Over one billion years of crustal evolution recorded in the Saglek-Hebron Complex (Northern Labrador)

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The Saglek-Hebron complex (SHC) in Northern Labrador represents one of the oldest terrains on Earth. It is a granite-greenstone terrain that recorded over one billion years of magmatism history between ~3900 Ma and ~2700 Ma. It is dominated by trondhjemite-tonalite-granodiorite suite (TTG) called the Iqualuk tonalites and the Uivak gneisses. Uivak are subdivided into the most extensive Uivak I consisting of Qtz +Pl +Bio ±Kfs tonalite gneisses and the subordinate porphyritic Uivak II granodioritic and Iqualuk tonalitic gneisses consisting of Qtz +Pl +Hbd +Cpx +Ttn ±Kfs. Zircons from the Iqualuk yield a U-Pb upper intercept age of 3888± 28 Ma and zircon U-Pb ages of Uivak I&II are 3838± 8 and 3631± 10 Ma respectively. The Eoarchean gneisses are intruded by younger 2775±7 Ma (mean $^{206}Pb/^{207}Pb$ age) granites consisting of Qtz +Kfs +Pl ±Ap. In-situ Hf isotopic data on zircons from the Eoarchean Iqualuk and Uivak samples yield chondritic to slightly suprachondritic initial εHf values (-2 to +2) suggesting a relatively juvenile source with limited contribution, if any, of much older crust. Zircons from the Neoarchean granites yield low initial εHf values (-13) consistent with reworking of the Eoarchean Uivak gneisses evolving with a $^{176}Lu/^{177}Hf$=0.01, without significant contribution of a juvenile source. The SHC is often correlated to the Itsaq gneiss complex of SW Greenland and our zircon εHf data suggest that both gneissic complexes share a similar Eoarchean crustal history however the SHC younger granitoids do not appear to have recorded a more juvenile source within the Meso-Neoarchean unlike the SW Greenland granitoids (Næraa et *al.* Nature 2012).