A petrographic, geochemical, and geochronological study of the southern Numok Intrusive Suite, Labrador

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The Aillik domain of the Makkovik Province in Labrador is intruded by several magmatic suites that are broadly divisible into groups that have ages of ca. 1860 Ma, ca. 1800 Ma, ca. 1720 Ma and ca. 1650 Ma. The southern Numok Intrusive Suite is part of the ca. 1800 Ma group of intrusions and occurs in NTS map area 13J/14, south of the Adlavik Brook fault zone. Petrography indicated two lithological phases in the southern Numok Intrusive Suite: a biotite-hornblende quartz monzonite to monzonite phase and a biotite-hornblende monzogranite phase. Major element geochemistry revealed that the biotite-hornblende quartz monzonite to monzonite has SiO_2 contents ranging from about 55 to 65 wt.% and TiO_2 ranging from 0.6 to 1.1 wt.%. The biotite-hornblende monzogranite phase has SiO_2 contents ranging from about 70 to 75 wt.% and TiO_2 ranging from 0.2 to 0.5 wt.%. The two phases are clearly separated on many major element plots. In both phases, REE diagrams showed a steep decrease from light to heavy rare earth elements with a strongly negative europium anomaly, although the biotite-hornblende quartz monzonite to monzonite has a tighter range of concentrations. Zircon from a quartz monzonite sample of the southern Numok Intrusive Suite yielded an age of 1808 ± 2.3 Ma (weighted average $^{207}Pb/^{206}Pb$, mean square weighted deviates = 0.86). This extends the age of the Numok Intrusive Suite compared to a previous reported age of 1801 Ma from the northern exposure of the suite. The southern Numok Intrusive Suite is at least 3 Ma older than the northern Numok Intrusive Suite. This new age indicates that this part of the southern Numok Intrusive Suite cannot be directly correlated with a younger phase north of the Adlavik Brook fault zone and, therefore, this intrusion cannot be used to assess the displacement along the fault zone.

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