

Pb and Sr isotopes in Riphean carbonate rocks of the South Urals and East Siberia: Implications for the $^{87}\text{Sr}/^{86}\text{Sr}$ variations in 1.10-0.65 Ga seawater

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The $^{87}\text{Sr}/^{86}\text{Sr}$ variations in Riphean ocean were traced through analyses of marine carbonates. Mn, Fe, Rb, and Sr were used as indicators of post-depositional alteration of carbonates. The Pb-Pb dating of the screened samples allows to calibrate the geochronological baseline.

The carbonate samples from the Turukhansk and Uchur-Maya regions, East Siberia, span the latest Middle Riphean (the Linok and Sukhaya Tunguska Fms.) to the earlier Late Riphean (the Neryuen, Derevnya and Burovaya Fms.). The Pb-Pb ages of the Sukhaya Tunguska and Neryuen carbonates are 1035 and 1020 Ma, respectively. The samples from the Bashkirian Anticlinorium (the Katav, Inzer, Min'yar and Uk Fms.), the South Urals, represent the bulk of the Late Riphean type. The Pb-Pb ages of the Inzer and Min'yar carbonates are 835 and 780 Ma, respectively.

The $^{87}\text{Sr}/^{86}\text{Sr}$ ratio in Proterozoic ocean decreased from 0.70601-0.70617 to 0.70519-0.70546 over 1.10-1.02 Ga and was rather low (0.70525-0.70538) at 0.89-0.84 Ga. Then it increased to 0.70555-0.70566 at 0.82-0.80 Ga. Over 0.79-0.71 Ga the $^{87}\text{Sr}/^{86}\text{Sr}$ ratio continued to increase from 0.70560 to 0.70611. Thereafter its value was about 0.70582-0.70600 up to 0.65 Ga with the exception of the drastic decrease to 0.70540 at 0.67-0.66 Ga. The low $^{87}\text{Sr}/^{86}\text{Sr}$ ratios testify that the mantle input of Sr into Middle/Late Riphean ocean dominated over the continental one. The results favour the concepts of breakup of Rodinia, absence of major orogenies, occurrence of marine transgression and opening new oceanic basins over the period of 1.02-0.65 Ga.

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