



## **Investigating glacial mass balance variability around the Prince Gustav Channel**

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Glaciers on the Antarctic Peninsula have shown a varied response to recent climatic change. Most commonly, AP tidewater glaciers have retreated at the calving front and their flow rate has accelerated, increasing the contribution to sea level rise. Here, we utilise the results from a new photogrammetric technique that unlocks the archives of aerial photography from the 1940's to present, to investigate the driving mechanisms of glacier mass change on the AP over this period.

Surface DEMs at different epochs have been derived using the new technique for a number of individual glacier basins. A higher-order vertically-integrated ice stream model is used to investigate the driving mechanisms of change for the area around the Prince Gustav Channel, incorporating basins covered by the new datasets. The Prince Gustav Ice Shelf collapsed in January 1995, followed by significant frontal retreat and speed up of its tributary glaciers. Additionally, significant changes have been observed for non-tributary glaciers such as Whisky Glacier on James Ross Island. Here, we investigate the sensitivity of this region's glaciers to ice shelf collapse, atmospheric and oceanic variability.