



## **A tectonic conundrum in the Otta-Bøverdalen area, Scandinavian Caledonides**

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The tectonostratigraphy and interpretation of the geological units at the north-eastern end of the Jotun Nappe Complex in southern Norway have been the focus of widely diverging interpretations and debates for over 70 years. New results shed new light on the matter but still leave some fundamental questions open. In the Otta–Heidal side of the region the exposed succession starts with allochthonous Paleozoic schists at the bottom, overlain by a unit of about 1500 Ma gabbro and Late Neoproterozoic arkose (sparagmite), followed by the high grade Rudihøe–Mukampen Suite, which was metamorphosed between 950 and 900 Ma (Heim and Corfu 2017). The Rudihøe–Mukampen Suite is structurally overlain by the Steinhø Complex of metasandstones, garnet mica-schists and amphibolites metamorphosed at about 473 Ma. They are both intruded by 430-427 Ma trondhjemite dykes and are overlain by the lowest elements of the Trondheim Nappe Complex. This uppermost unit in the area comprises metasedimentary rocks and local serpentinite lenses and conglomerates, locally with Ordovician fossils, typical elements of tectonic melange formed during hyperextension of continental crust. This unit is lithologically very similar to the melange documented in Bøverdalen on the north-western side of the Jotun Nappe Complex and further south (Andersen et al. 2012; Jakob et al. 2017). On this north-western margin, however, the melange overlies a unit of Paleozoic schists above the basement of the Western Gneiss Complex, but is itself tectonically overlain by various units of limestone, an imbricate assemblage of gneisses and 970-950 Ma volcanic and subvolcanic units (Sognefjell Complex), and by the Jotun Nappe Complex. Since there is strong lithological and geochronological evidence that the Jotun Nappe Complex is a likely lateral equivalent of the Rudihøe–Mukampen Suite the contrasting position of the melange below (in the west) and above (in the east) the crystalline nappe complex is paradoxical and must imply that either these melange occurrences are not equivalent or that the tectonostratigraphy in this areas is highly dismembered and partially out of sequence.

Andersen, T.B., Corfu, F., Labrousse, L. & Osmundsen P.T. 2012. Evidence for hyperextension along the pre-Caledonian margin of Baltica. *Journal of the Geological Society, London*, 169, 601-612

Heim, M. & Corfu F. 2017. Heidal revisited: new light on critical elements in the allochthon of the classical Otta region (Oppland). *Geophysical Research Abstracts*, 19, EGU2017-9151

Jakob, J., Alsaif, M., Corfu, F. & Andersen, T.B. 2017. Age and origin of thin discontinuous gneiss sheets in the distal domain of the magma-poor hyperextended pre-Caledonian margin of Baltica, southern Norway. *Journal of the Geological Society, London* 174, 557-571