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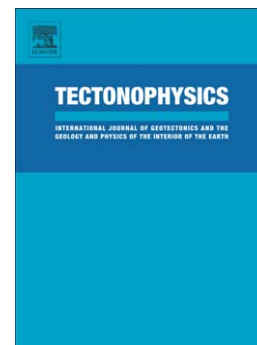
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## Geochronologic Constraints on the Permian-Triassic Northern Source Region of the Sverdrup Basin, Canadian Arctic Islands

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### Abstract

Detrital zircon U-Pb ages are used to provide constraints on the geologic evolution of the sediment source area(s) north of the Sverdrup Basin from the middle Permian to Late Triassic. Previous research on facies relationships and sediment progradation patterns of late Paleozoic and Triassic strata from the northern portion of Sverdrup Basin indicate that substantial sediment was derived from north of the basin. Utilizing LA-ICP-MS U-Pb geochronology we have analyzed detrital zircons from these northerly derived strata, including sandstones of four Late Triassic (Norian) outcrop samples the northeast Sverdrup Basin, and two Triassic (Olenekian and Carnian) and two Permian (Roadian and Wordian) samples from wells in the northwestern Sverdrup Basin.

The samples from northwestern Sverdrup Basin contain abundant Early Mississippian (350 Ma) to Early Ordovician (460 Ma), late Cambrian (500 Ma) to Cryogenian (650 Ma), and early Tonian (960 Ma) to Orosirian (2050 Ma) detrital zircon. The detrital zircon ages from these samples are similar to zircon age components of Late Devonian siliciclastic strata of the Franklinian foreland basin, and we suggest a similar source area, a low-lying landmass north of the Sverdrup basin, which included extensive Devonian foreland basin strata.

The U-Pb detrital zircon age components of northerly-derived Late Triassic strata of northeastern Sverdrup Basin samples are similar to the Permian and Triassic northwestern Sverdrup samples, but also contain a substantial age component of Triassic (201 Ma) to Middle Mississippian (340 Ma) detrital zircons, suggesting an additional source area. The only well documented source for such

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