

# SCAR Standing Committee on Antarctic Geographic Information (SCAGI) 2014: UK NATIONAL REPORT



SCAR Antarctic Digital Database (ADD)

Separate report

UK still committed to developing and maintaining the ADD



Fieldwork – aerial photography campaign November and December 2013



Mapping work



UK Antarctic Place-names Committee (APC)



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# Fieldwork – aerial photography campaign

November and December 2013

-  Zeiss/Intergraph DMC camera - supersedes Zeiss RMK film camera used 1990-2011
-  Resolution:  
10 cm at 1000 m (3300 ft); 40 cm at 4000 m (13,100 ft)
-  Areal coverage:  
3300 ft = 1.4 km strip width; 13,100 ft = 5.6 km
-  4-band images RGB and near-IR:
-  Applanix GPS/IMU system – photogrammetry ready images



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# Deployed in BAS Twin Otter



Extra fuel tank gives 5 hrs endurance: about 650 nm/1200 km



## Three task types:



Science support: Glacier change photogrammetry



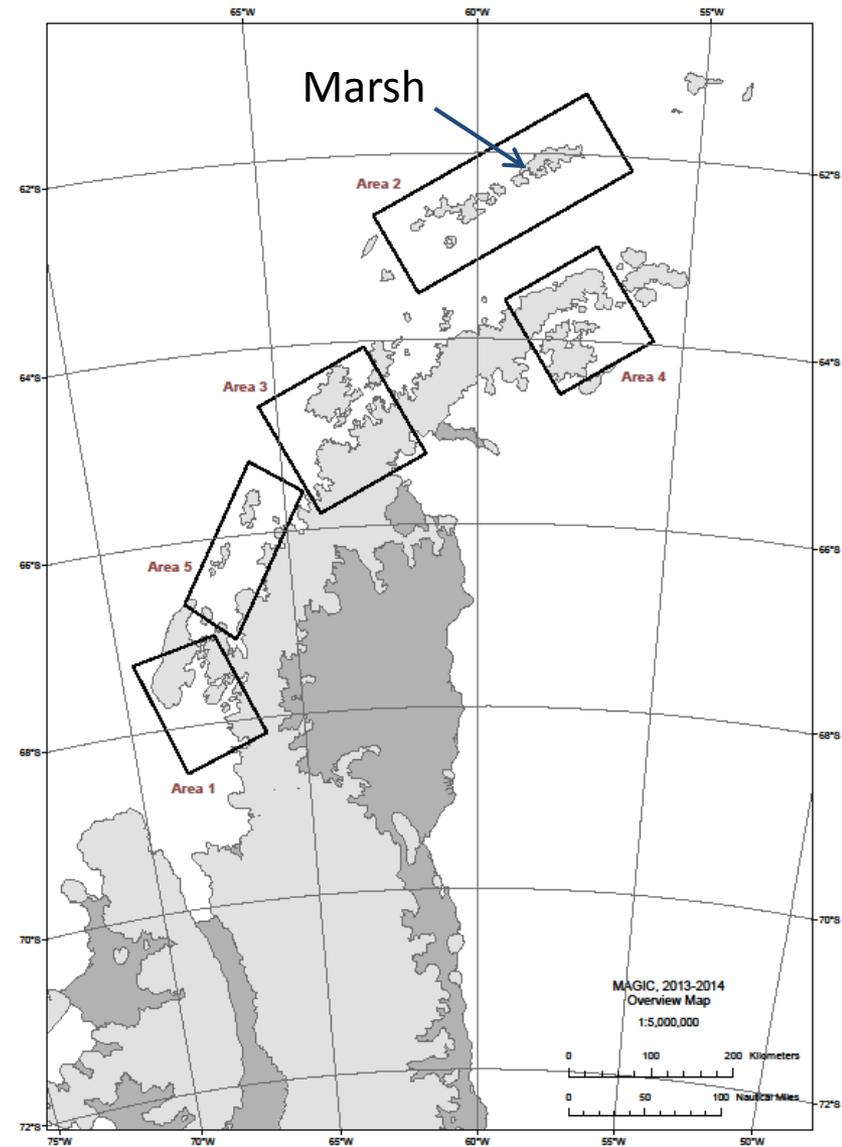
Science support: Penguin census



Topographic mapping



5 task regions, accessed from Rothera and Marsh



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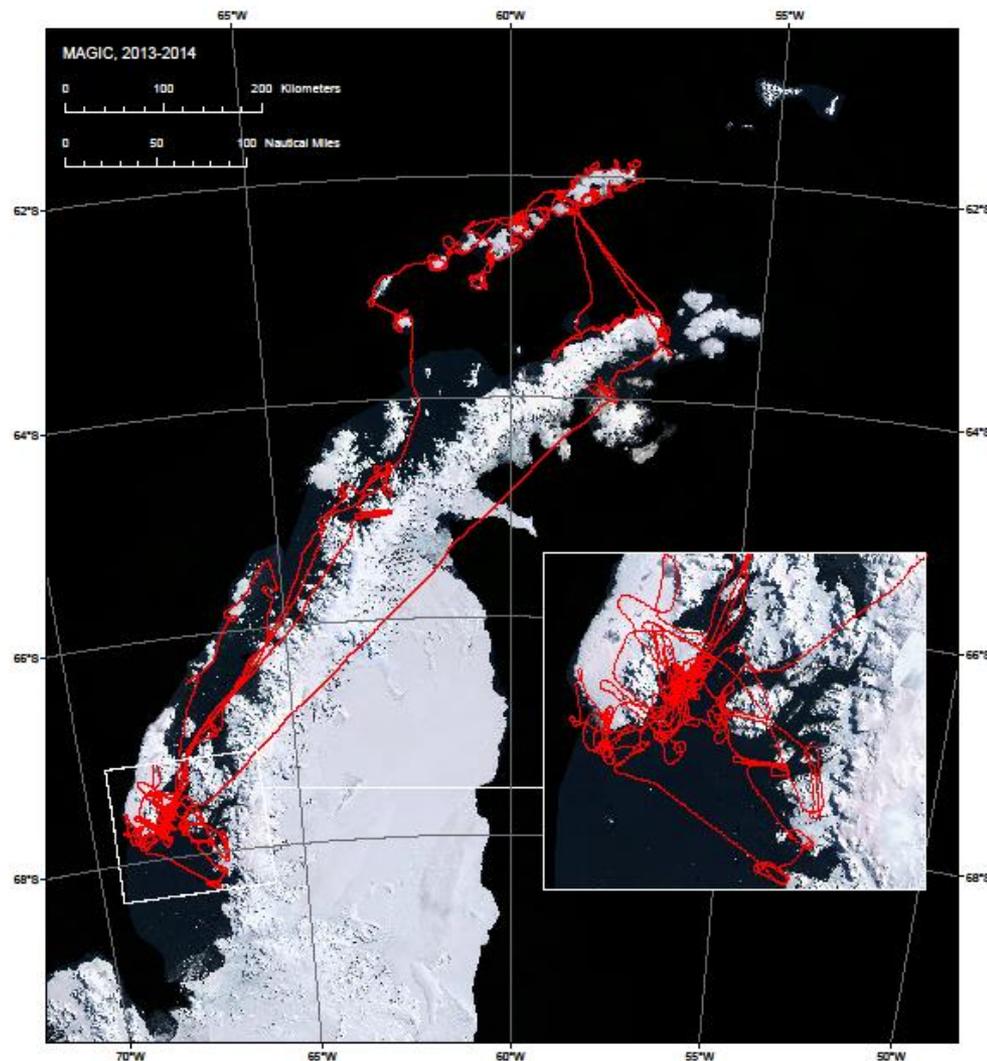
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# MAGIC Aerial photography campaign 2013

 14 flights, 42 hrs, 9500 km

 153 targets achieved:  
137 penguins; 11 mapping  
targets; 6 glaciers

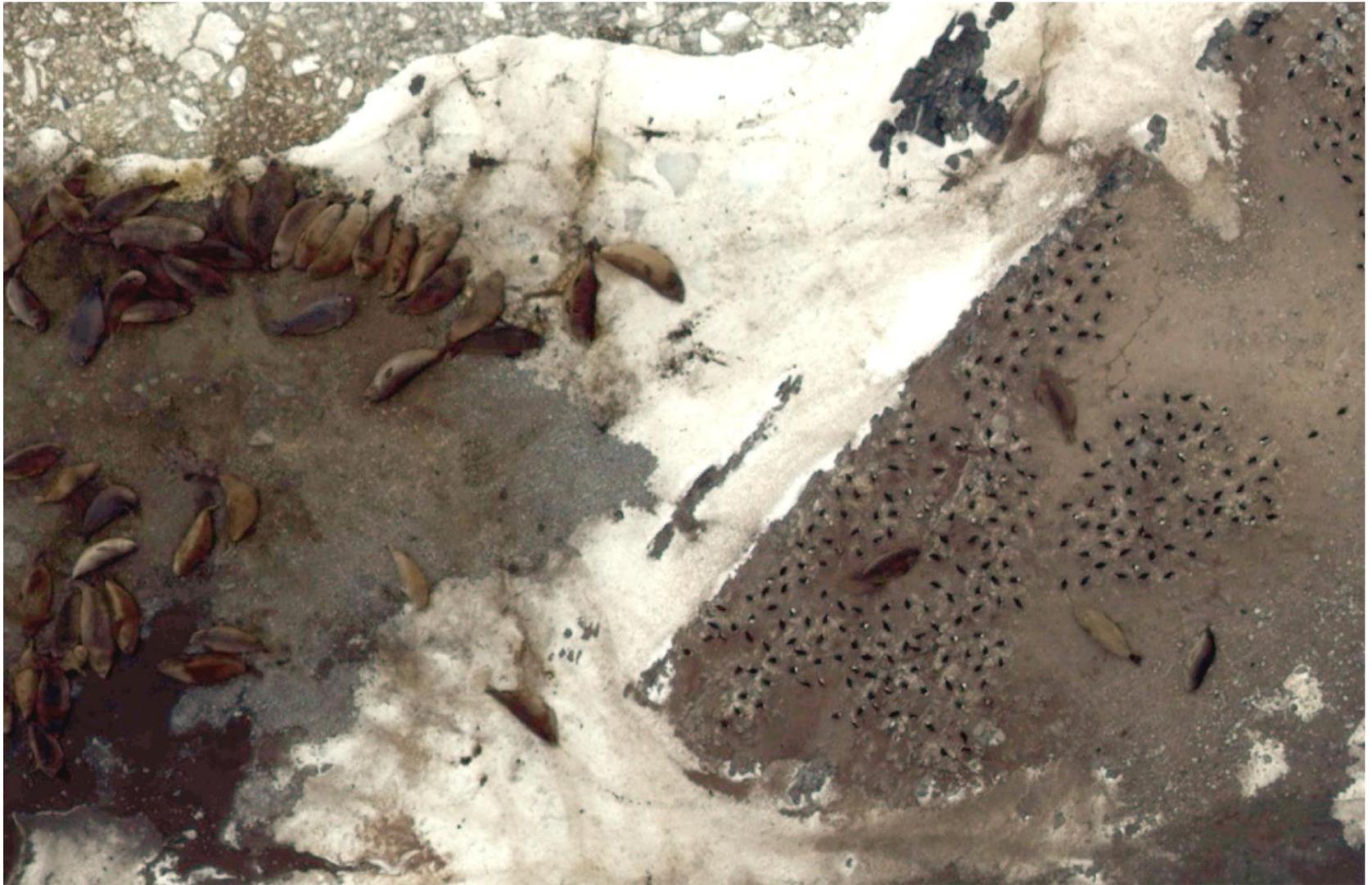
 2,600+ images – 2000+  
penguins



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Avian Island: 6.5 cm resolution at 650 m/2000 ft



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Test flights over Avian Island to find optimum balance between resolution and altitude: looking for highest acceptable altitude



12 cm resolution at  
1200 m /3937 ft



14 cm resolution at  
1400 m /4593 ft



# Boulton Glacier – Beascochea Bay (nr Vernadsky)



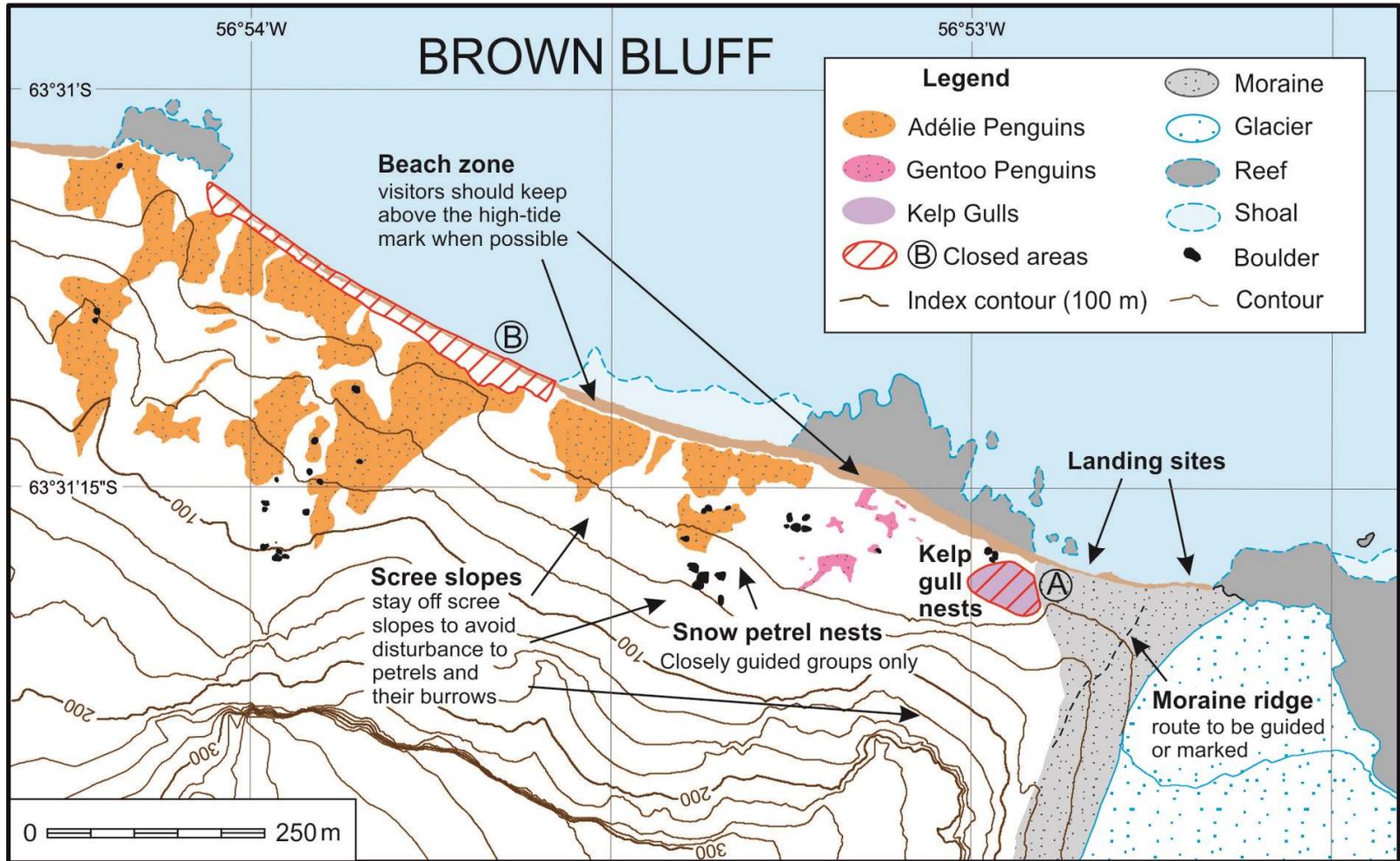
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Some simple, small areas, some more complex..  
 Maps completed and submitted to Treaty Secretariat

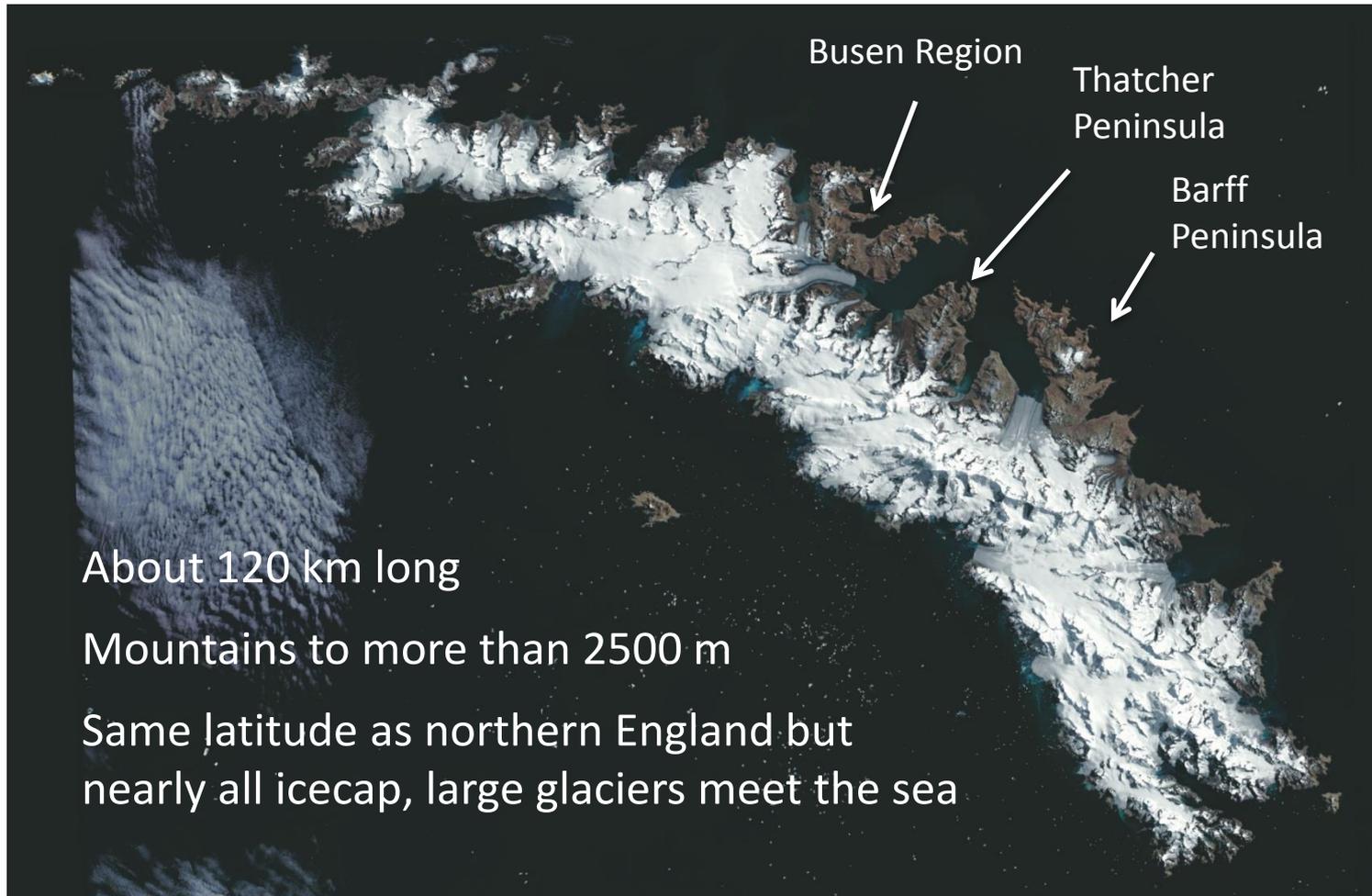


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# South Georgia: Mapping work on three ice-free peninsulas



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## Two maps completed, one in progress



Sources: helicopter aerial photography, WorldView-2 and Quickbird satellite images



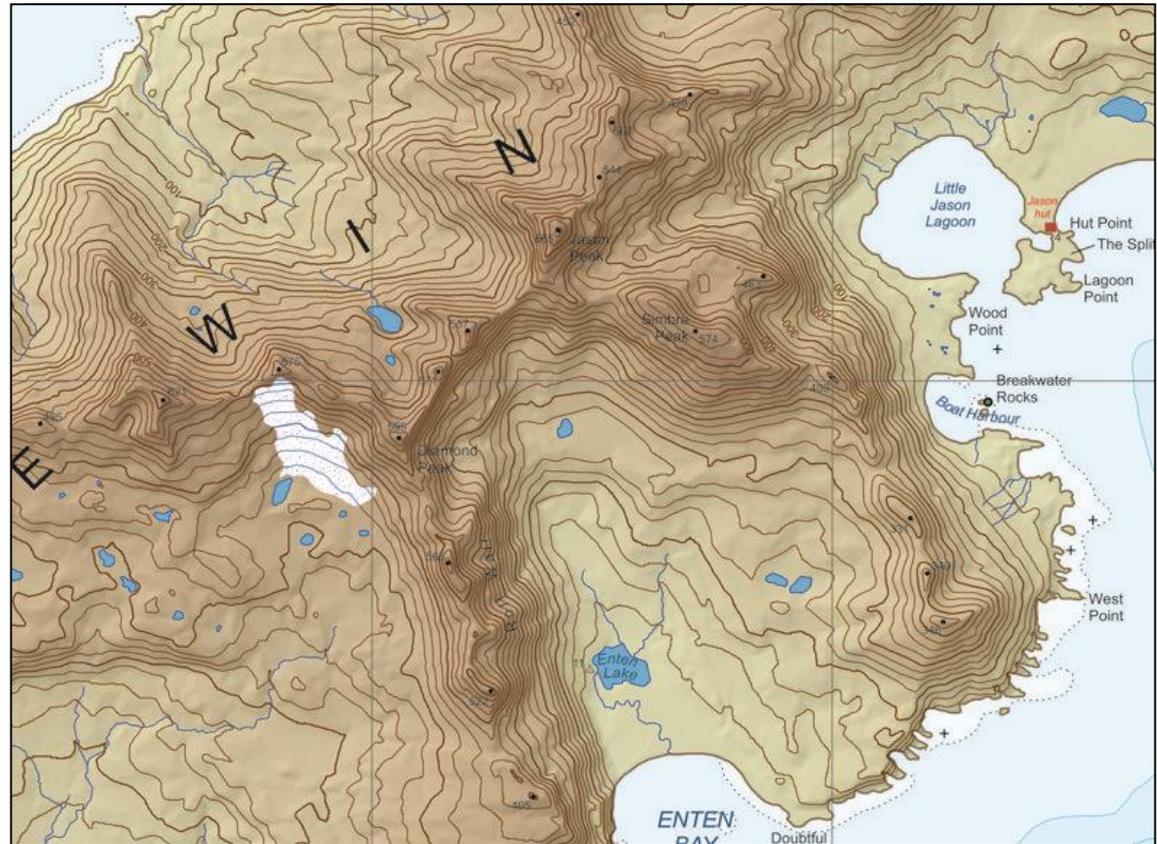
GPS field survey for GCPs



Photogrammetric TIN model from aerial photos and WorldView-2 images



Detail - ortho-rectified Quickbird images – minimum snow cover



Busen region 1:25,000 scale map November 2013



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# GPS surveyed Ground Control Points

WorldView-2 images:  
~ 1m X, Y, Z orientation to GCPs

Using supplied image parameters (RPCs) - GPS points as check

Busen

CE90 = 5.76 m, LE90 = 1.03 m

Barff

CE90 = 1.82 m, LE90 = 2.77m

Better than DigitalGlobe statistics

5 m = 0.2 mm at 1:25,000 scale

Better than navigation GPS



Trimble GPS < 10 cm accuracy

Busen Region 19 GCPs

Barff Peninsula 11 GCPs



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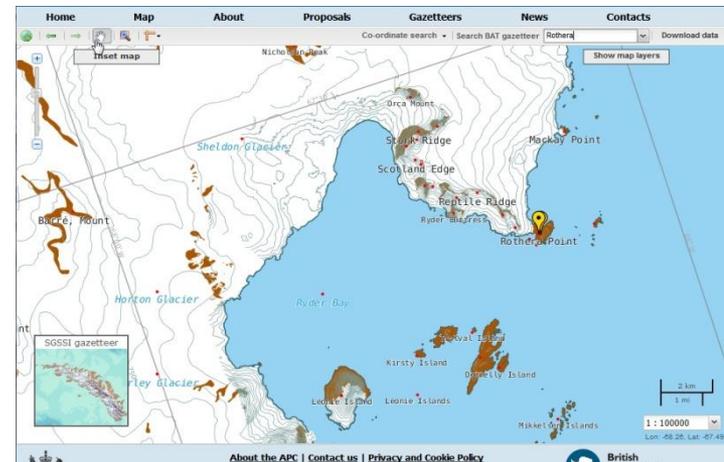
# UK Antarctic Place-names Committee (APC)



New names approved since July 2013 SCAGI meeting:  
3 names on Antarctic Peninsula,  
50 names on South Georgia



Continue to develop the UK-APC  
website and web-map  
[www.antarctica.ac.uk/apc](http://www.antarctica.ac.uk/apc)



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## Future plans.....



**Aerial photography** – campaign in 2015-16



Implement 1.5 m long remote sensing equipment port in BAS Dash-7  
10 hrs endurance at 220 knots; 20,000+ feet ceiling; short runway  
- A very powerful platform for aerial photography and other airborne survey



### **Mapping:**

1:250,000 scale map of Antarctic Peninsula to fill a gap between 65 15'S (Vernadsky) and 67 S (N Adelaide Island)

More work on South Georgia

Aim to improve elevation data for AP region – high-resolution imagery, Tandem-X?



Thanks for your attention – any questions?

A rare blue-sky day at Smith Island

