METAVOLCANICS OF NORDENSKIÖLD LAND FROM SW SVALBARD AS AN EXAMPLE OF NEW OCEAN CRUST

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This study concerns late Neoproterozoic metavolcanics from southwestern Svalbard in an investigation to trace the evolution of oceans plate rifting. A number of outcrops of these rocks are connected with the regional Torellian unconformity, which is associated with a Late Neoproterozoic orogenesis event – post 640 Ma. This unconformity divides the younger metasediments of the Sofiebogen Group from older metasedimentary sequence of the Deilegga Group. Samples have been collected from Nordenskiöld Land belonging to the Sofiebogen Group, which is situated between Bellsund and Isfjorden, to the north of Wedel Jarlsberg Land.

Field observation reveals that these metavolcanics very often occur as a pillow lavas and lavas. They contain mineral assemblages typical for greenschist facies metamorphism such as: actinolite, chlorite, epidote, albite, but some of them contain garnets and glaucophane, which is typical for blueschist facies conditions. Based on a total alkali silica diagram they are classified as tholeitic basalts. Spider diagram shows patterns similar to MORB, where the REE are flat. The LILE except Sr are depleted, but this depletion is caused probably by metamorphism. However, the metavolcanics of Nordenskiöld Land are also relative depleted in HFSE (Th/Yb = 0.2–0.31 and Nb/Yb = 2.9–4.4) and LREE (Lan/Smn = 1.0–1.5). Trace elements like Nd, Th, Yb and La show trends that could be associated with fractional crystallization.

The geochemical character of metavolcanics from Nordenskiöld Land, as well as, their forms (pillow lavas) suggests that they created beneath the sea level, as new ocean crust.

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