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Glacier changes on South Georgia since the late-19th century documented in historical photographs

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South Georgia is one of the few landmasses in the Southern Ocean. It provides a crucial geographical datapoint for glacier responses to climate change over different timescales. As part of an ongoing glacier inventory of the island, we are compiling a database of historical glacier photographs. Since the late 19th century, the island has been visited by numerous scientific and survey expeditions, as well as being the land-base for a major whaling industry. Historical photographs of the island are available from the late-19th century, beginning with the 1882-83 German International Polar Year Expedition. Many more exist from the 20th century, notably from the South Georgia Surveys in the 1950s. An assessment of the value of the photographs indicates that spatial coverage is variable, many lack reference features to pinpoint glacier positions and, in the case of smaller glaciers, the presence of snowcover makes it difficult to define the ice edge. Nevertheless, the photographs provide useful corroboration of more advanced glacier positions during the late-19th century and recession of smaller mountain and valley glaciers during the mid-20th century, while larger tidewater and sea-calving glaciers generally remained in relatively advanced positions until the 1980s. Since then, nearly all the glaciers have retreated; some of these retreats have been dramatic and a number of small mountain glaciers have fragmented or disappeared. The response of the glaciers can be related to synoptic-scale warming, particularly since the 1950s, moderated by individual glacier geometry and topography.