

Is it possible to correlate the Paleoproterozoic gold belts of Nanortalik (southern Greenland) and Lycksele-Storuman (northern Sweden)?

Denis M. Schlatter^{1*}, Katerina Schlöglova² and Joshua W. Hughes³

¹Helvetica Exploration Services GmbH, Carl-Spitteler-Strasse 100, CH-8053 Zürich, Switzerland

²Institute of Geochemistry and Petrology, ETH Zürich, Clausiusstrasse 25, CH-8092 Zürich

³Department of Earth & Environmental Sciences, University of St Andrews, KY16 9AL, Scotland

*denis.schlatter@helvetica-exploration.ch

The Paleoproterozoic Nanortalik gold belt (NGB) is located South of the West Greenland portion of the NAC and trends NE for >150 km from South to South-East Greenland. The NGB incorporates the quartz vein hosted Nalunaq gold mine (375,650 Oz; 2004-2013 average grade 15g/t), as well as numerable gold occurrences, most notably the cluster of high grade occurrences at Vagar which is centred on the Niaqornaarsuq Peninsula (Fig. 1). The Paleoproterozoic Lycksele-Storuman gold belt (LSGB), commonly referred to as the “Gold Line”, is located in northern Sweden and trends NW for 150 km within the Fennoscandian shield. The LSGB is located to the SE of the well-known Skellefte Mining District. The LSGB hosts the Svartliden gold mine (2.967 Mt., 4.26g/t; Fig. 1) and several other gold deposits and occurrences. In this contribution we aim to compare the NGB and LSGB and to discuss a potential continuity prior to the breakup of the Paleoproterozoic Columbia (Nuna) supercontinent. The **Vagar gold occurrences** of the NGB are contemporaneous with the Ketilidian orogeny (ca.1.8 Ga, Fig.1) and possibly related to the amalgamation of the Columbia (Nuna) supercontinent. Gold mineralisation at Vagar is hosted in K-feldspar, sericite, carbonate, silica and calc-silicate altered, sheared calc-alkaline granitoids belonging to the 1.85-1.80 Ga Julianeåb batholith. Although geochronology has not yet been undertaken at Vagar, the nearby Nalunaq gold deposit, hosted in amphibolite-facies metavolcanics yields an age of 1.783-1.765 Ga. The mineralisation at Vagar is considered to be orogenic, although affinities with intrusion related gold systems have also been proposed (Schlatter et al. 2013). **Svartliden** is a shear-zone hosted hypozonal orogenic gold deposit belonging to the Svecofennian orogeny (Nordic on Fig. 1) and is associated with 1.81 and 1.77 Ga Skellefte-Härnö calc-alkaline granites. The deposit is hosted by K- and calc-silicate altered meta-volcano-sedimentary sequences of the Bothnian Basin, metamorphosed and deformed under amphibolite facies conditions. The gold mineralization occurs in dismembered Fe-rich units - basic volcanic rocks with calc-silicate alteration and BIFs (Schlöglova et al. 2013). Gold deposits of the NGB and the LSGB share intriguing similarities with respect to their ages, deposit styles, and hydrothermal alteration. Although the geological continuity between Ketilidian of southern Greenland and the Makkovik Province of Canada is well established (Fig. 1, Lahtinen et al. 2008), it is more difficult to verify the correlation of the Ketilidian (on Laurentia) to the Svecofennian orogeny (on Baltica). This further complicated due to overprinting by the later Caledonian orogeny. However geochronological data for granitoids hosting orogenic gold within the NGB and LSGB supports this interpretation.

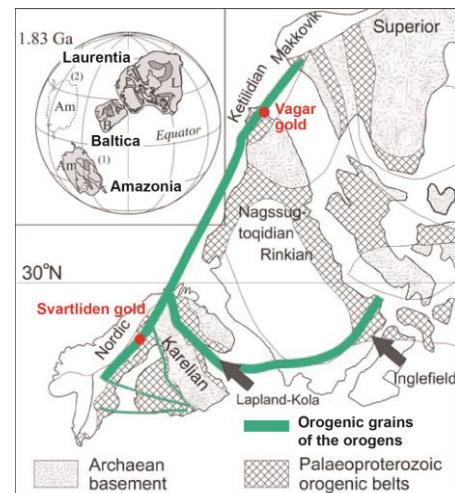


Figure 1: Reconstruction of the c. 1.8 supercontinent and location of Svartliden gold on Baltica and Vagar gold on Laurentia. Modified after Lahtinen et al. 2008.

REFERENCES:

- Lahtinen, R., Garde, A.A. and Melezhik, V. A. (2008): Paleoproterozoic evolution of Fennoscandia and Greenland. **Episodes** published by the IUGS, Vol.31 No.1, pp. 20-28.
- Schlatter, D.M., Berger, A. and Christiansen, O. (2013): Geological, petrographical and geochemical characteristics of the granitoid hosted Amphibolite Ridge gold occurrence in South Greenland. **Conf. Proceed. SGA Meeting**, Sweden: 1189-1192.
- Schlöglova, K., Gordon C., Hanes R., Ask H. and Broman, C. (2013): Svartliden gold mine: shear zone and BIF-hosted orogenic gold deposit, Gold Line, northern Sweden. **Conf. Proceed. 12th Biennial SGA Meeting**, Sweden: 1193-1196