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The Landegode- Heggmovatn "basement terranes"- fragments of the Laurentian Grenville Orogen in the Scandinavian Caledonides?

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Recent geochronological studies on sedimentary (Heggmovatn supracrustal) and igneous rocks (Landegode igneous complex) from the Bodø area, North Norway, indicate that they do not represent a westward extension of the Mesoproterozoic and older rocks exposed in the Caledonian foreland further east, as generally thought. The Heggmovatn supracrustals, making up a “window” east of Bodø, are dominated by metapsammites, but also include units of metapelites. The supracrustals are intruded by two generations of granitoids. The oldest intrusives (granodiorite) have an emplacement ages between. 925 Ma and 940 Ma (ID-TIMS) and are deformed and metamorphosed together with the supracrustals under low amphibolite facies conditions. Weakly deformed granitic aplites and pegmatites are typical for the younger generation intrusives. These were emplaced around 431 Ma. LA-ICPMS data on clastic zircons from the psammite indicate a late Mesoproterozoic to early Neoproterozoic depositional age (1040-930Ma) for the Heggmovatnet supracrustals. The age of metamorphism and deformation is unclear, but is either Grenvillian or early Caledonian in age.

The Bodø-Landegode igneous complex makes up the island of Landegode and some small islands west of Bodø. The dominant lithology is megacrystic granite intruded by diorite dykes, amphibolite and granite pegmatites. All units except the pegmatites are foliated. Preliminary ID-TIMS data indicate an emplacement age of ca. 945 Ma for the megacrystic granite and the diorite, and Silurian age (432 Ma) for the pegmatites.

The early Neoproterozoic emplacement ages for the magmatic rocks in the Bodø area, intruding thick psammitic successions in the Heggmovatn area, indicate that they constitute part of the uppermost thrust-sheet in the Scandinavian Caledonides (Uppermost Allochthon), most likely derived from Laurentia‘s eastern margin. We tentatively correlate the Heggmovatn supracrustals with the Neoproterozoic Krummedal sequence in NE Greenland with its 950 Ma and 430 Ma intrusives.