

# UK/NOC Existing Facilities and Technology

## Marine Autonomous & Robotic Systems (MARS) Facility



Head of MARS: Gwyn Griffiths  
Leader of Glider Group: David White



# UK National Oceanography Centre

Gliders to be based at Southampton with capability at Liverpool



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# Glider fleet

Marine Autonomous & Robotic Systems

- Slocum Glider (x4 1000m, x3 200m)
- iRobot SeaGlider (x4 1000m)
- Liquid Robotics Wave Glider (x3)



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# Glider fleet

## Marine Autonomous & Robotic Systems

Glider	No.	Depth	Endurance	CTD	O2	PAR	CHL CDOM OBS	Micro structure
TWR	4	1000m	~ 90 days	x	x		x	
TWR	3	200m	~ 50 days	x	x		x	
TWR	1	200m	~40 days	x				x
SG	2	1000m	up to 180 days	x	x		x	
SG	2	1000m	up to 180 days	x	x	x	x	

TWR - Teledyne Webb Research Slocum glider

SG - iRobot SeaGlider

TWR : G1 Gliders (x6) will be upgraded to G2 gliders during 2012/2013

Planned - **x**

Endurance with lithium batteries

# Facilities at NOC

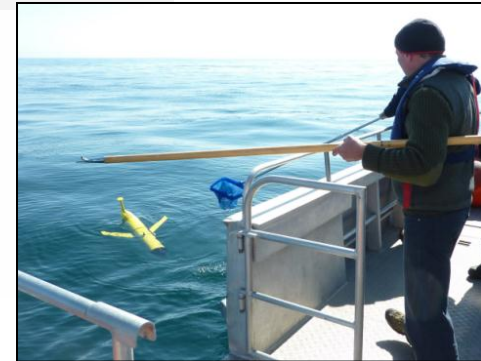
Lab space / deployment recovery options



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RV Marisa

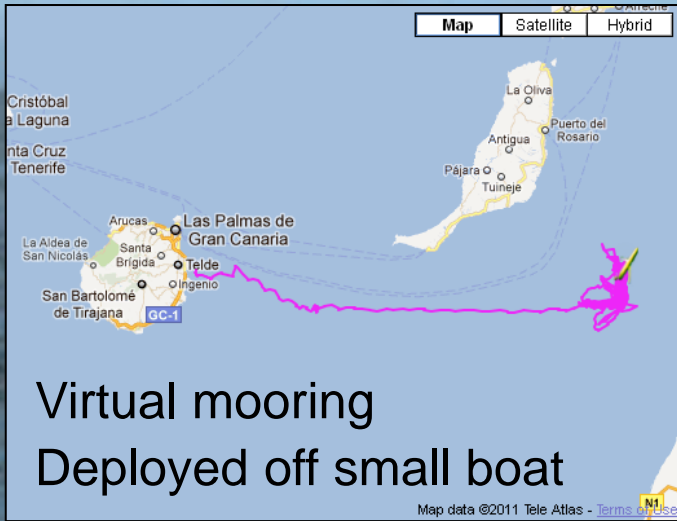


RV Prince Madog

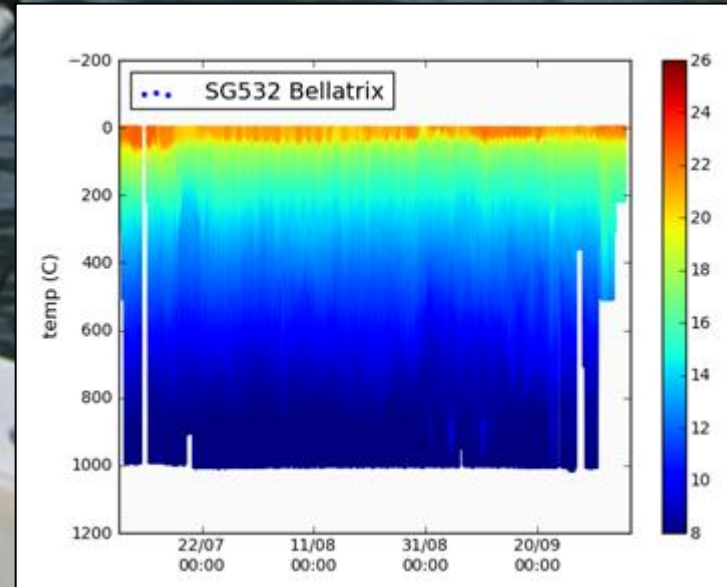
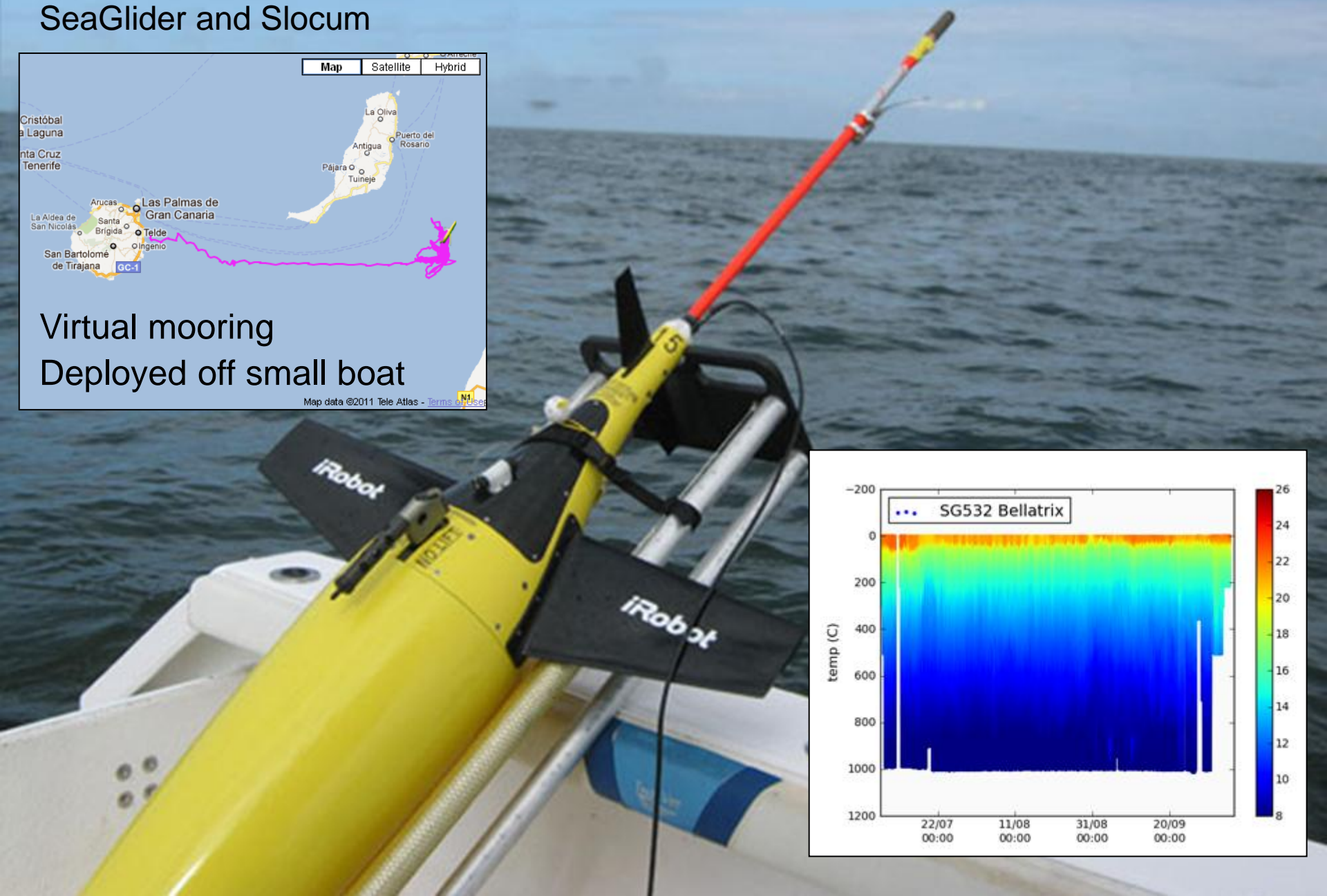


# Ocean experience

## SeaGlider and Slocum



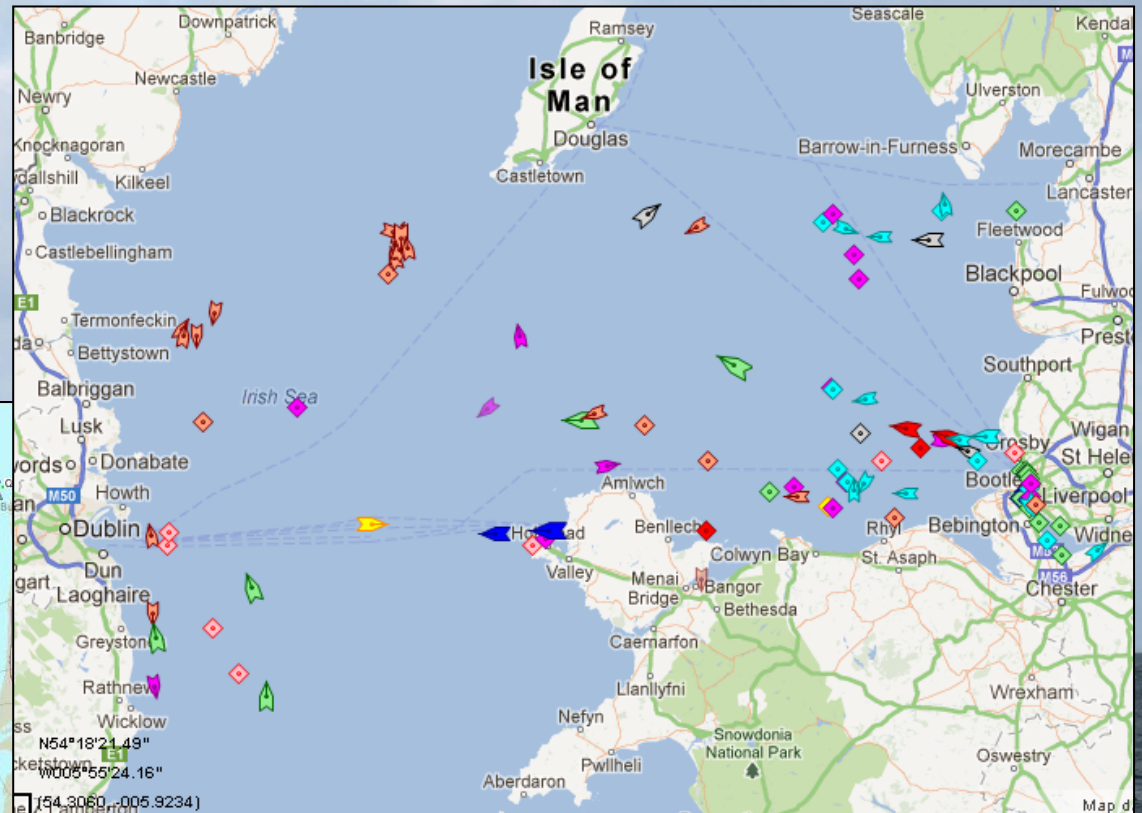
Virtual mooring  
Deployed off small boat



# Overcoming operational challenges

in difficult coastal areas

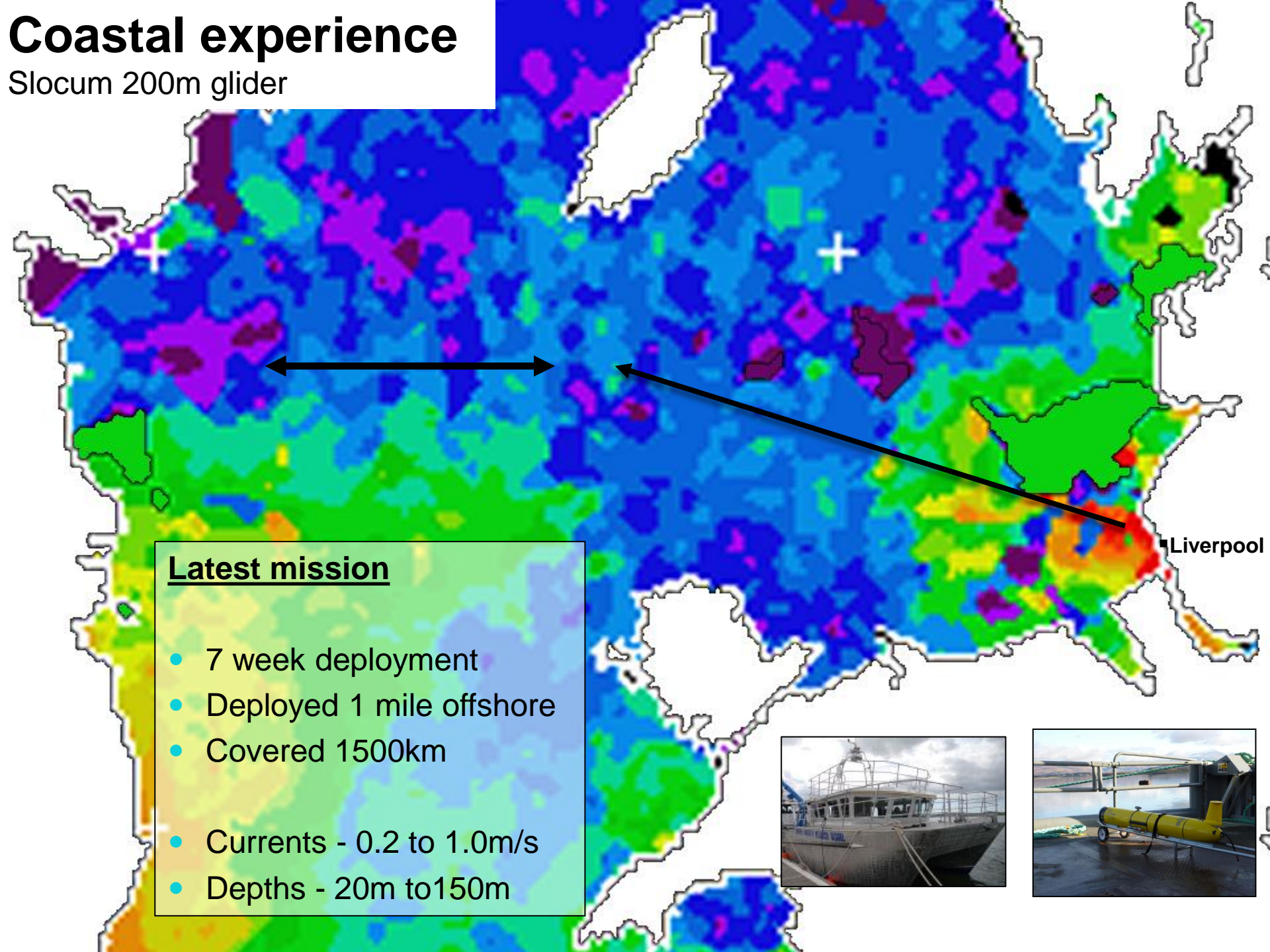
- Oil/gas platforms
- Wind farms



- Ship traffic
- Fishing Activity

# Coastal experience

Slocum 200m glider



## Latest mission

- 7 week deployment
- Deployed 1 mile offshore
- Covered 1500km
- Currents - 0.2 to 1.0m/s
- Depths - 20m to 150m

Liverpool







# Adding sensors

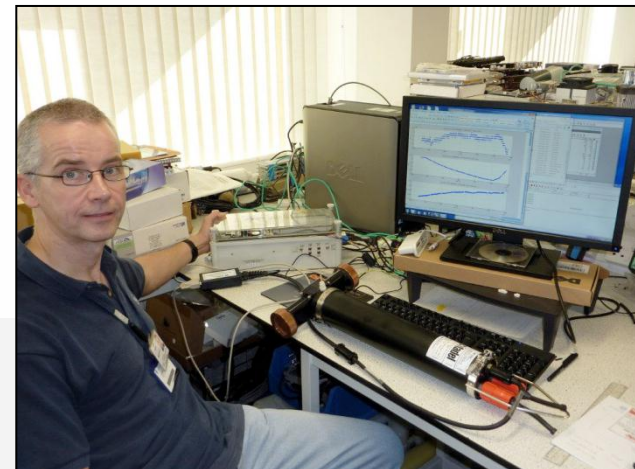
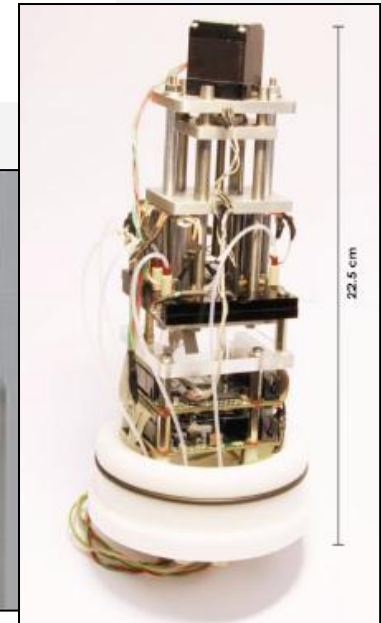
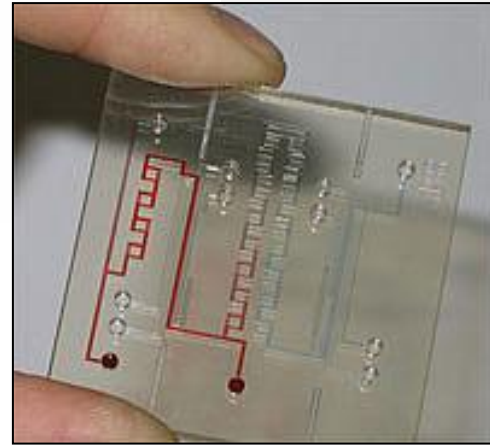
## Marine Autonomous & Robotic Systems

### Experimental micro-sensors

#### LOAC (Lab On A Chip)

- Low power & compact
- Specialised measurements  
( e.g., nitrate, nitrite, phosphate,  
ammonia, iron, manganese, silicate )

Plans to incorporate them and other new sensors onto both SeaGlider and Slocum platforms





# New capabilities

Marine Autonomous & Robotic Systems

## Sea Glider servicing

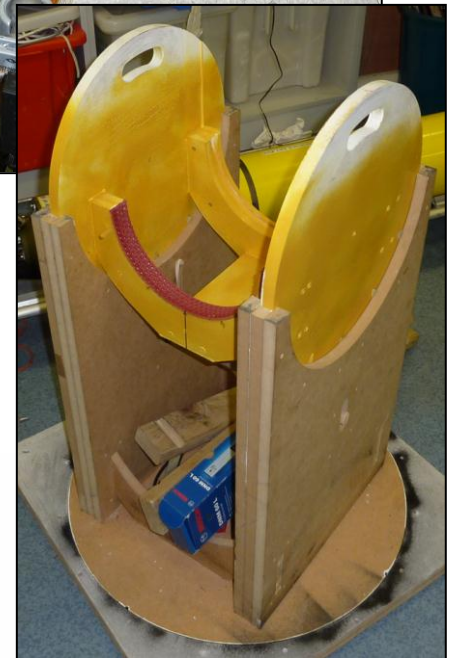
- Two engineers trained up for re-batterying
- Start the first one in August 2012
- Offer of this service to UK community



SeaGlider rotating jig for maintenance (note the lead weights on the internal hull of the glider)



SeaGlider compass calibration rig



# British Antarctic Survey (BAS)

## Glider Fleet

- x2 Slocum 1000m gliders
- x1 SeaGlider

All with CTD, O<sub>2</sub>, CHL/CDOM/OBS