GSA Annual Meeting in Seattle, Washington, USA - 2017

Presentation Time: 9:00 AM-5:30 PM

DETRITAL ZIRCON GEOCHRONOLOGY AND PROVENANCE OF THE HECLA HOEK SUCCESSION OF NORTHEASTERN SVALBARD, NORWAY

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The Svalbard archipelago has been divided into at least three pre-Devonian tectonic provinces, or terranes, that were juxtaposed during the Silurian–Devonian Caledonian Orogeny. The Northeastern Province includes the >6 km thick Neoproterozoic–Ordovician Hecla Hoek Succession that consists of, in ascending stratigraphic order, the Veteranen, Akademikerbreen, Polarisbreen, and Oslobreen groups. Previous workers have emphasized distinct stratigraphic ties between the Hecla Hoek Succession and age-equivalent strata of the Eleonore Bay Supergroup, East Greenland Caledonides, providing an important paleogeographic constraint on pre-Caledonian tectonic reconstructions of the North Atlantic region. We conducted U-Pb laser ablation-inductively coupled mass spectrometry (LA-ICPMS) on detrital zircon from sedimentary units throughout the Hecla Hoek Succession of Ny Friesland and Nordhaustlandet, Svalbard, to test these presumed Neoproterozoic–early Paleozoic paleogeographic linkages. Sandstone samples from the Hecla Hoek Succession yield two distinct zircon U-Pb age distributions: 1) bimodal distributions with peak age populations ranging from ca. 1920–1820 and 2830–2650 Ma, and 2) polymodal distributions with peak age populations ranging from ca. 1250–930, 1540–1380, 1680–1630, and 2830–2650 Ma. These age populations are consistent with derivation from the main basement domains of western Baltica and eastern Laurentia (in present coordinates), including a source region within the Grenville–Sveconorwegian orogen. They are also consistent with previously reported U-Pb detrital zircon data from the Eleonore Bay Supergroup of East Greenland, as well as multiple provenance datasets from age-equivalent strata in the Scandinavian Caledonides.

Session No. 90--Booth# 501

T221. Circum-Arctic Structural Events: Tectonic Evolution of the Arctic Margins and Trans-Arctic Links with Adjacent Orogens (Posters)

Sunday, 22 October 2017: 9:00 AM-5:30 PM

Halls 4EF (Washington State Convention Center)

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