



UK Ocean Acidification
Research Programme

Cold-water Coral Research Cruises

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SCOTTISH
ASSOCIATION
for MARINE
SCIENCE

Proposal Plan

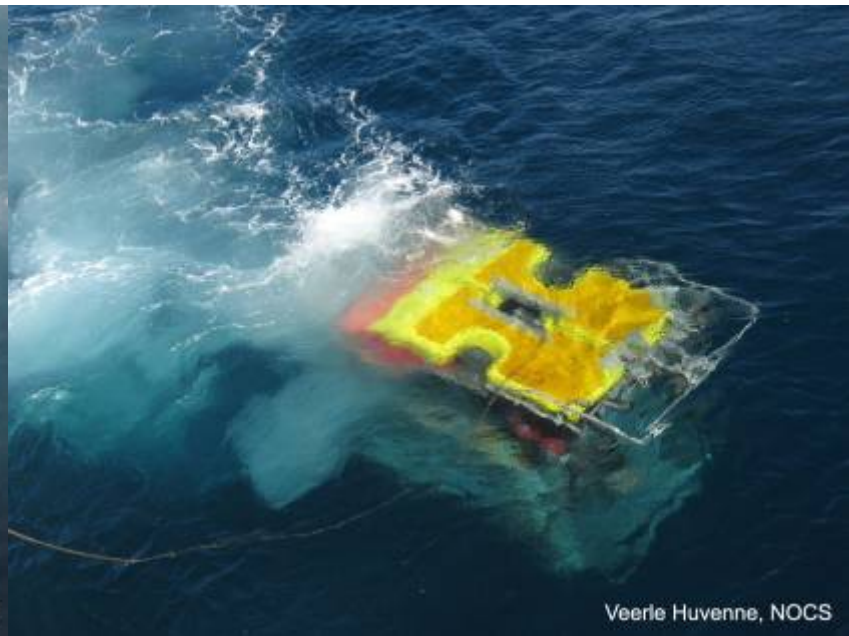
- 3-days coral sampling (Mingulay reefs) in 2011
- Combine these with Pelagic OA consortium cruise
- Month-long *ISIS*-ROV cruise (Mingulay & Rockall Bank) in 2012



Veerle Huvenne, NOCS



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RRS Discovery
2011

D366: 6 June – 7 July

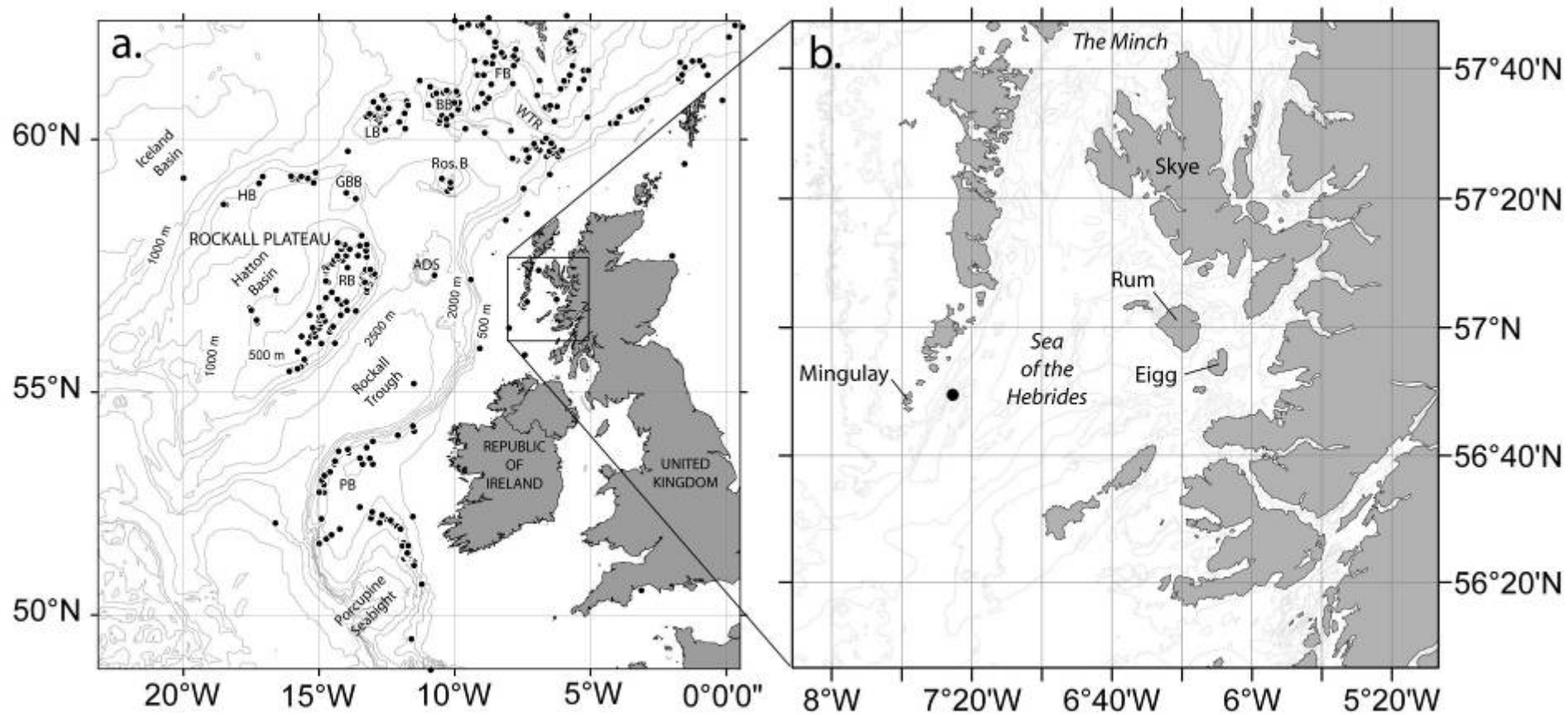
D367: 8-12 July

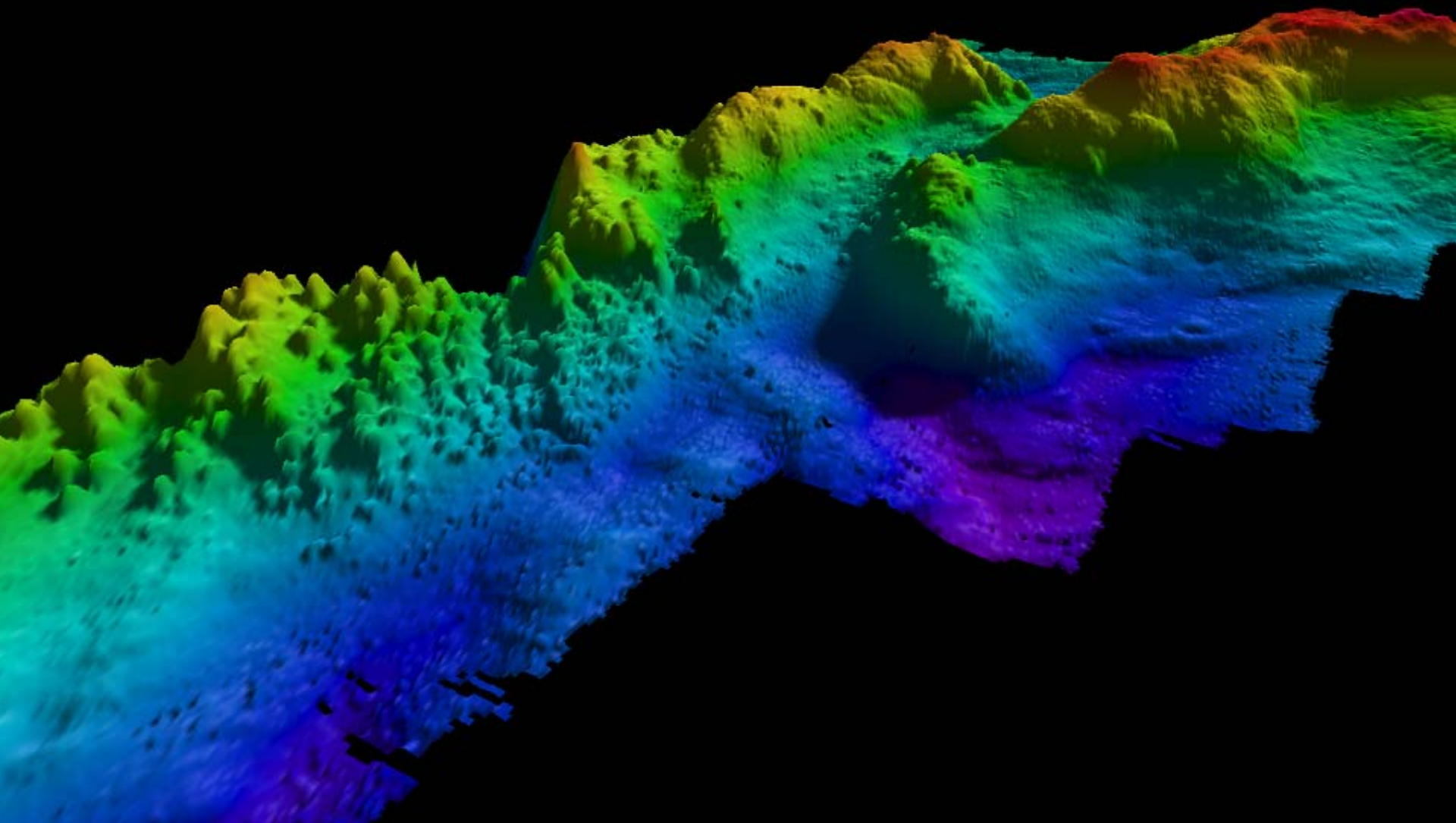
Birkenhead - Birkenhead



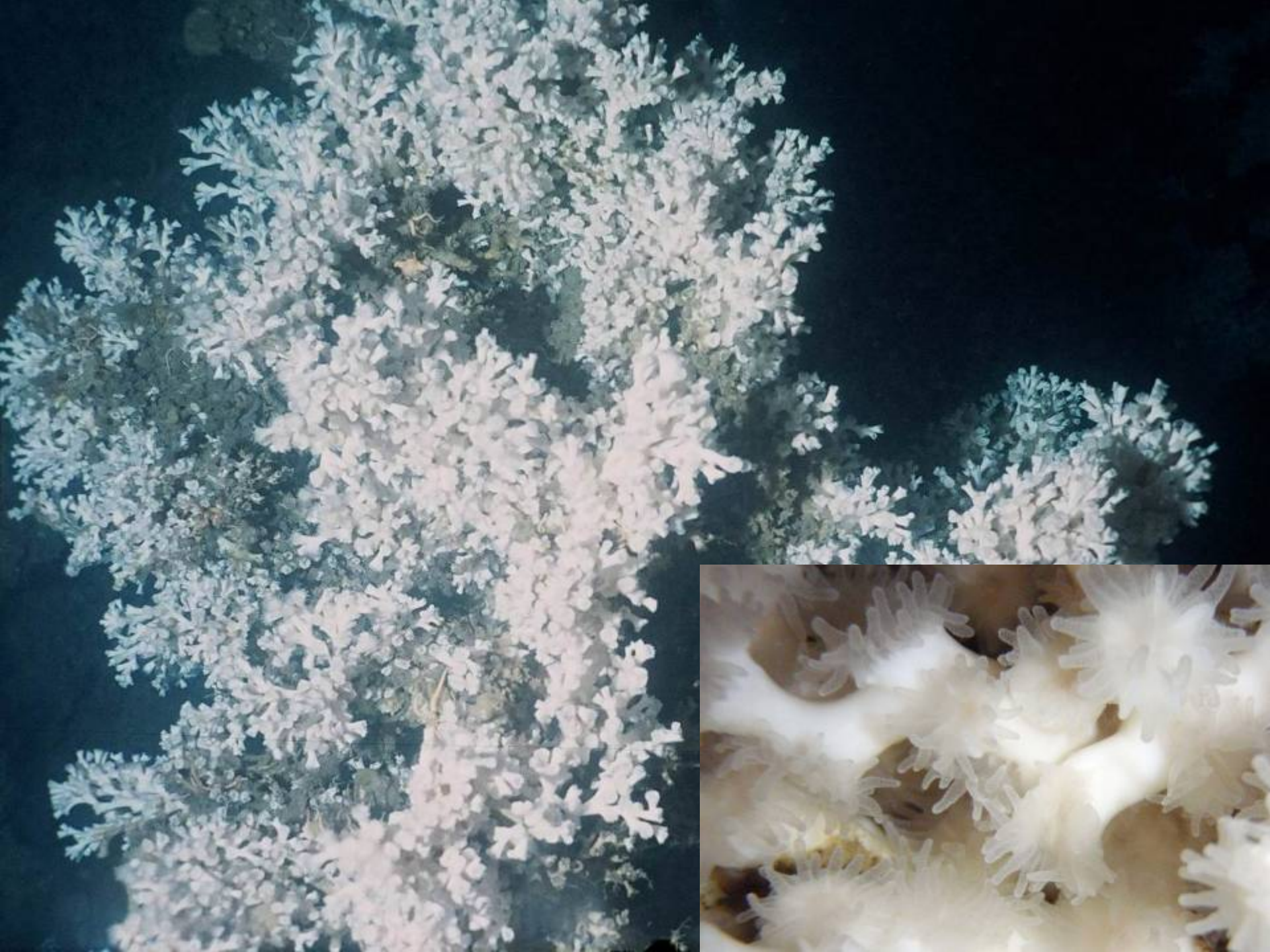
D366
Cruise track





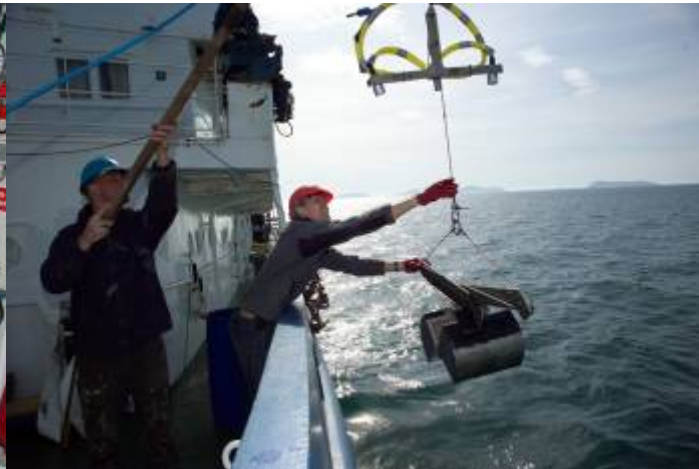


Multibeam bathymetry Mingulay Area 1, exaggerated 6-fold in the vertical
Roberts et al. (2005) *Coral Reefs* 24: 654-669



D367 Equipment

- Pelagic OA consortium SME equipment
- GIS maps of Mingulay reef complex
- Video-grab for live coral sampling
- Transportable, self-contained 'coral hotels'
- 4-channel optode respirometer



D366/367 Objectives

- Collect live *Lophelia pertusa* from Mingulay reefs early at start D366/367 cruise
- Conduct series short-term incubations during round Britain cruise (growth & respiratory physiology)
- Collect live *Lophelia pertusa* from Mingulay reefs at end of cruise to use in 18-month benthic OA exposure experiment

2012 cruise still to be programmed

Preferred dates between June & September

1. RRS *James Cook* (seems most likely)



2. RRS *James Clark Ross*



3. Barter ship
(seems unlikely given *ISIS*-ROV)

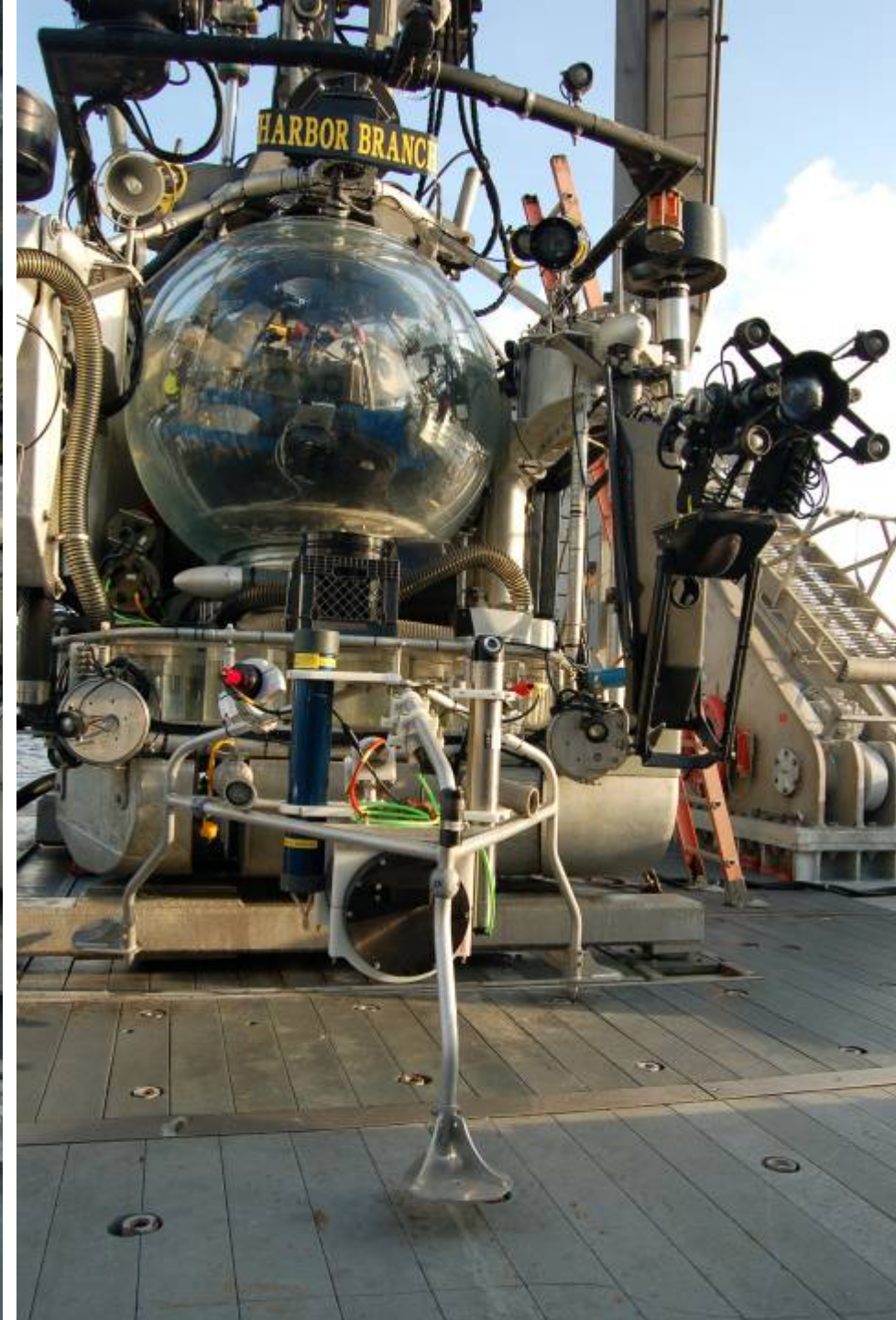
2012 Equipment

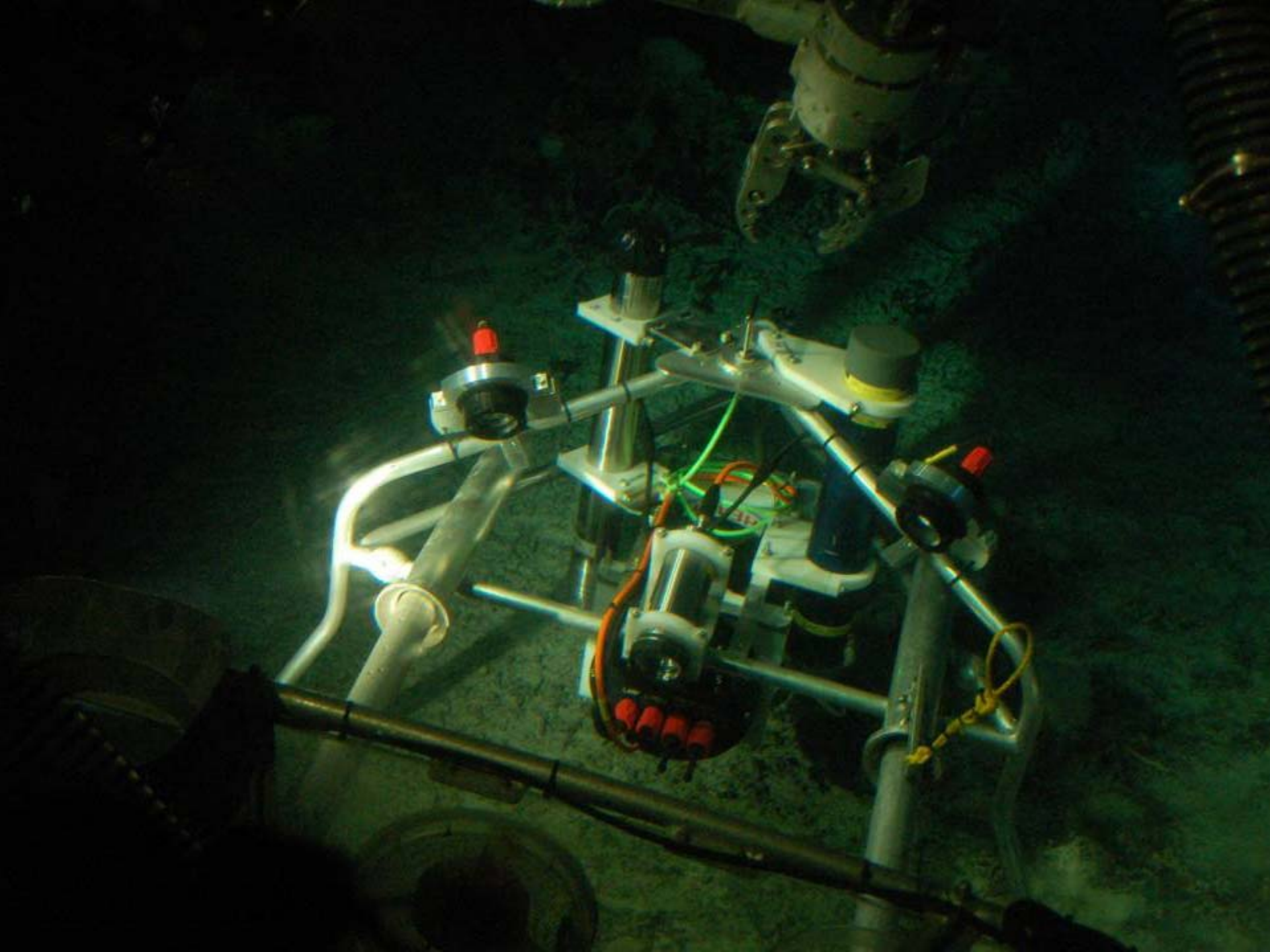
Chemistry :	Laboratory fume hood. Laboratory nitrogen gas generators. Laboratory pure water system (Millipore). Liquid scintillation counter. Radionuclide laboratory container.
Seismics/Echo Sounders/Coring :	Agassiz trawl systems. NIOZ box corer (500mm square box). Seabed dredging. SMBA box corer: stainless steel (500mm square box).
Deep Platforms :	ISIS 6500m remotely operated vehicle (ROV).
Sensors and Moorings :	CTD/rosette sampler systems (Stainless Steel). Scanfish.
Miscellaneous :	-20 degree centigrade freezer. -85 degree centigrade freezer. Gas bottle storage racks. Ice making machine. Refrigerators.
Ship Fitted Equipment :	150 kHz hull mounted ADCP system. Pumped sea water sampling system [hull bottom intake]. Sea surface monitoring system [salinity, temperature, transmissometer, fluorimeter]. Ship scientific computing systems. SIMRAD EA600 12 kHz single beam echo sounder. SIMRAD EM120 swath bathymetry system. SIMRAD shallow water multibeam (EM710). SPD11 dynamic positioning system. Ultra short base line (USBL) acoustic navigation system.

2012 Objectives

- Collect live cold-water corals (*Lophelia pertusa*, *Desmophyllum dianthus*)
- Collect other fauna for benthic consortium (e.g. ubiquitous *Cidaris cidaris* urchins)
- Deploy SAMS microlander equipped with eddy correlation sensor
- Complete habitat characterisation surveys around all working areas
- Contrast carbonate chemistry between Mingulay reefs (130 m) and Rockall Bank (~800 m)
- More to come...









Planning

- Need benthic consortium wish-list of fauna & experimental ideas for *ISIS*
- Follow-up with other potential collaborators
- e.g. pH/pCO₂ sensor developed by Kiminori Shitashima, Japan (UK-Japan exchange currently supported by UK Embassy Tokyo)
- Please contact j.m.roberts@hw.ac.uk

