

The Sveconorwegian tectonic cycle - a review

LARSON, SVEN Å. Department of Geology, Earth Sciences Centre, Göteborg University, Göteborg, Sweden

Reconstruction of the Mid-Proterozoic supercontinent, Midgardia, is consistent with a Baltica location adjacent to present-day eastern Greenland. Weakly alkaline basaltic volcanism (c. 1.23 Ga) marks the incipient Baltica - Midgardia break-up. Succeeding alkaline, dyke related magmatism (c. 1.18 Ga) and contemporaneous, scattered granitoid magmatism represent a more advanced stage of rifting to which also volcano-sedimentary deposits in southern Baltica may be referred.

Orogenic crustal contraction characterises the Sveconorwegian province of Baltica resulting in bedrock deformation, crustal thickening and peak metamorphism (c. 1.15 to 0.95 Ga). Typically heterogeneous metamorphic overprinting (greenschist to granulite facies) resulted in formation of veins and mineral recrystallisation. Prominent features are folds and roughly NE to NW trending shear- and thrust zones.

Synkinematic, calc-alkaline, Sveconorwegian magmatism is so far only represented by the Feda augen gneiss, SW Norway. Late tectonic features are extensional with shear zone movements related to exhumation, followed by deposition of foreland basin sediments. The western part of the Sveconorwegian Province was intruded by numerous post-tectonic granitic, noritic and anorthositic plutons at c. 0.95 to 0.88 Ga.

Rodinia rifting N-S trending dolerites (c. 0.93 Ga) of SE Baltica represent early manifestations of Rodinia rifting. Basin formation in south Sweden, magmatism in north Norway and formation of aulacogens in the East European platform are other manifestations of initial rifting. Dolerite swarms and sheeted dyke complexes in nappes of the Scandinavian Caledonides and a dolerite swarm (c. 616 Ma) in the Proterozoic foreland mark the birth of the Iapetus Ocean. In Poland, Belarus and Ukraine basaltic magmatism indicate the opening of the Tornquist basin.