



Detrital Zircon Signatures of the Baltoscandian Margin in the central Scandes

D. G. Gee (1), A. Ladenberger (2), P. Dahlqvist (2), and D. Frei (3)

(1) Uppsala University, Department of Earth Sciences, Uppsala, Sweden (david.gee@geo.uu.se, +4618501110), (2) Geological Survey of Sweden, (3) Stellenbosch University, Matieland, South Africa

An on-going project seeks to establish the provenance signatures along the Baltoscandian margin, from central Jämtland in Sweden to Finnmark in northern Norway, by LA-ICPMS U/Pb analysis of detrital zircons in siliciclastic (meta-)sediments in the various nappes of the Lower and Middle allochthons (including the Seve Nappe Complex, SNC; Andreasson and Gee 2008, 33rd IGC Oslo) of the Scandinavian Caledonides.

In the western central Jämtland -Tröndelag profile of the central Scandes, the detrital zircons provide evidence of the change in character of the Baltoscandian crystalline basement, from the characteristic late Paleoproterozoic granites of the Trans-Scandinavian Igneous Belt (TIB, c.1650-1850Ma) in the autochthon, to the typical Mesoproterozoic age profile (c.950-1700Ma) of the Sveconorwegian Orogen of southwestern Scandinavia in the hinterland. In the autochthon, the Cambrian alum shales rest directly on late TIB basement, but in the overlying, low grade Jämtlandian Nappes of the Lower Allochthon, these shales are underlain by Early Cambrian (possibly Late Ediacaran) Vemdal quartzites; they provide strong bimodal signatures with TIB (1700-1800) and Sveconorwegian, *sensu stricto* (950-1000Ma) ages dominant. This signature persists in these formations, at the same tectonostratigraphic level, westwards into Tröndelag, via Trollheimen to the Norwegian west coast. Ordovician turbidites (Norråker Formation) of the Lower Allochthon in Sweden, sourced from the west, have unimodal signatures dominated by Sveconorwegian (*sensu stricto*) signatures with peaks at 1000-1100Ma, but with subordinate components of older Meoproterozoic zircons (1200-1650Ma). Younger sandstones in the Jämtlandian Nappes are being analysed.

In the greenschist facies Middle Allochthon, the Särv Nappe signatures (Be'eri-Shlevin et al 2011, Precambrian Research) are mostly bimodal (950-1100Ma and 1700-1850Ma), with variable dominance of the younger or older group and subordinate other Mesoproterozoic components. In the most westerly located Särv samples, in Tröndelag, Sveconorwegian zircons, with a peak at c. 1000Ma, dominate. The overlying, amphibolite to eclogite facies lower part of the Seve Nappe Complex (SNC), where the metasediments are dominated by feldspathic quartzites and calc-silicate-rich psammites, some units have unimodal signatures very similar to the Ordovician turbidites of the Jämtlandian Nappes. Central parts of the SNC (Kirkland et al 2011, Precambrian Research) have bimodal signatures similar to the Särv Nappes. In the overlying Upper Allochthon, lower Köli (Baltica-proximal, Virisen Terrane), Late Ordovician quartzites provide unimodal signatures dominated by Sveconorwegian ages (*sensu stricto*), as might be expected from the associated Baltoscandian Hirnantian faunas.

Further north in the Scandes, Kirkland et al (2011) provided the zircon signature of an "autochthonous" sample in the Akkajaure area that is similar to the Vemdal quartzites of the Lower Allochthon in Jämtland. Data on the Kalak Nappes, in previous Kirklandian papers, are in no way exotic to the Sveconorwegian Baltoscandian margin; however, they do suggest the influence of the Timanian northeastern margin of Baltica. Isotope-age data, acquired previously by various authors over the last forty years, support the interpretation that the Sveconorwegian Orogen, in the Neoproterozoic, continued northwards, from type areas in the south, along the entire Baltoscandian margin of Baltica, into the high Arctic.