

Welcome

Congratulations to those who achieved awards under the Sustainable Marine Bioresources initiative (p 4). Elsewhere in this issue, I am pleased to include articles from SAMS and NOCS researchers who report on seafloor topography, gliders and AUVS, Autosub 6000 trials and the first 2025 designed research cruise. On the policy front, we await the Government response to the 'Investigating the Oceans' Inquiry.

The Oceans 2025 website has been re-launched and will be developed into an information portal for

Acronyms in this Newsletter

"Marine science is plagued by acronyms" HoC Science & Technology Committee. Most acronyms in this Newsletter will be given in full on first use, but not always! Oceans 2025 Centre names are referred to as follows: MBA, Marine Biological Association; NOCS, National Oceanography Centre, Southampton; PML, Plymouth Marine Laboratory; SAMS, Scottish Association for Marine Science; and SMRU, Sea Mammal Research Unit.

the community. I hope that you find Issue 2 interesting and look forward to your feedback, as well as articles, news and reports of meetings for Issue 3.

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Next generation marine research

Policy News: Investigating the Oceans



The House of Commons Select Committee on Science and Technology report, 'Investigating the Oceans' was released on 18 October. The report's 59 recommendations include: formation of a new marine agency, with responsibility for marine monitoring and coordinating marine science; establishment of pilot Marine Protected Areas, ahead of the Marine Bill; an increase in the level of Arctic research; that NERC make a case for a new coastal vessel; and the development of a strategy for UK marine science that would be 'part of a national plan for maritime affairs'. Responsibility for the strategy and plan would lie with a 'Minister for Marine Science' within Defra. The report may be found at:

<http://www.publications.parliament.uk/pa/select.htm>

The Government's response to the report is being compiled, with input from NERC, and is expected to be published in early 2008.

Oceans 2025 Programme Advisory Board

The Oceans 2025 Advisory Board will be appointed in early 2008. The membership of senior academic, governmental and private sector stakeholders will provide independent advice on the direction of the programme, identifying additional opportunities and enhancing its match with national scientific and policy needs. The first meeting is expected to match with the 2008 annual Theme Leader programme meeting (27 – 29 May).

A strategic marine science programme for NERC

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Oceans 2025 event reports

It's Rough at the Bottom: Theme 3 Workshop at SAMS *Mark Inall*

There is no dispute that the ocean is stratified (light fluid lying on top of heavy fluid), but ask anyone how rough the seabed is and the most honest answer is “we don't really know”. And yet the interaction of stratified flow with topography drives an estimated 40% of the vertical density flux in the global ocean. Accompanying that vertical flux of density are, of course, all the ingredients which make the ocean a living entity – the biophysical state of which concerns us greatly. These broad statements apply not just to the open ocean; the high productivity of stratified shelf seas is driven largely by vertical mixing, and our knowledge of the detailed roughness of the seabed even here is surprisingly sparse.

With this in mind, a workshop at SAMS in November, co-supported by Hydroid Europe, brought together university and centre researchers with interests in the interaction between fluid dynamics and topographic

roughness, over a range of spatial and temporal scales. Discussions included high resolution observations, high resolution numerical models and experimental, laboratory studies.

The workshop recognised that parameterisation of internal wave/topography interactions needs to explicitly consider the scale-dependent makeup of both the fluid dynamical processes and of topographic roughness. There is therefore need for topographic (bathymetric) information to be available at the same scale as the hydrodynamic processes being studied. This has implications for Theme 3 of the Oceans 2025 programme and also wider seafloor mapping activities – not only in UK shelf seas but also globally, e.g. mixing effects over mid-ocean ridges. Details:

www.sams.ac.uk/research/departments/physics-department/flow_topog_workshop_07/topo2

Oceans 2025 Workshop on Gliders and Small AUVs *Gwyn Griffiths*

In September a workshop at NOCS brought together teams involved in using and supporting small autonomous underwater vehicles (AUV) and undersea gliders in Oceans 2025. Joining groups from SAMS, POL and NOCS were colleagues from Heriot-Watt University, who have operational experience of the REMUS100 small AUV. **Gliders.** SAMS will use a glider for measurements along the Ellet hydrographic line from Scotland to Iceland via Rockall. Capable of diving to 1000m, Seagliders have an endurance of up to 4600km or six months. The POL experience with gliders has been in the Irish Sea in cooperation with Rutgers University; results have proved impressive and a 200m Slocum electric glider is on order to support research on shelf and coastal processes. At NOCS three 1000m Slocum electric gliders have been in use since 2006. Following trials off Mallorca, they were deployed in the Gulf of Lions. Returning to the region in 2008, the NOCS team will be based at IFREMER, Toulon, and will work with colleagues from CNRS. **Small AUVs.** In 2008, SAMS expects delivery of a 2m version of the Hydroid REMUS600 vehicle, capable of missions of 8–10 hours. Research will examine topographically-induced mixing on the continental shelf and coastal oceanography studies off Svalbard.



Successful first trials of Autosub6000 *Stephen McPhail*



Autosub6000 lifted into its recovery cradle following its first deep mission. (Image by Maaten Furlong)

NOCS is developing Autosub6000, a 5.5m long, 2800 kg Autonomous Underwater Vehicle (AUV) with a 6000m depth rating and autonomy of up to 60 hours. The nose can support a varied payload (e.g. cameras and sensors); the inertial navigation system uses an Ixsea PHINS Fiber Optic Gyro, coupled to a RD Instruments 300 kHz Acoustic Doppler Current Profiler.

Autosub6000 has recently completed trials using RRS Discovery in the abyssal

Atlantic where it descended to 4556m. The Linkquest Tracklink10000 Ultra Short Base Line and telemetry system worked well to a slant range of over 7 km; tests proved the accuracy of the AUV dead reckoned navigation system. The AUV ran for 60 hours, in 8 deployments. Ultimately, it will be possible to fix its position at 6000 m depth to a horizontal accuracy of a few metres.

A new look for www.oceans2025.org

The Oceans 2025 website has a fresh new design; contributions of your news items, forthcoming events and photographs are welcome.

Email to Jackie Pearson, NMCO at: jfpea@noc.soton.ac.uk



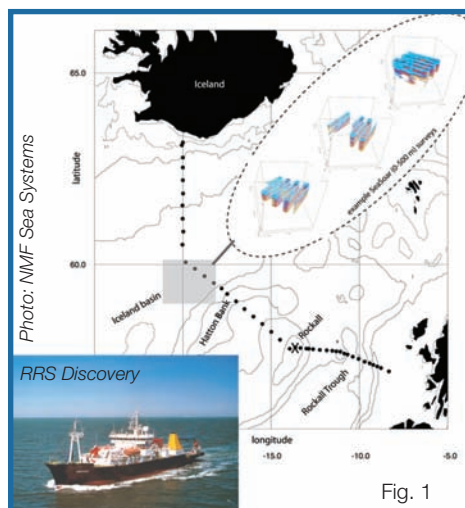
The first Oceans 2025 designed research cruise *John Allen*

On 25 July 2007, RRS Discovery left Govan to begin the first Oceans 2025 research cruise, D321, "Biophysical Interactions in the Iceland Basin".

Extended Ellett Line stations were completed on the way to our study region, centred around JGOFS Ocean Weather Station India site (~ 59°N, ~ 19°W) and the northward turn of the extended Ellett line at 20°W (Fig. 1). D321 was the first of three process study research cruises to be run by NOCS Ocean Biogeochemistry and Ecosystems research group under Oceans 2025. The cruises will comprise locally intensive process studies around spatially and/or temporally extensive time

series observations, supplemented by remote sensing and modelling. Cruises planned at the Porcupine Abyssal plain site in 2009 and a North Atlantic

Subtropical Gyre site in 2011 will repeat physical, biological, chemical and sediment measurements at high spatial resolution to quantify key variables and their short term variability. These detailed studies, at 'historically' important sites, will assist in quantifying the basin-scale impact of the highly turbulent ocean on biological production and the natural uptake of carbon dioxide, to be achieved in collaboration with leading-edge modellers and under the 'gaze' of UK earth observation scientists.



The extended Ellett line repeat hydrography stations (black dots) and a grey box showing the approximate cruise study region.

Strategic Ocean Funding Initiative

Awards announced for Sustainable Marine Bioresources

The Sustainable Marine Bioresources initiative started separately from SOFI (Strategic Oceans Funding Initiative) but is now part of it, jointly supported by NERC and government departments (Defra, SGMD/FRS and AFBI). Award letters have recently been issued for the following six projects:

- A spatially resolved ecosystem model for the assessment of fisheries (Dougie Spiers, Strathclyde; with St Andrews/SMRU and FRS)
- Do oceanographic characteristics and predator-prey behaviours define critical marine habitats? (Beth Scott, Aberdeen; with POL, FRS, Cefas, JNCC, CFPO and MRAG)
- Population structuring of cod around the UK: scale, mechanisms and dynamics (Gary Carvalho, Bangor; with SAMS, Strathclyde, FRS, Cefas, AFBI, Hull and DIFR)
- Climate change and macroecological patterns in an exploited marine fish assemblage (Mark Johnson, Queen's University Belfast; with Cefas, AFBI and MBA)
- New production in the North Sea deep chlorophyll maximum: magnitude and ecosystem effects (Tim Jickells, UEA; with Cefas)
- Modelling interactions between top predators and fishing vessels: implications for fisheries management in a wider ecosystem (John Harwood, St Andrews/SMRU; with Sheffield, FRS and Cefas)

Each of these projects involves several partners, including strong involvement of Oceans 2025 centres. In addition to delivering excellent science, they will therefore help achieve a more joined-up, strategic approach to the exploitation – and conservation – of UK marine resources.

Wider engagement in Oceans 2025

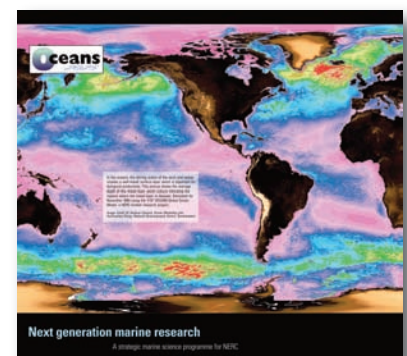
A Moderating Panel has been established by NERC to consider proposals submitted by the main SOFI closing date of 10 October. The Panel will meet in mid December to assess research studentship bids, and again in late February 2008 to make its funding recommendations for small and standard grants.

Oceans 2025 Implementation Plan

The Oceans 2025 Implementation Plan is being finalised, for publication in 2008. Designed to enable Centre Directors to capture delivery of Oceans 2025 across the programme, the plan will link into formal reporting mechanisms. Updated annually, the plan will draw on the Oceans 2025 annual programme meeting and refer to cruises planned and programme risks; it will also address facilitation of inter-theme coordination and linkages.

2025 Folders

Copies of the newly produced Oceans 2025 folders will be distributed to centres shortly, however, if needed urgently, please contact Jill Jones at the National Marine Coordination Office, e-mail: jmj4@noc.soton.ac.uk.



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