



The Støren Group greenstones and their relationship to the ophiolite fragments of the western Trondheim Nappe Complex, central Norwegian Caledonides

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The stratigraphy of the western part of the Trondheim Nappe Complex has traditionally been divided into greenstones and related rocks belonging to the Late Cambrian/Early Ordovician Støren Group at the base, overlain by predominantly Mid- to Upper Ordovician sedimentary rocks of the Hovin and Horg Groups. Rocks that have been assigned to the Støren Group *sensu lato* crop out in several geographically isolated areas. To the southeast, an up to 6 km thick northeast-striking belt of mainly pillow lava with intercalated phyllite, metachert and black shale, here referred to as the Støren Group *sensu stricto* (s.s.), is exposed over a distance of more than 100 km from Rennebu in the south, through the town of Støren to Stjørdalen in the north. These have been correlated, across an inferred Horg syncline, with several ophiolite fragments to the northwest, e.g. at Løkken, Vassfjellet and Bymarka, here referred to as the LVB ophiolites.

In this contribution we present new field observations and geochemical data demonstrating that the Støren Group s.s. and the LVB ophiolites are not correlatable. Lithologically, gabbros and sheeted dyke complexes are characteristic of the ophiolites but are missing in the Støren s.s., while ribbon chert and graphitic shale occur in Støren s.s. and are virtually absent in the ophiolites. Plagiogranites in the ophiolitic gabbros have yielded U-Pb zircon ages of 480-487 Ma. Datable syn-volcanic felsic rocks are absent or very rare in the Støren s.s. and its absolute age is still unknown. Geochemically the LVB ophiolites are dominated by basalts that are broadly comparable to N-MORB but that have a superimposed subduction signature reflected, e.g., in significantly elevated Th/Ta ratios. By contrast, the Støren s.s. basalts, ranging from typical N-MORB to E-MORB compositions, have absolutely no indications of a subduction signature in their geochemistry.

Our new field and geochemical data demonstrate that the Støren Group s.s. and the LVB ophiolites are significantly different units, and that they cannot be connected by a simple syncline. While the ophiolites probably formed in a back-arc rift environment, the Støren Group s.s. formed in an extensional setting that may have been unrelated to a volcanic arc system.