

Age and geochemistry of granitoids in the Precambrian basement of Öland, SE Sweden – implications for the extension of the Transscandinavian Igneous Belt in the Baltic Sea region

Salin, E.^{1*}, Sundblad, K.¹, O'Brien, H.³, Lahaye, Y.³ and Woodard, J.²

¹University of Turku, 20014 Turku, FINLAND; *evsere@utu.fi

²University of KwaZulu Natal, Westville (Durban), X5 4001, SOUTH AFRICA

³Geological Survey of Finland, 02151 Espoo, FINLAND

The Precambrian crust in the Baltic Sea region is mostly covered by Phanerozoic sedimentary rocks but can be studied in drill cores. Two granitoids from the crystalline basement below Öland were collected from the archives of the Geological Survey of Sweden and analyzed for geochemistry and dated with the U-Pb method on zircons. The Böda Hamn granitoid (northern Öland) has a monzodioritic composition and an age of 1799.8 ± 3 Ma while the Valsnäs granitoid (central Öland) has a quartz monzonitic composition and an age of 1784.9 ± 5.7 Ma. These geochemical-isotopic characteristics are compatible with those of generation 1 of the Transscandinavian Igneous Belt (TIB) in the Fennoscandian Shield, ≥ 30 km west of Öland.

A more detailed review of the TIB-1 generation shows that two sub-generations (1a and 1b) can be distinguished on each respective side of the Oskarshamn-Jönköping Belt (OJB). Sub-generation 1a (north of OJB) has an age span of 1794-1808 Ma while sub-generation 1b (south of OJB) has an age span of 1769-1793 Ma. According to this subdivision, the Böda Hamn monzodiorite belongs to sub-generation 1a, which also can be followed to southernmost Gotland (Sundblad *et al.* 2003) and the Valsnäs quartz monzonite belongs to sub-generation 1b, which can be followed to the Latvian/Lithuanian border, where a marginally younger granitoid was reported from off shore drill core E-7 (Salin *et al.* 2016). Taken together, these data suggest that the Transscandinavian Igneous Belt can be traced across the Baltic Sea from the exposed parts within the Fennoscandian Shield to the Latvian/Lithuanian border.

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Sundblad, K., Claesson, S. & Gyllencreutz, R. 2003: The Precambrian of Gotland – a key to the understanding of the geologic environment for granitoids in the Baltic Sea region. Granitic systems – State of the art and future avenues. An international symposium in honor of professor Ilmari Haapala. Abstract volume, Helsinki, 102–106.