

## Crustal evolution of the southwestern margin of the Svecofennian Domain in the Baltic Sea region

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The Precambrian crust in the Baltic Sea area represents a southeastern extension of the Fennoscandian Shield concealed beneath the East European platform sediments. Drill core samples (162–2600 m) have been studied with respect to petrography, geochemistry and U-Pb zircon geochronology (ICP-MS and SIMS) in order to improve the understanding of the crustal evolution along the southwestern margin of the ca. 1.9 Ga Svecofennian Domain. It can be presented as a sequence of younging belts from the central part of the Baltic Sea (Gotland) to the Polish coast:

1. Detrital zircons in Svecofennian metasedimentary rocks on northern Gotland record three age populations: 2.11–1.96, 2.95–2.63 Ga and 3.29 Ga, which indicate pre-Svecofennian sources. The lack of Svecofennian sources is not common in metasedimentary rocks elsewhere in the Svecofennian Domain.
2. A Svecofennian amphibolite-granitoid complex on central Gotland can be correlated with southern Bergslagen in the Fennoscandian Shield and the Mid-Lithuanian Domain. It consists of 1.88 Ga orthogneisses and amphibolites with a volcanic island arc affinity [1].
3. A km-thick sequence of ca. 1.87 Ga fluvial quartz-dominated metasedimentary rocks along the Svecofennian margin are intercalated with mafic metavolcanic rocks with within-plate basalt affinity.
4. Continental margin granitoids intruded into the Svecofennian margin from southwestern Bergslagen to northwestern Lithuania. These TIB 0 granitoids were dated at 1.85 Ga on Gotland and in E6-1 drill core, offshore Latvia [2].
5. A rifted marine volcanic arc was identified within the Vetlanda-Oskarshamn belt and was shown to be contemporaneous with the continental margin TIB 0 granitoids [3].
6. After the accretion of the volcanic arc to the Svecofennian margin, three generations of continental margin granitoids (TIB 1 a-c) were emplaced. The 1.81–1.79 Ga TIB 1a granitoids intruded into Svecofennian crust and TIB 0 granitoids while the 1.79–1.77 Ga TIB 1b granitoids intruded into the Vetlanda-Oskarshamn belt and the TIB 1a granitoids. Finally, the 1.77–1.75 Ga TIB 1c granitoids intruded into the TIB 1b granitoids. Thus, the continental margin moved stepwise southwards from the central to southern parts of the