PROVENANCE OF CENOZOIC UNITS FROM SEYMOUR ISLAND, WESTERN ANTARCTICA, BASED ON DETRITAL ZIRCON U-PB GEOCHRONOLOGY

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Seymour Island within the Weddell Sea represents an emerged portion of the back-arc basin of the Antarctic Peninsula magmatic arc. Landscape in the northern portion of the island is dominated by a plateau known as "meseta" comprised of three
Cenozoic sedimentary units. At the base, the Eocene La Meseta Formation crops out, a fossil-rich sequence of sandstones and mudstones. It is unconformably overlain by the Hobbs Glacier Formation, a glaciomarine, pebble-rich mudstone unit that grades to sandstone with rare clasts. A sharp basal contact separates the underlying units from the pebbly mudstone of the Weddell Sea Formation. The provenance of each these three units has been studied using SHRIMP U-Pb ages. The La Meseta Formation has detrital zircons ranging from 83 to 2720 Ma. Those from Hobbs Glacier Formation yielded ages between 20 and 2750 Ma, whilst the Weddell Sea Formation records ages varying from 23 to 3320 Ma. In each of the three samples there are prominent age peaks at about 175, 570 and 1050 Ma, but late Neoproterozoic to Cambrian ages are the more dominant. The youngest zircon from Hobbs Glacier sediments, dated at
20.0 ± 0.4 Ma, supports a Miocene age for the deposition of this unit. The clast assemblage of the Neogene units is typical of magmatic arcs likely sourced from the
Antarctic Peninsula. Moreover, at the base of Hobbs Glacier Formation, a Boulder pavement with glacial striae and small stoss and lee structures indicate glacier movement toward the SE. Detrital zircons ages between 620 and 500 Ma are probably related to Brasiliano/Pan-African sources, whilst older detrital populations could be from either the basement of the arc or derived from reworking of older sedimentary rocks. However, it is important to note that *in situ* basement older than Silurian has not been reported from the Antarctic Peninsula.