



Implications of Laurentian Grenville crust in the northern Scandinavian Caledonides

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Field and geochronological data ($^{40}\text{Ar}/^{39}\text{Ar}$ and U-Pb ID-TIMS and SHRIMP) on granitoids and their metasedimentary host rocks in the Salten region, northern Norway, document large Early Neoproterozoic plutons intruding slightly older metasedimentary protoliths. The Bratten-Landegode-Tårnvika gneiss complex, herein called the Rørstad complex, and the Heggmo unit have traditionally been interpreted to represent Baltican basement culminations (~ 1.8 Ga), but we document them to be exotic Grenville elements within separate thrust sheets at the structurally highest preserved tectonostratigraphic level (Uppermost Allochthon) of the Scandinavian Caledonides. Neoproterozoic ages for magmatism in these two tectonic units range between ~ 950 and 926 Ma, whereas metasedimentary host rocks of the Heggmo unit were deposited after ~ 1050 Ma (youngest zircon) prior to their intrusion. We suggest correlation of the metasedimentary rocks between the Heggmo and the Rørstad, although differences in their tectonometamorphic histories are clear. The Rørstad complex was migmatized in the Late Ordovician (~ 450 Ma) and later intruded by pegmatites and diorite sheets at ~ 433 and 428 Ma, respectively. Ordovician migmatites have not been found in the Heggmo unit, but relics of ~ 450 Ma activity might be masked by intense migmatization and associated leucogranite activity are documented. $^{40}\text{Ar}/^{39}\text{Ar}$ step-heating analysis of hornblende and K-feldspar locally record pre-Scandian thermal effects, whereas muscovites and phlogopites indicate Siluro-Devonian metamorphism and cooling from Scandian emplacement.

The Rørstad complex and the Heggmo unit show one-to-one correlations in ages with Mesoproterozoic to Neoproterozoic rock complexes from the southern segment of the East Greenland Caledonides, as well as affinities to other complexes throughout the North Atlantic realm. The discovery of Laurentian Grenville-continental crust in the Uppermost Allochthon of the Scandinavian Caledonides requires substantial revision of the tectonostratigraphy of this part of the Caledonides. The Rørstad and Heggmo preserve a record of tectonic events that had taken place on the northeastern Laurentian continent prior to its Caledonian continent-continent collision with Baltica. We hypothesize on interactions and displacements between the two conjugate continental margins during the Scandian phase of the Caledonian orogeny.