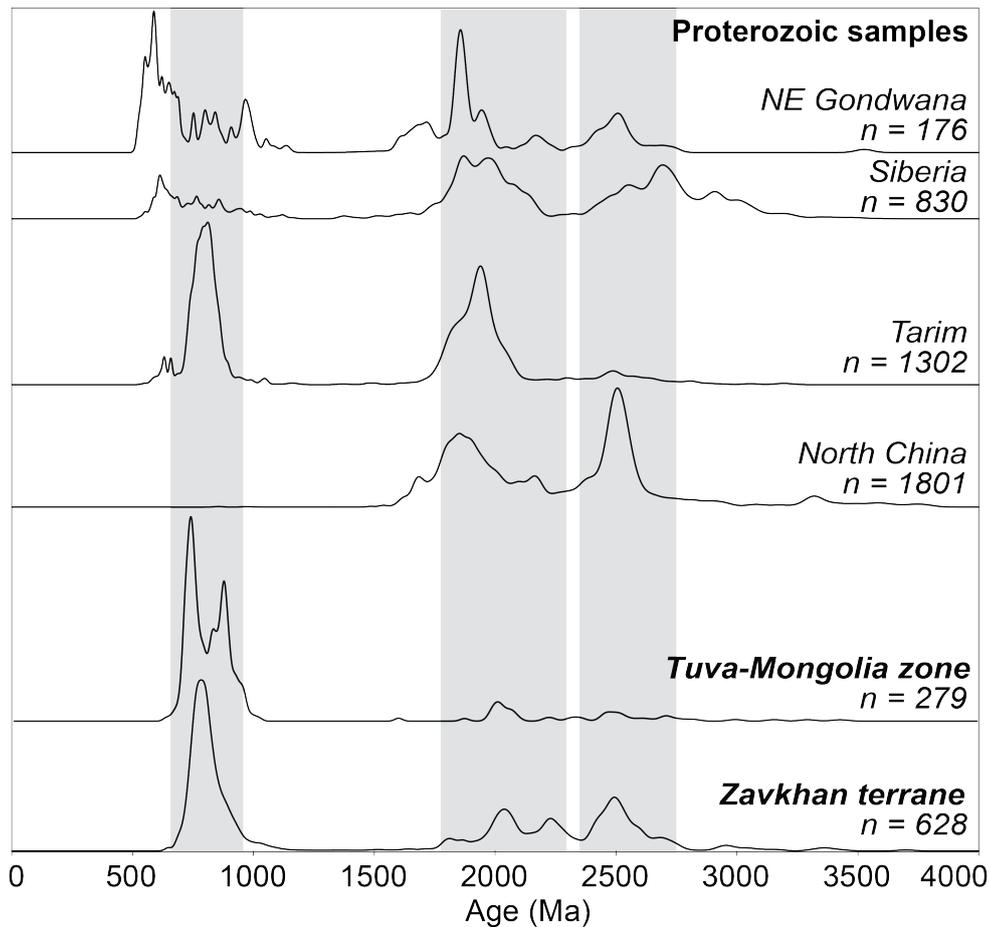


Fig. 2. Detrital zircon provenance of the Zavkhan terrane and Tuva-Mongolia zone. Note the comparison with the neighboring stable cratons (modified from [Bold et al., 2016a]).

larger cratons to form the CAOB. These data also highlight the need for more geochronologic data from Neo-

proterozoic strata deposited on the southern margin of the Siberian craton.

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