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The age and tectonic status of the Revseggi Nappe of the southern section of the Scandinavian Caledonides

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The Hardangervidda-Ryfylke Nappe Complex is one dominant element of the southern segment of the Norwegian Caledonides. The section of Haukeli-Røldal includes the almost undisturbed Proterozoic basement, with slivers of autochtonous/parautochtonous Cambrian-Ordovician sediments locally preserved. Overlying these rocks are the Holmasjø (late Neoproterozoic to Cambro-Silurian?), the Dyrskard and Kvitenut (both Mesoproterozoic) and the Revseggi (early Palaeozoic?) nappes, each separated by thrusts (Naterstad et al. 1973). The relationships between structures, metamorphism and radiometric ages show that thrusting of the Kvitenut onto the Dyrskard nappe had occurred already during the Sveconorwegian Orogeny (995 $\pm$ 5 Ma; Gabrielsen 1976; Roffeis et al. 2013). The relationship between the Kvitenut and overlying Revseggi nappes is, however, more enigmatic. The Revseggi Nappe consists largely of metasedimentary rocks intruded by an (Ordovician?) bimodal sequence and metamorphosed before its final inclusion in the Caledonian nappe stack. The interface between the Kvitenut and Revseggi nappes has been interpreted both as a disturbed depositional contact (Naterstad et al. 1973) and as a tectonic (thrust) contact (Roffeis et al. 2014).

The present study shows that

1. The contact between the Kvitenut and Revseggi nappe units involves an up to 50m thick zone of imbricated mylonite gneiss with a central (2-5m thick) ultramylonite, documenting that the contact between the Kvitenut and Revseggi nappes is tectonic rather than depositional.

2. The (top-SE) fault rocks at the contact have commonly been overprinted by large-scale extensional top-NW-extensional transport.

3. Preliminary dating of pegmatites associated with peak metamorphism have yielded Ordovician ages, and new age determiations are in progress to clarify the age relations.

Our preliminary results therefore suggest that the Revseggi Nappe was emplaced on top of the Kvitenut Nappe at an early stage of the Caledonian collision, thereafter riding piggy-back on a thrust unit consisting of the Dyrskard and Kvitenut nappe units that had become coupled in the Sveconorwegian Orogeny.

References

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