

## **GEOTECTONIC EVOLUTION OF THE CONTINENTAL CRUST IN THE PALEOPROTEROZOIC SVECOFENNIAN OROGEN IN FINLAND**

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The Palaeoproterozoic Svecofennian orogen has some special features like large crustal thickness variations (45-65 km), a thick crust preserved until now, the exceptionally high palaeoheat flow followed by a rapid cooling event and long deep conductors indicating collision zones. The major stages of the Svecofennian crustal evolution include: (1) rifting of the cratonized Archaean crust between 2.5 and 1.97 Ga; (2) final break-up and ocean development at 2.1 Ga; (3) formation of the 2.06 Ga old continent and protolith for Svecofennian arc magmatism; (4) magmatic and metamorphic evolution of a primitive island arc at 1.93-1.85 Ga and a mature island arc at 1.910-1.885 Ga; (5) collision of the Svecofennian arc complex and the Archaean continent at 1.91-1.90 Ga; (6) extension stage associated with the rapakivi and related magmatism at 1.65 to 1.540 Ga and development of sedimentary basins; and (7) diabase dyke magmatism at 1.27 to 1.26 Ga. Magmatic underplating that caused melting of the lower crust and low pressure high temperature metamorphism in the upper parts of the Svecofennian crust took place soon after the collision of the Svecofennian arc complex with the Archaean continent at 1.885 Ga. At the Archaean Svecofennian boundary zone not only the Archaean crust reworked, but the entire Archaean lithosphere activated. The collision and magmatic underplating produced some of the thickest continental crust known excluding presently active orogenic regions. The crust reaches its maximum thickness of 65 km, at the Archaean - Proterozoic boundary zone.