Application of AUV technology for the mapping of polar shelf seas

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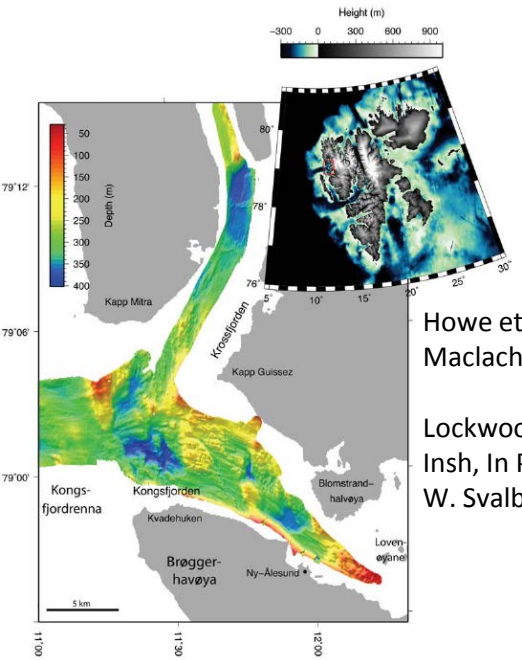
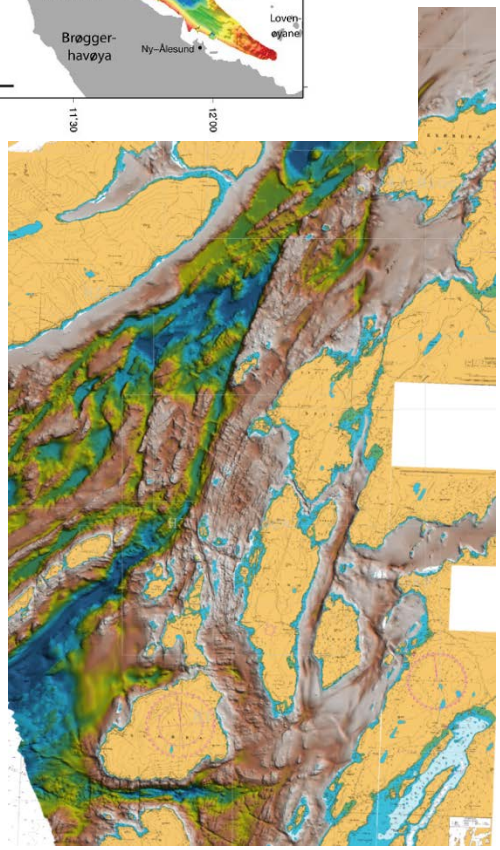


Howe et al., 2003,
Maclachlan et al., 2010

Lockwood, In Prep
Insh, In Prep
W. Svalbard, Fram Strait



Dove et al., 2015; Howe et al., 2015

Mapping mid-high latitude regions of glacially-influenced shelf

Western Scotland
W. Svalbard
Antarctica

Vessel-based and recently AUV

Geomorphology, habitat
Sediment dynamics

NERC RATE
Lo-Rise (Long-Range Transport of Radionuclides in the Marine Environment

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MAREMAP
Marine Environmental Mapping Programme

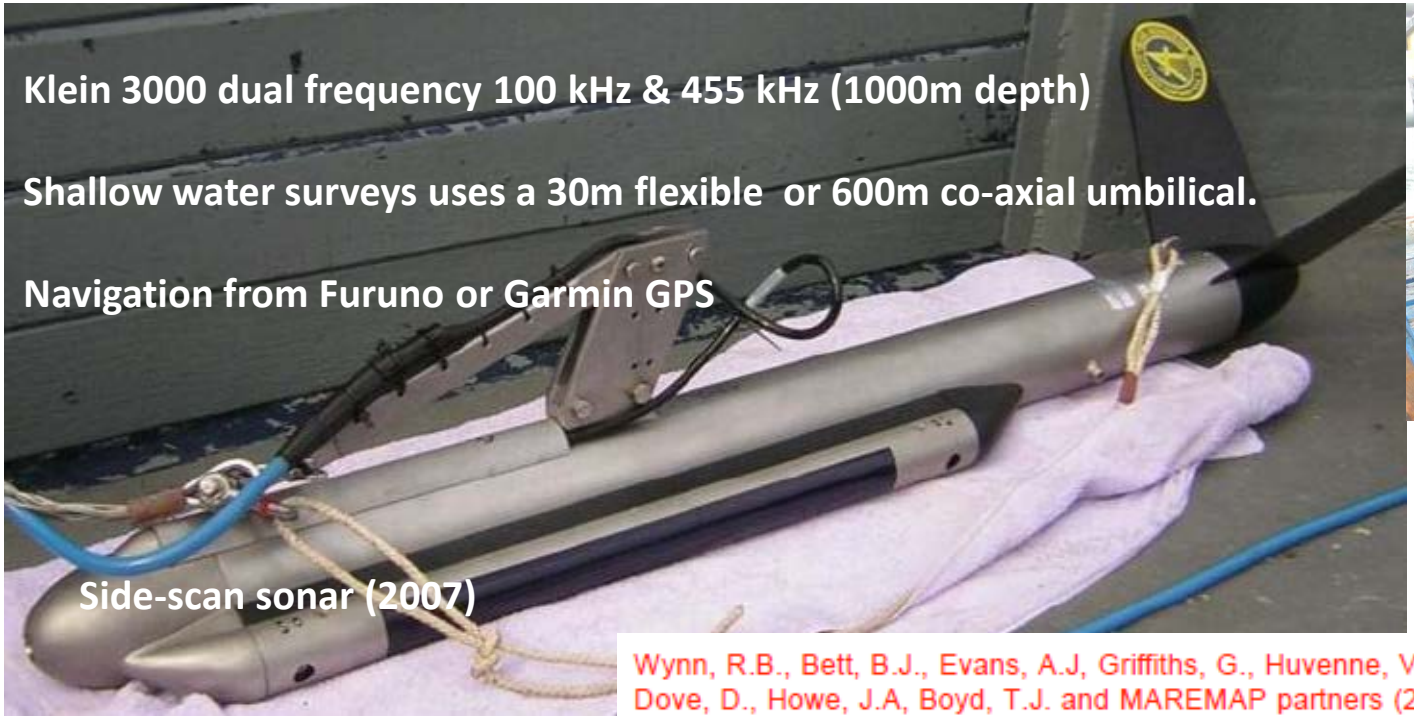
Glaciated North Atlantic Margins (ITN)

GLANAM

Durham University · UNIVERSITY OF TROMSØ · north energy · UNIS · SEVENTH FRAMEWORK PROGRAMME · SAMS · GEUS · University of ULSTER · Statoil · Volcanic Basin Petroleum Research

The overarching scientific goal of the GLANAM network :

1. **To determine the role of different glacial/non-glacial sedimentary processes in shaping the glaciated North Atlantic margins.**
2. **To contribute to the understanding of the extent, timing and rates of decay of marine-based ice sheets.**
3. **To contribute to the understanding of the influence the ice ages have imposed on the hydrocarbon systems on the glaciated North Atlantic margin**
4. **To determine the influence of climate change and sedimentary processes on the fluid flow (and gas hydrate) systems on the glaciated North Atlantic margin.**
5. **To identify the controlling factors and the role of submarine mass movements (with resulting tsunamis) on the glaciated North Atlantic margin.**



Mohave ROV (2014)

Wynn, R.B., Bett, B.J., Evans, A.J, Griffiths, G., Huvenne, V.A.I., Jones, A.R., Palmer, M.R, Dove, D., Howe, J.A, Boyd, T.J. and MAREMAP partners (2012) *Investigating the feasibility of utilizing AUV and Glider technology for mapping and monitoring of the UK MPA network.* Final report for Defra project MB0118. National Oceanography Centre, Southampton. 244 pp.

Gavia Offshore Surveyor (2015)

AUV Freya configuration

- Offshore Surveyor base vehicle (500m depth rating)
- High-precision DVL aided Inertial Navigation System
- Swath Bathymetry 500kHz GeoSwath+
- Colour Camera
- Sound Velocity Meter , Obstacle Avoidance Sonar,

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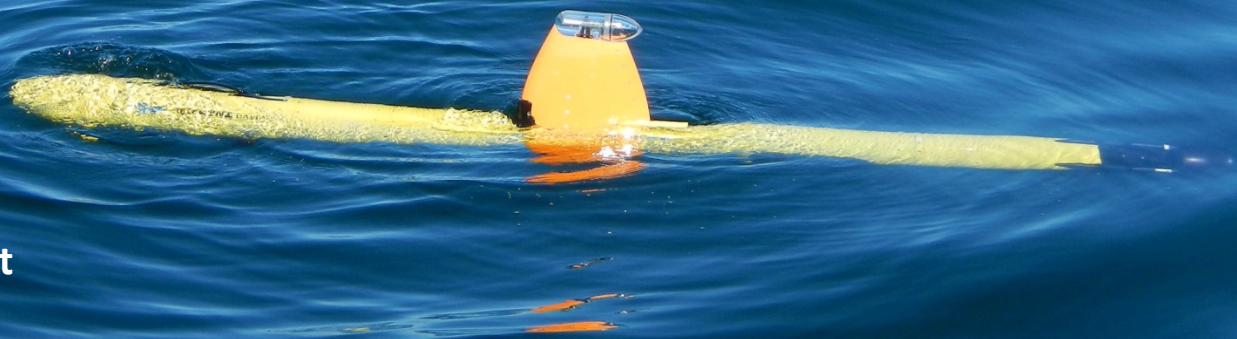


AUV Freya

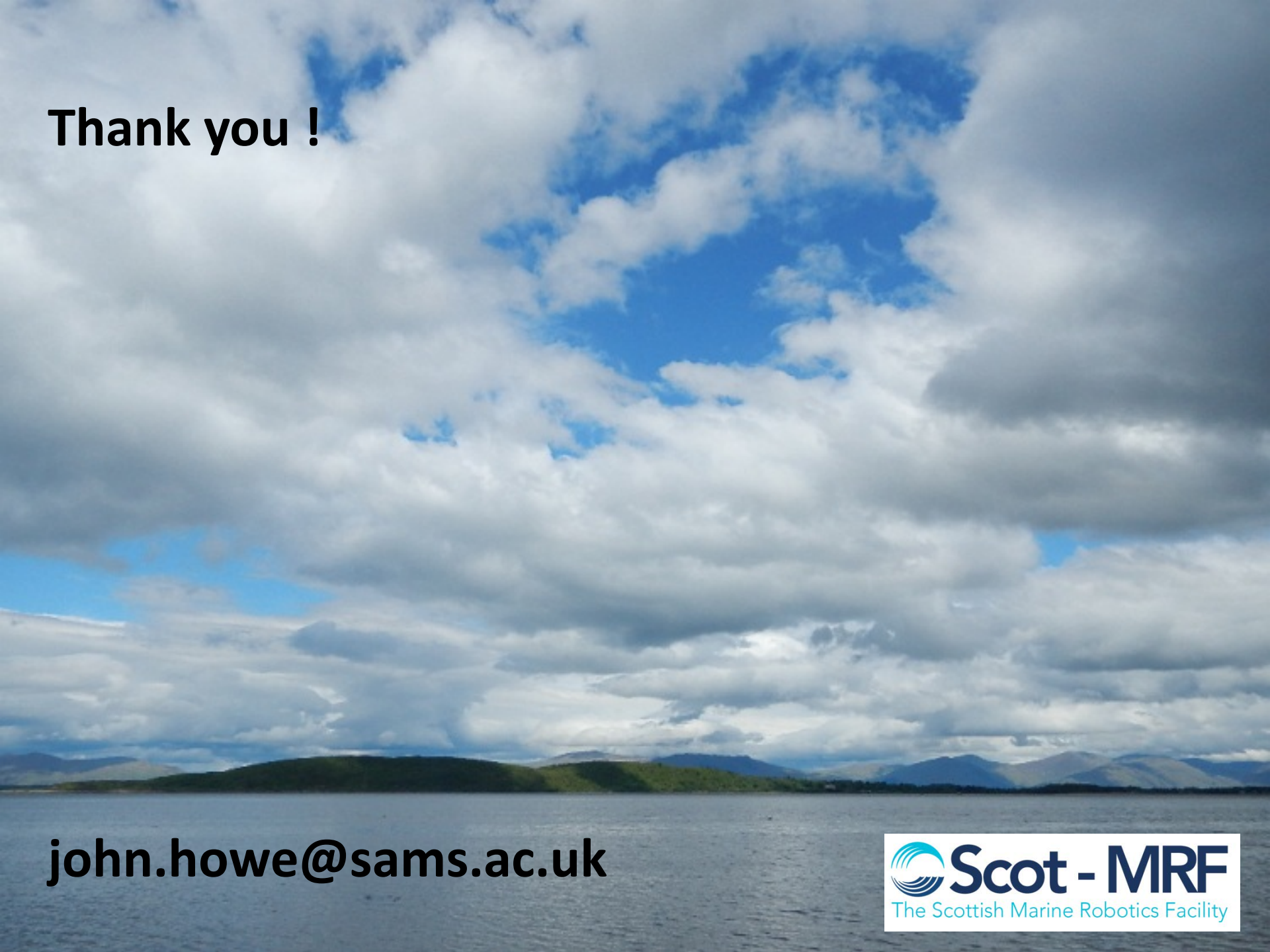
80kg

2.7m long

9 boxes for transport

4hr endurance

~10-15 km^2 area per mission


Thank you !
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