Mafic Dykes on Bornholm (Denmark) as Indicators of Precambrian to Permian Extensional Events at the SW Margin of the Fennoscandian Shield

Karsten Obst

Institute of Geography and Geology, University of Greifswald, F.-L.-Jahn-Str. 17a, 17489 Greifswald, Germany

About 200 mafic dykes intruded Mesoproterozoic gneisses and granites of Bornholm, a Danish island situated in the southern Baltic Sea between Sweden, Germany and Poland. Field studies along the northern coast document that most of these dykes are roughly N–S oriented. Only a very few intrusions as the NE trending Kelseå dyke or some dykes in the north-western part of the island, which strike NW to WNW, deviate. Only four dykes are 20 to 60 m thick. All the other dykes have thicknesses that reach rarely a few meters. Some of them form local swarms.

Petrographic and geochemical investigation show that the composition of the dykes varies in a wide range (e.g. Obst 2000; Holm et al. 2010). The majority comprises olivine tholeiites and alkaline mafic rocks. Besides, quartz-bearing tholeiites, trachybasalts and a basaltic camptonite occurs. Based on age determinations using different methods, at least four episodes of mantle derived magmatism can be distinguished that are related to rift events perpendicular or parallel to the southern margin of the Fennoscandian Shield.

References

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* Corresponding author. E-mail: obst@uni-greifswald.de