

The Palaeo-Asian ocean in the Neoproterozoic and early Palaeozoic: new geochronologic data and palaeotectonic reconstructions

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Abstract:

The Central Asian fold belt (Urals-Mongolian belt in the Russian literature), which incorporates rock units derived from a variety of geodynamic settings, evolved the Palaeo-Asian Ocean (PAO) in the Neoproterozoic and Palaeozoic. We present new geological and isotopic data for ophiolites and metamorphic complexes of the Eastern Sayan Range of southern Siberia (Dunzhugur complex), the Polar Urals (Enganepe Range), and the Dariv and Khantaishir Ranges of western Mongolia. We also review existing geological, geochronological and palaeomagnetic data for rock assemblages indicative of past tectonic settings within that ocean. Based on these data, we suggest geodynamic reconstructions for the principal time-slices that reflect turning points in the history of this ocean at similar to 1000-650, similar to 650-510, and 510-450 Ma.

The age of the Circum-Siberian ophiolites is critical to constrain the timing of break-up of the large Mesoproterozoic Eurasian continent into Baltica and Siberia, and this break-up could not have occurred later than about 1100 Ma. The main events in the formation of volcanic arcs and marginal basins in the PAO were at 1000-1010, 830, 740-700, 670-640, 570, 540, and 500-490 Ma, whereas the main phases of accretion and ridge collision in the PAO were at around 800, 570, and 470 Ma. We also reconstruct the spatial positions of palaeobasins and continents at about 740 and 640 Ma. (C) 2002 Elsevier Science B.V. All rights reserved.

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U-PB GEOCHRONOLOGY, TUVA-MONGOLIA MASSIF, MUYA OPHIOLITE BELT, SM-ND, SUPERCONTINENT RODINIA, SIBERIAN PLATFORM, EASTERN SIBERIA, BAIKAL AREA, 800 MA, AGE

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