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The geology of King George Island, South Shetland Islands: uniting local geological maps and stratigraphical columns

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King George Island is the largest one of the South Shetland Islands group distributed parallel to and separated by the Bransfield Strait of the northern tip of Antarctic Peninsula. The archipelago of the South Shetlands is mainly composed of the products of the active margin developed as a result of the subduction of the Phoenix Plate beneath the continental crust of the Antarctic Peninsula (e.g. Barker, 1982; Bastias et al., 2019). The lithologies are largely dominated by Mesozoic and Cenozoic sedimentary and volcanic successions that are cut by a few hypabyssal plutons. While some authors have suggested a southwest to northeast trend along the archipelago from older to younger magmatic activity (e.g. Haase et al., 2012), others have indicated that some of the magmatic events may have been recorded along the entire archipelago (e.g. Valanginian arc rocks; Bastias et al., 2019). Regardless, King George Island hosts an exceptional stratigraphical record of the Cenozoic period. Moreover, this island is mostly covered by an ice cap at the present day, which is commonly terminated with ice cliffs around much of the island. The southern edge of the island host Mesozoic and Paleogene successions, these rocks are dominated by volcanic and volcanoclastic units. The rocks in King George Island are generally young to the east and to the north ends. Cape Melville, the southeast extreme of the island, hosts the youngest sedimentary rocks known on the island: the Moby Dick Group (Birkenmajer, 1985).

While several authors have presented local studies in the King George Island over the last three decades, an integrated assessment of the outcropping units in the entire island remains unexplored. A new geological map for King George Island will allow to update the current understanding of the stratigraphy of the South Shetland Islands, which will help to support not only the geological studies but also those focused on the environmental and paleontological record.

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