# Timing and sources of pre-collisional Neoproterozoic sedimentation along the SW margin of the Congo Craton (Kaoko Belt, NW Namibia)

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Isotopic dating of detrital zircons from metasediments and of magmatic zircons from intercalated metavolcanics in the medium- to high-grade part of the Kaoko Belt in Namibia provides first robust constraints on the age of Neoproterozoic sedimentation along the southwestern margin of the Congo Craton. Zircons from metasediments directly overlying the cratonic basement suggest maximum sedimentary protolith ages of c. 1.00 and c. 1.45 Ga, and age populations comparable with protolith ages from the gneisses of the Congo/Kalahari cratons. Dating of zircons from associated metavolcanics constrains the age of the earliest preserved sediments at c. 740–730 Ma and at c. 710 Ma.

Detrital zircons from the samples collected from upper parts of the succession contain only small proportion of grains with ages similar to those from the Congo Craton. Samples show dominance of c. 1.00 Ga, c. 750 Ma and c. 650 Ma old zircon grains that can only be derived from the Punta del Este – Coastal Terrane (Dom Feliciano and Kaoko belts) that acted as an (back)arc domain at c. 650–630 Ma. Neodymium model ages for the studied metasediments provide another argument that the youngest sediments could not have been derived from the Congo Craton.

Recognition of the Punta del Este – Coastal Terrane crust as a source region for the youngest pre-collisional sediments of Kaoko Belt suggests that the c. 650–630 Ma (back)arc Punta del Este – Coastal Terrane has developed directly on top of, or very close to, the attenuated Congo Craton passive margin.

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# Geochemical zoning of the spodumene vein series of the mineral deposit Tastig Tuva, Central Asia

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Spatial zoning is an essential characteristic of all ore-magmatic systems. It is quite definite, if there is a logical (naturally determined) change in falling, rising, spreading trends, or in a trend from an axial deposit zone to borders of productive mineral parageneses. However, zoning is not so obvious, if scalar parameters composing a single paragenetic complex are being changed consistently along these trends. In such a case, forecast valuation of an object is often challenged. The latter refers entirely to vein series of rare metal spodumene-albite pegmatites, which are still the main industrial type of endogenous lithium deposits.

The author of the work has studied steep-grade vein series (with a pitch angle/angle of fall of 70-80°) of spodumene pegmatites from the deposit Tastig in the republic Tuva in order to define elements of such a spatial zoning. It is outcropts within the absolute altitude range (2600-2200 m), but oriented in a way, where the veins of the lying side of the series are at the maximum heights (2600-2500 m), whereas the veins of the hanging side are revealing within the height interval from 2200 to 2350 m. It was ascertained by sampling of rock-forming pegmatite feldspars, that the indicator of Rb/Ba ratio, which shows degree of a system differentiation, changes logically in accordance with the following pattern. It increases sharply from the lying side of the vein series (where it is equal 15) to its axial zone (61-73), and then decreases slightly (34) in a vein microcline of the hanging side.

The discovered pattern shows that there is rather a hidden transversal zoning within the mineral deposit, which is much more contrast in the modern erosive cut, than a poorly revealed vertical zoning. Insignificance of the last one in the type chemical features of the rock-forming potassium feldspar is probably connected with poor studying of the deep parts of the object, and that a real vertical spread of mineralization exceeds noticeably the natural cut observed (400 m).

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