

Observing the presence of Penguin colonies in the Antarctic

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Summary

The aim of this project was to locate and monitor Adelie Penguins in multiple locations across Antarctica, primarily Joinville island. We tracked them via their guano which we did by applying specific filters to the EO browsers to make the guano more identifiable.



Above: birds eye view of Joinville Island

Background information

Adélie penguins (*Pygoscelis Adeliae*) are found on the coast of mainland Antarctica, as well as some sub-Antarctic islands. They have a diet of primarily krill.

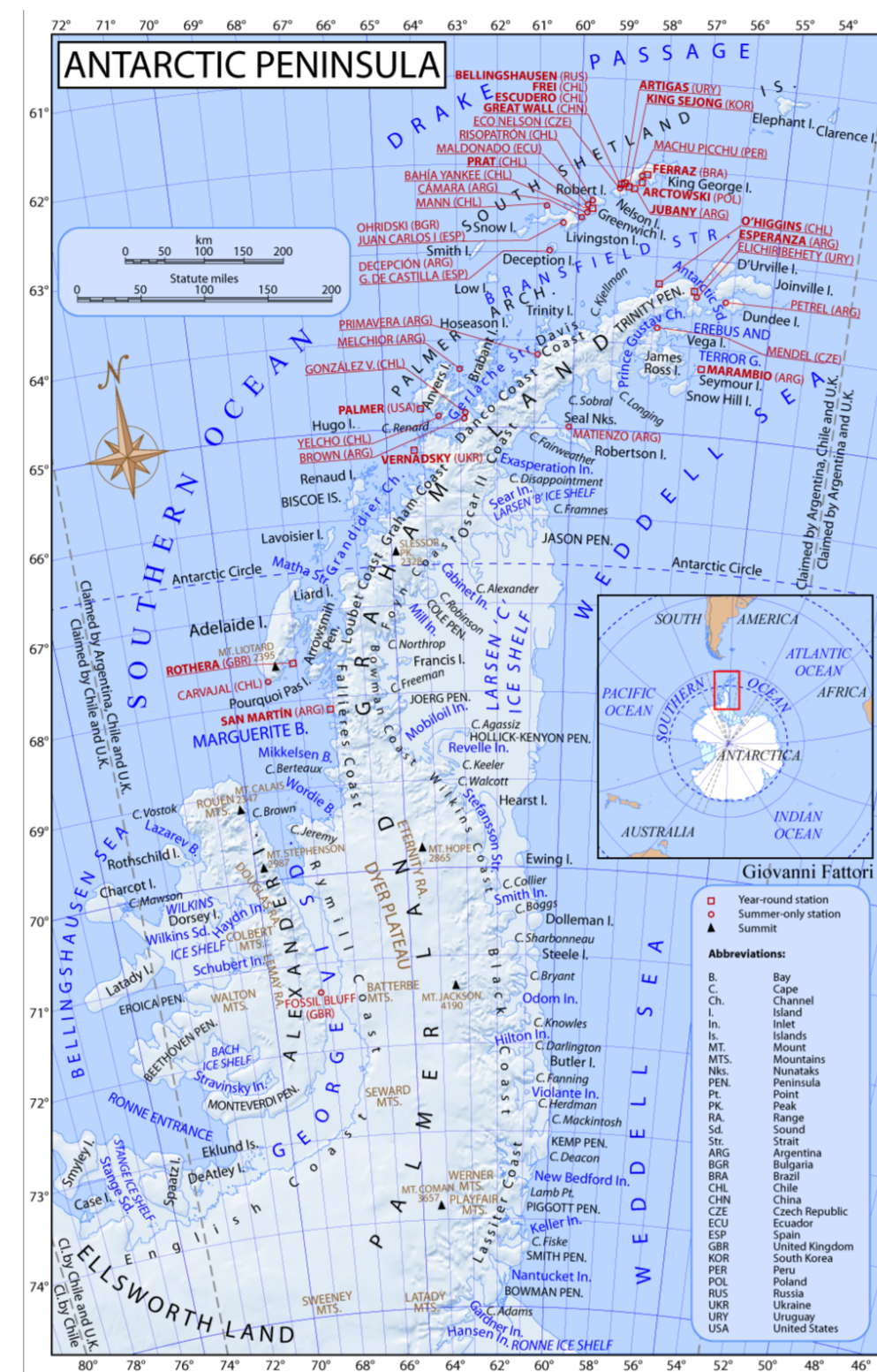


Penguin

Left: a photograph of an Adélie penguin (Wikipedia)

References

National Geographic; Wikipedia



Peninsular

Above: a map of the Antarctic Peninsula (Wikipedia)

Background information

The majority of penguin colonies in Antarctica are located coastally, primarily on the Antarctic Peninsula and on the archipelago of Danger Islands, most commonly Adélie penguins. (National Geographic). Penguins are too small to view from a satellite, but by looking at these locations under a filter, we can track the penguins by searching for their guano, which can be used to find effects of habitat loss on the size of the colonies. Breeding season for Adélie penguins is described as being from October to March, which is when we searched.

Experimental Method

The penguins were found by reviewing images of different areas within the Antarctic peninsula with specific changes to the visualisation. Images were chosen with the lowest cloud coverage within the winter and early spring months.

Around the area of interest, we altered the gain down to 0.5 to change the saturation. At the composites we used a custom visualisation and changed the R: to B12, G: to B11, and the B: to B02 (as seen below). We then changed line 10 on the custom script to:

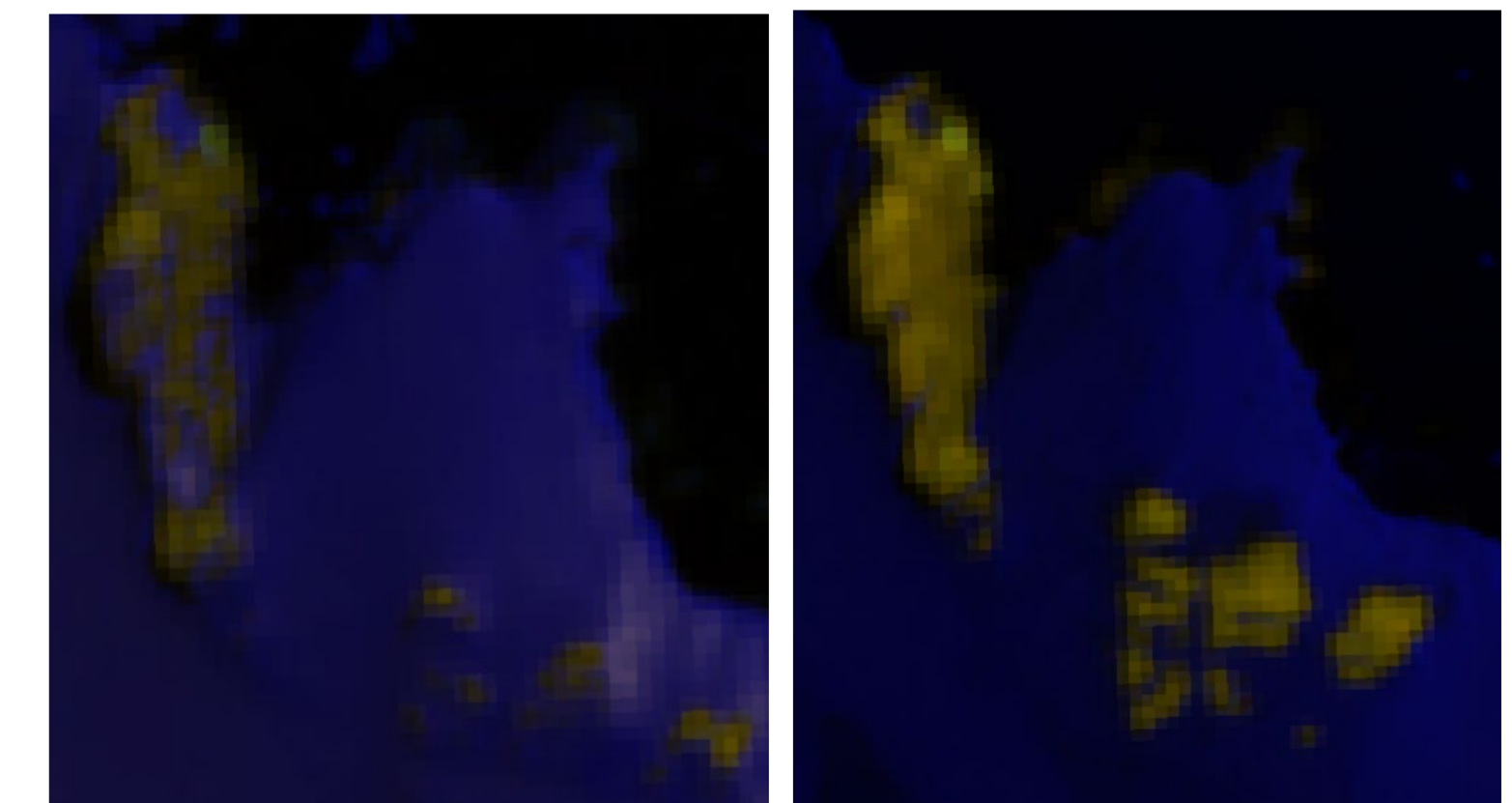
```
return [4.5 * sample.B12,3.5 *
sample.B11,0.5 *
sample.B02, sample.dataMask ]
We then repeated this, changing
the composites to R: B12, G: B07 and B: B03
and changed the custom script (line 10 again)
to:
return [4.5 * sample.B12,0.75
* sample.B11,0.5 *
sample.B02, sample.dataMask ]
```



Above: the composite used to identify the penguin guano.

Results

We found an area of interest in the North-East coastal area of Joinville Island. We were slightly unsure of the results and what they were indicative of. The results are evidenced by the highlighted area which was visible for around three months from November to February. The size grew slightly over the time when it was visible but changed from approximately 0.11 km² to 0.16 km².



Above left: area of interest November.
Above right: area of interest December.

Analysis & conclusions

Since the penguins were only visible for a short amount of time and didn't cover a particularly large surface area it's possible that it was a small colony of penguins that migrated away after breeding season. Moving forward, we can compare our findings to results documented before or to previous years to monitor the changes over time regarding the presumed colony to see any changes regarding size or migration.