

Prevalence of ~800 Ma magmatism in the northern part of the Central Asian orogenic belt.

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The Tuva-Mongolia Zone (TMZ) located in the northern part of the Central Asian orogenic belt is composed of Archean gneissose basement rocks, Proterozoic island arc volcanics, Neoproterozoic continental arc volcanics (Sarkhoi volcanics) and accretionary complex, and Neoproterozoic to early Cambrian carbonate platform cover strata. In order to understand and interpret the relationship of these units, magmatic rocks of the TMZ have been targeted to propose tectonic evolution models. However, most of the detailed geologic work was done in the northern regions, in southern Russia, and lithostratigraphic comparisons were used to infer their southern extension. Here we present new geochemical data and U-Pb ages of undated granitoids exposed in the southern TMZ in Mongolia. Based on map-relationships, the studied granitoids were previously regarded as early Paleozoic. In contrary, we find that ~800 Ma magmatism was much more prevalent than previously assumed with a minor input of Cambrian-Ordovician granitoids. ~800 Ma granitoid has been documented in southern Russia before and was attributed as an equivalent of the Sarkhoi continental arc volcanics and hence support continental arc setting. Further justification for the tectonic setting, including subduction polarity, is needed based on field-based structural work and detailed geochemical analyses. Cambrian-Ordovician magmatic rocks have also been reported in neighboring regions and may record the arrival of the TMZ to the Siberian margin.

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