On the presence of almandine bearing rocks at the moraine of Collins Glacier, King George Island: part of the Scotia Metamorphic Complex?

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The Antarctic Peninsula is a magmatic arc of Triassic to Neogene age, containg fragmented subduction complexes, which outcrop as metamorphic sequences within the South Shetland archipelago. They are reported in the northen (Elephant Island group) and the southern-most island (Smith Island). These exposures, together with similar rocks at South Orkney Islands (north-east of the Antarctic Peninsula), have been grouped as the 'Scotia Metamorphic Complex' (Tanner et al., 1982). They are characterized by blueschist/greenschist and epidote- to amphibolite facies rocks with ages between 80 and 47 Ma at the South Shetland Island (e.g. Truow et al., 1998). Almandine-bearing schist are so far only reported on Elephant Island.

King George Island is the biggest island and is located at the center of the South Shetland archipelago. An incipient metamorphic rock was collected from the moraine of Collins Glacier, south-west of King George Island. The rock yielded a metamorphic assemblage of albite, quartz, muscovite, phlogopite and almandine, which is currently being examined in detail by XRD, Raman spectroscopy and EPMA analyses.

This assemblage suggests that under the ice-cap at King Gorge Island, there is metapelitic units outcropping, that could be correlated with rocks of the Scotia Metamorphic Complex, indicating that the subduction complexes also occurs at the center of the archipelago.

The more continous presence of these units at the South Shetland archipelago, rather than exclusively on its north-south extremes, is relevant for a better comprehension of the tectonic evolution of the subduction margin.

Tanner et al. 1982. JGSL 139, 683-690.
Truow et al. 1998. JMG 16, 475-490.