

A Neoproterozoic Connection Between Baltica and Siberia?

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Neoproterozoic relationships between Baltica and Siberia are not well defined. Alternative tectonic reconstructions show Baltica and Siberia as either 1) a single, relatively continuous land mass which had an active collisional margin with subduction-related magmatism and forearc accretion (e.g. Sengör et al. 1993), or 2) geographically distinct land masses separated by an intervening ocean of unknown extent (e.g. Torsvik et al., 1996). Our work in Arctic Siberia and northeast Baltica (modern-day coordinates) allow us to test these models and make inferences regarding the tectonic connection between Baltica and Siberia.

New ion-microprobe data from Arctic Siberia on rock units beneath a major Early Paleozoic unconformity define a Riphean evolution: U-Pb zircon analyses of “Archean” (previous mapping) samples from the Shrenk River region in the central Taimyr Peninsula indicate that Neoproterozoic, foliated granites are c. 900-950 Ma and intrude amphibolite facies sediments of probable Mesoproterozoic age (c.1.2 Ga). Ophiolite fragments and volcanic arc rocks in central Taimyr are c. 700 Ma and are thought to have been obducted at c. 600 Ma, yet there is a notable absence of Vendian-age, arc-related magmatism. These factors suggest that either 1) Arctic Siberia in the Vendian was not a convergent margin, or 2) that convergence was dominated by *extremely* oblique subduction or by a transverse, strike-slip regime – either scenario inhibiting the development of continental arc-magmatism.

In contrast, the entire northeastern continental margin of Baltica, from the Timan Range to the Polar Urals, was dominated by Vendian-age complexes related to relatively orthogonal ocean-continent collision and the development of westward subduction under Baltica. This may imply that Baltica and Siberia did not share a common convergent margin in the Vendian, and that a Neoproterozoic connection between Baltica and Siberia did not exist at this time.