



# atlas

A trans-Atlantic  
assessment and deep-water  
ecosystem based spatial  
management plan for Europe

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project news

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## WELCOME FROM THE ATLAS COORDINATOR



*Prof. Murray Roberts,  
the University of Edinburgh*

The oceans are changing, and changing rapidly. They are warming, becoming more acidic and in some areas are losing the oxygen essential to life. But as these global changes unfold, human society is still asking for more and more from our oceans. Rising human populations demand not only more food but also greater supplies of oil, gas and mineral resources. Can we find ways of balancing the needs of society and exploring sustainable economic 'Blue Growth' with a long-term strategy that maintains ocean ecosystems for generations to come? This challenge lies at the heart of the **ATLAS** project.

**ATLAS** has set out to understand deep Atlantic ecosystems and how human society appreciates and values them. It is an international project crossing ocean basins, where social science, economics and policy sit alongside marine science research, engagement and public outreach.

Building the consortium that became **ATLAS** has been one of the greatest experiences of my career and I am delighted to introduce this first **ATLAS** project newsletter.

It's been six months since we launched the project in June 2016. Here, and through our project website, Twitter, Facebook and LinkedIn feeds, you can read about the latest work of the **ATLAS** consortium, and what is planned for the months and years to come. The **ATLAS** project gathers data from ships at sea, in laboratories and experimental aquaria, through social science surveys and a whole range of Atlantic stakeholder interactions, to explore sustainable Blue Growth. Our voyage is underway, and we hope you will join us on this exciting journey over the next four years.



## THE DEEP SEA CHALLENGE

Deep below the ocean's surface is a mysterious world that takes up 95% of the Earth's living space. Little or no light penetrates the deep sea and for many years scientists believed there was little life in the ocean depths. Historically, research in these deep zones presented a challenge to researchers eager to discover more, but technological advances in the form of underwater vehicles are allowing scientists to gain a wealth of new knowledge about the abundance of life in this harsh environment.

Scientists have shown that the deep North Atlantic supports diverse ecosystems that are crucial to the cycling of primary production, carbon, and nutrients from the ocean surface to the deep seafloor. These cycles support a diverse range of habitats and ecosystems including cold-water coral reefs, coral gardens and sponge grounds with hydrothermal vent and cold seep ecosystems fuelled from the geosphere. In turn, these diverse deep-water ecosystems provide us with goods and services, such as fisheries and tourism opportunities, which are central to our well-being and economic activities. However, global change and human activities are having major impacts on the distribution and sustainability of living marine resources. This is a real challenge for business and policy communities seeking sustainable Blue Growth in the marine and maritime sectors.

Researchers within **ATLAS** will provide new information on the deep sea by monitoring and predicting biodiversity and genetic connectivity of fish stocks in various ecosystems across the North Atlantic. This research will provide policy makers with

the best data, tools, and understanding needed for new management of the deep ocean that balances the needs of the environment, society, and maritime businesses.



*By: Dr Katherine Simpson, the University of  
Edinburgh*

## ATLAS IN A NUTSHELL

The **ATLAS** consortium brings together a wide range of stakeholders including oceanographers, marine ecologists, social scientists and policy experts from 25 organisations across 10 European countries, the USA and Canada (see a map of **ATLAS** partners on page 7). By bringing together such a diverse range of expertise, **ATLAS** will work towards four key objectives to:

- Advance our understanding of deep Atlantic marine ecosystems and populations
- Improve our capacity to monitor, model and predict shifts in deep-water ecosystems and populations
- Transform new data, tools and understanding into effective ocean governance
- Scenario-test and develop science-led, cost-effective adaptive management strategies that stimulate Blue Growth



## THE ATLAS ADVISORY BOARD

The **ATLAS** consortium is managed by a Steering Committee (SC) with input from the **ATLAS** Advisory Board. The SC includes our work package leaders, the scientists responsible for leading the different research themes within the project, and the case study coordinator. The Advisory Board provides expert advice to the SC to guide and inform their decisions to further the project and to highlight opportunities to engage with policy makers, the business community and other stakeholders. The Board consists of 25 experts

in the fields of oil and gas, blue biotechnology, fisheries and marine conservation. The Advisory Board is chaired by Dr Jake Rice, Scientist Emeritus of the Canadian Department of Fisheries and Oceans and a leading authority on Vulnerable Marine Ecosystems and Ecologically or Biologically Significant Area policy development.

**Our Advisory Board members will be introduced throughout the ATLAS newsletter series, so keep reading as we discuss the latest ATLAS discoveries and more with them!**

## NEWS AND HIGHLIGHTS

### First ATLAS General Assembly

The first **ATLAS** General Assembly took place in Edinburgh, Scotland, UK, from 13-15 June 2016. More than 60 consortium members attended to mark the beginning of an exciting series of expeditions involving at least 25 research cruises and hundreds of scientists working collaboratively to explore the depths of the Atlantic Ocean over the next four years.



*Participants at the first ATLAS General Assembly in June 2016, Edinburgh, Scotland, UK ©Alex Ingle*

All **ATLAS** work packages (WP) were presented on the first day of the meeting:

- WP1 Ocean Dynamics Driving Ecosystem Response
- WP2 Functional Ecosystems
- WP3 Biodiversity and Biogeography
- WP4 Connected Resources
- WP5 Valuing Ecosystem Services and Blue Growth Potential
- WP6 Maritime Spatial Planning
- WP7 Policy Integration to Inform Key Agreements
- WP8 Open Science Resources for Stakeholders
- WP9 Dissemination, Knowledge Transfer and Outreach
- WP10 Coordination and Management

The second day focussed on the 12 **ATLAS** case studies. Each leader introduced their study area and outlined which work packages they will be contributing data to. More information on the **ATLAS** case studies can be found on page 7.

This was followed by lively discussions in the following breakout sessions:

- Integrating Paleo Data with Instrumental Records in Oceanography and Hydrography
- Data Flow from Case Studies into WP6
- e-DNA and Genetic Sampling Protocols
- Opportunities to Influence Policy
- VIKING20 Model and Ariane Ocean Particle Tracking Integration with WPs
- Functional Ecosystems

The meeting brought the **ATLAS** consortium together for the first time and allowed the **ATLAS** Steering Committee and **ATLAS** Advisory Board to hold their first face-to-face meetings.



*Dr Stéphane Pesant (University of Bremen) introducing his work package on open science resources for key stakeholders*



*From left to right, work package leaders Dr Dick Van Oevelen (NIOZ Royal Netherlands Institute for Sea Research), Dr Telmo Morato (IMAR – University of the Azores) and Dr Sophie Arnaud-Haond (Ifremer) introducing their ATLAS work packages*



*Prof. David Johnson (Seascope Consultants) leading the breakout group discussion on policy integration to inform key agreements*



*Inspiring deep-sea and science discussions at the ATLAS conference drinks, hosted by project Partner Dynamic Earth (from left to right, Dr Sebastian Hennige, Dr Alan Fox and Dr Jake Rice) ©AquaTT*



*Prof. Stuart Cunningham (The Scottish Association for Marine Science) and Dr Igor Yashayaev (The Department of Fisheries and Oceans Canada) having a productive discussion*



*Dr Francis Neat (Marine Scotland Science) explaining the potential of one of the ATLAS case studies, Rockall Bank*

## EVENTS

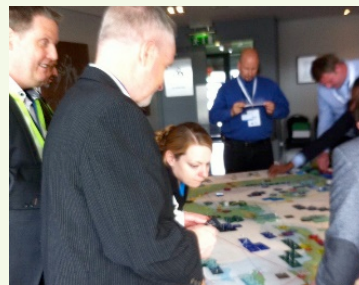
Members of **ATLAS** have been very busy participating in various meetings and events following the project launch in June. To date, **ATLAS** has been presented 30 times across 12 countries including Canada and the USA. These events have ranged from general introductions outlining the foundations of **ATLAS** research through to specific discussions on marine connectivity modelling.



*Mr Tidiani Couma (Department of Internal Relations, Monaco) Mr Michael Lodge (The International Seabed Authority) and Prof. Ronán Long (The National University of Ireland Galway, NUIG) at the UN negotiations on a new legal instrument to protect biodiversity in areas beyond national jurisdiction ©Ronán Long*



*ATLAS Steering Committee Meeting, Edinburgh, December*



*Dr Anthony Grehan (NUIG) taking part in the Marine Spatial Planning challenge 2050 at the SIMCelt workshop, Dublin, September 2016. [www.simcelt.eu](http://www.simcelt.eu) ©AquaTT*

### Deep Sea Coral Symposium and Galway Statement workshop, September 2016, Boston (USA)

Presentations were delivered by several **ATLAS** partners and associate partners at the symposium, including the Changing Oceans group from the University of Edinburgh (Prof. Murray Roberts, Dr Alan Fox, Dr Fiona Murray, Ms Laurence de Clippele, Dr Sebastian Hennige), and Royal Netherlands

Institute for Sea Research (Dr Dick van Oevelen) and Temple University (Dr Erik Cordes).

The **ATLAS** Project Office arranged the Galway Statement workshop with sponsorship from the Atlantic Ocean Research Alliance (AORAC-SA). The workshop included presentations from the European Commission, NOAA and the **ATLAS** and SponGES projects. Several stakeholders relevant to international collaboration efforts in deep sea sciences participated



*The Changing Oceans group on route to Boston, USA. from left to right Dr Fiona Murray, Ms Laurence de Clippele, Prof. Murray Roberts, Dr Sebastian Hennige, Dr Alan Fox ©Murray Roberts*



*Ms Laurence de Clippele presenting her work at the conference ©Murray Roberts*

**Ocean Indicators workshop, September 2016, Montréal (Canada)**

Ocean Indicators are essential to assess the status of our seas and measure the success of policy measures. The Canadian Healthy Oceans Network (CHONe) sponsored a workshop on Ocean Indicators, continuing the tradition of research cooperation between Canada and Europe. **ATLAS** was invited to attend the workshop by Dr Paul Snelgrove, CHONe Network Director. The knowledge from this workshop will help **ATLAS** face the challenging task of describing Europe's deepest waters, in particular the Biodiversity and Biogeography work package,



From left to right Mr David Murphy, Dr Claudia Junge and Dr Anthony Grehan, 3rd Atlantic Stakeholder Platform Conference, Dublin, Ireland, September 2016 ©AquaTT

which will define and implement deep sea indicators that will be used to measure the status of our Ocean.  
By: *Gerald H. Taranto*

**3rd Atlantic Stakeholder Platform Conference, September 2016, Dublin (Ireland)**

**ATLAS** was well represented at this conference. Dr Anthony Grehan (National University of Ireland Galway, NUIG) presented the **ATLAS** vision in the plenary session, and Mr David Murphy (AquaTT) and Dr Claudia Junge (AquaTT) communicated the project objectives to stakeholders at the **ATLAS** information booth. [bit.ly/2cjP1vG](http://bit.ly/2cjP1vG)



Dr Anthony Grehan giving an **ATLAS** presentation at the 3rd Atlantic Stakeholder Platform Conference, Dublin, Ireland, September 2016 ©AquaTT

**Collaboration for Data Sharing – the New Deep-sea OBIS Node workshop, October 2016, Oostende (Belgium)**

To facilitate access to data sharing in global databases, the first International OBIS-INDEEP training workshop was hosted in the UNESCO-IOC project office for International Oceanographic Data and Information Exchange. The OBIS deep-sea node was established: a network of scientists and data managers who promote the sharing of deep-sea data in OBIS within their institutions and projects. This network includes different specialists from leading institutions in deep-sea research. Dr Christopher Nicolai Roterman and Ms Meri Bilan attended the workshop on behalf of **ATLAS**. [bit.ly/2fRCW5Z](http://bit.ly/2fRCW5Z)  
By: *Meri Bilan*



Participants at the International OBIS-INDEEP training and workshop, Oostende, Belgium, October 2016.

**Marine Park of the Azores Advisory Council meeting, Faial Island, Azores (Portugal)**

The Marine Park of the Azores (MPAz) was designed to promote deep sea and open ocean conservation and the sustainability of human activities around the Azores islands. The last advisory council meeting began the process to define a management plan for the MPAz, and is expected to be finished in 2017.  
By: *Gilberto MP Carreira*

**YOUNG SCIENTIST CORNER**

Are you a promising early career researcher? You and your research could be featured **HERE**. Share your stories with the world in the upcoming **ATLAS** newsletters! Send an email to [claudia@aquatt.ie](mailto:claudia@aquatt.ie) to find out more.

## INTRODUCING THE ATLAS CASE STUDIES

To achieve the ambitious research goals in **ATLAS** more than 25 deep-sea cruises will investigate a network of 12 case studies spanning the Atlantic from the LoVe observatory located off the Lofoten and Vesterålen islands, Norway to the Davis Strait, Eastern Arctic. Over the four-year project, researchers will study a variety of ecosystems including sponges, cold-water corals, seamounts and mid-ocean ridge systems. Each case study will be introduced in more detail in the following **ATLAS** newsletters. Please contact Dr Lea-Anne Henry, **ATLAS** Case Study coordinator, with any enquiries about the case studies ([l.henry@ed.ac.uk](mailto:l.henry@ed.ac.uk)).

<b>1. LoVe Observatory</b>	<b>7. Gulf of Cádiz/Strait of Gibraltar/Alborán Sea</b>
<b>2. North and West of Shetland</b>	<b>8. Azores</b>
<b>3. Rockall Bank, Northern NE Atlantic</b>	<b>9. Reykjanes Ridge</b>
<b>4. Mingulay Reef</b>	<b>10. Davis Strait, Eastern Arctic</b>
<b>5. Porcupine Seabight</b>	<b>11. Flemish Cap</b>
<b>6. Bay of Biscay</b>	<b>12. South-eastern USA (Bermuda Transect)</b>



★ Case Studies    ● Project Partners

- |                                                                                 |                                                               |                                                          |
|---------------------------------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------|
| <b>1</b> The University of Edinburgh (UEDIN)                                    | <b>9</b> Universität Bremen (UniHB)                           | <b>19</b> The Arctic University of Norway (UiT)          |
| <b>2</b> Aarhus Universitet (AU)                                                | <b>10</b> Iodine (Iodine)                                     | <b>20</b> Scottish Association for Marine Science (SAMS) |
| <b>3</b> Instituto do Mar – Centre of the University of the Azores (IMAR-UAz)   | <b>11</b> Royal Netherlands Institute for Sea Research (NIOZ) | <b>21</b> Seascope Consultants (SC)                      |
| <b>4</b> Secretaria Regional do Mar, Ciência e Tecnologia (DRAM)                | <b>12</b> Dynamic Earth (DE)                                  | <b>22</b> Instituto Español de Oceanografía (IEO)        |
| <b>5</b> British Geological Survey (BGS/NERC)                                   | <b>13</b> University of Oxford (UOX)                          | <b>23</b> University of North Carolina Wilmington (UNCW) |
| <b>6</b> Gianni Consultancy (GC)                                                | <b>14</b> University College Dublin (UCD)                     | <b>24</b> AquaTT UETP Ltd (AquaTT)                       |
| <b>7</b> Institut Français de Recherche pour l'Exploitation de la Mer (Ifremer) | <b>15</b> University College London (UCL)                     | <b>25</b> Fisheries and Oceans Canada (DFO)              |
| <b>8</b> Marine Scotland (MSS)                                                  | <b>16</b> National University of Ireland, Galway (NUIG)       |                                                          |
|                                                                                 | <b>17</b> University of Liverpool (ULIV)                      |                                                          |
|                                                                                 | <b>18</b> University of Southern Denmark (USD)                |                                                          |

## CRUISE LOGBOOKS

Nine research cruises in 2016 alone have already collected a myriad of data for ATLAS!



**30 Apr - 24 May 2016**  
 CCGS Hudson (Canadian Department of Fisheries and Oceans, DFO)  
 Atlantic Zone Off-Shelf Monitoring Program  
 Case Study 10 (Davis Strait, Eastern Arctic)  
**ATLAS Partner: DFO**

**13 May - 23 Jun 2016**  
 RRS James Cook (UK National Environmental Research Council, NERC)  
 Case Study 3 (Rockall Bank, Northern NE Atlantic)  
**ATLAS Partners: University of Oxford, BGS**

**7 Jun - 24 Jun 2016**  
 RRS Discovery (NERC)  
 DY052 Ellett Line  
 Case Study 3 (Rockall Bank, Northern NE Atlantic)  
**ATLAS Partner: SAMS**

**29 Jun - 23 Jul 2016**  
 RRS Discovery (NERC)  
 DY053 OSNAP east  
 Case Study 3 (Rockall Bank, Northern NE Atlantic)  
**ATLAS Partner: SAMS**

**2 - 24 Jul 2016**  
 RV Meteor (University Erlangen-Nürnberg)  
 Azores (The Mid-Atlantic Ridge and Terceira Rift)  
 Case Study 8 (Azores)  
**ATLAS Partner: IMAR - UAZ**

**14 Jul - 16 Aug 2016**  
 CCGS Hudson (DFO)  
 Scotian Shelf to Bermuda  
 Case Study 12 (South-eastern USA - Bermuda Transect)  
**ATLAS Partners: DFO, University of Oxford, University of Edinburgh**

**16 Jul - 6 Aug 2016**  
 RV Pelagia (Royal Netherlands Institute of Sea Research, NIOZ)  
 Condor Seamount and Menez Gwen hydrothermal vent field  
 Case Study 8 (Azores)  
**ATLAS Partners: NIOZ, IMAR - UAZ**

**10 - 23 Sep 2016**  
 MOREDEEP II MRV Scotia (Marine Scotland Science)  
 Faroe-Shetland Channel, Rosemary Bank Seamount, Rockall  
 Case Study 2 (North and West of Shetland) and Case Study 3 (Rockall Bank, Northern NE Atlantic)  
**ATLAS Partners: Marine Scotland Science, University of Edinburgh**

**21 Sep - 25 Oct 2016**  
 MEDWAVES, RV Sarmiento de Gamboa (Spanish National Research Council, CSIC)  
 Alborán Sea to Azores  
 Case Study 7 (Gulf of Cádiz/ Strait of Gibraltar/Alborán Sea) and Case Study 8 (Azores)  
**ATLAS Partners: IEO, IMAR - UAZ, Ifremer, University of Edinburgh**



## Featured cruise #1: CCGS Hudson (DFO) cruise, the Scotian Shelf to Bermuda 14/07/16 - 16/08/16

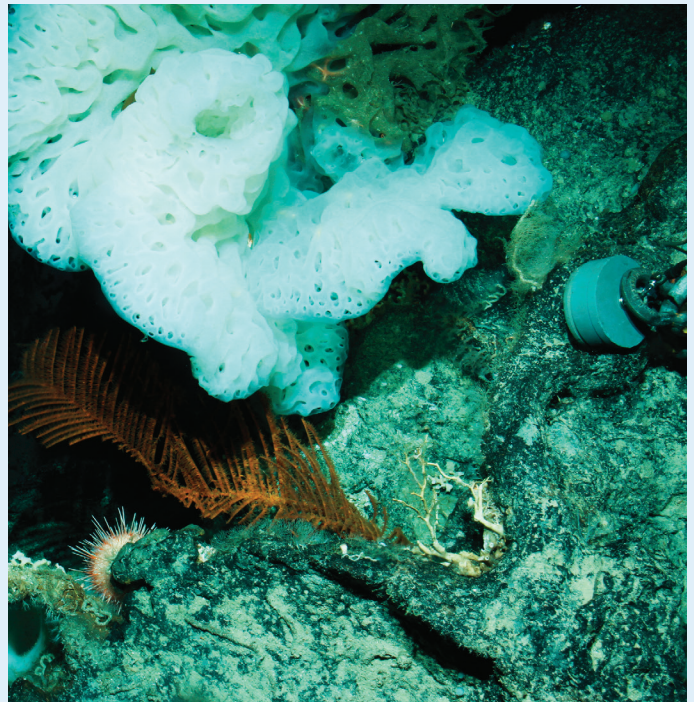
This **ATLAS**/SponGES cruise, led by Dr Ellen Kenchington (DFO) and Dr Alex Rogers (Oxford University), together with the Nekton Foundation, sailed 2,600km from Nova Scotia to Bermuda as part of Case Study 12. Data collected included multibeam seafloor maps, and various physical, biological and chemical oceanographic measurements. Nets were deployed to sample surface microplastics, surface biota and deep-sea zooplankton. Van Veen grabs collected corals and sediment, and several drop cameras caught wonderful images of the deep sea. Water samples were taken for environmental DNA (eDNA).

Understanding how the flow of energy and elements controls the distribution and diversity of living marine resources in the North Atlantic provides the foundational backbone of the **ATLAS** project. The **ATLAS** scientists on board the *CCGS Hudson* aimed to understand if, and how, seamounts in this region augment oceanography, and whether they support marine life that could indicate the presence of Vulnerable Marine Ecosystems (VMEs) or support designations as Ecologically or Biologically Significant Areas (EBSAs).

Camera surveys at the Kelvin Seamount, part of the New England Seamount chain in the High Seas, gave excellent high-resolution images of rich coral and sponge assemblages, including two reef framework-forming corals *Enallopsammia rostrata* and *Solenosmilia variabilis* and a variety of deep-sea sponges (demosponges, and glass sponges (hexactinellid)). Analysis of conductivity, temperature, depth, water mass structure, chemical oceanography and other such measurements from Kelvin is ongoing but could indicate the presence of mixing zones and interactions with meso-scale eddies of the type that are thought to attract seasonal occurrences of sperm whales to Kelvin.

In contrast, the Bermuda seamounts showed well-stratified layers of water laying overtop Bowditch

Seamount (northeast of Bermuda), Argus and Challenger Banks (both southwest off Bermuda). A core layer of poorly oxygenated Central North Atlantic Water was evident at about 700 - 900m water depth. Here, bottom currents were strong, and seafloor surveys of the saddle feature at these depths between Argus and Challenger showed mostly fine-grained sediments that supported a variety of gorgonians including *Acanella* species.



*Diverse sponge and coral community on the Kelvin Seamount ©DFO*

The intensive schedule of offshore cruises underway in **ATLAS** is an excellent opportunity to build on this oceanography to understand how ocean currents support marine biodiversity and connect populations across the Atlantic.

*By: Dr Lea-Anne Henry, the University of Edinburgh, member of the scientific party on board, CCGS Hudson*



*The CCGS Hudson docked in St. George's, Bermuda in July 2016; sampling from the Conductivity, Temperature and Depth (CTD) Rosette; retrieval of the multi-net; the Remotely-Operated Underwater Vehicle (ROV) being deployed in Bermuda ©Lea-Anne Henry*

## Featured Cruise #2: MEDWAVES, RV Sarmiento de Gamboa (CSIC) Alborán Sea to Azores 21/09/16 – 25/10/16

The MEDiterranean outflow WATER and Vulnerable EcosystemS (MEDWAVES) cruise was organised by **ATLAS** beneficiary Dr Covadonga Orejas (Spanish Oceanographic Institute, IEO) and included participants from IEO, the University of Edinburgh, Heriot-Watt University, the French Research Institute for Exploitation of the Sea (Ifremer), the Centre for Marine Research at the University of the Azores (IMAR-UAz), the Marine Science Institute and Natural Science Museum (both from the Spanish National Research Council, CSIC), the Observatório Oceânico da Madeira (ARDITI), University of Málaga, University of Alcalá de Henares, and Aquarium Finisterrae. The Marine Technological Unit from the Spanish Research Council (UTM, CSIC) provided technical support, and the captain, officers and crew of the *RV Sarmiento de Gamboa* made the work possible.

The MEDWAVES cruise targeted a 'pure' Mediterranean area and three more areas under the potential influence of Mediterranean Outflow Water (MOW) within the Mediterranean and Atlantic realms. These include seamounts where cold-water corals have been reported but are still poorly understood, and which may act as essential stepping stones connecting fauna from seamounts in the Mediterranean with those of the continental shelf off Portugal and the Azores.



*RV Sarmiento de Gamboa* ©Guardia Civil, Helicópteros

The main goal of this cruise was to characterise the MOW Path, both physically and geochemically, and understand its interaction with the general Atlantic Meridional Overturning Circulation (AMOC) stream, from the Alborán Sea to the Azores, through the Gulf of Cádiz, and the Ormonde Seamount. During the cruise, the relationship between the oceanographic settings of the target areas and the ecosystems therein were explored. The CTD-Rosette allowed a series of vertical profiles of the water column and water sampling to be performed

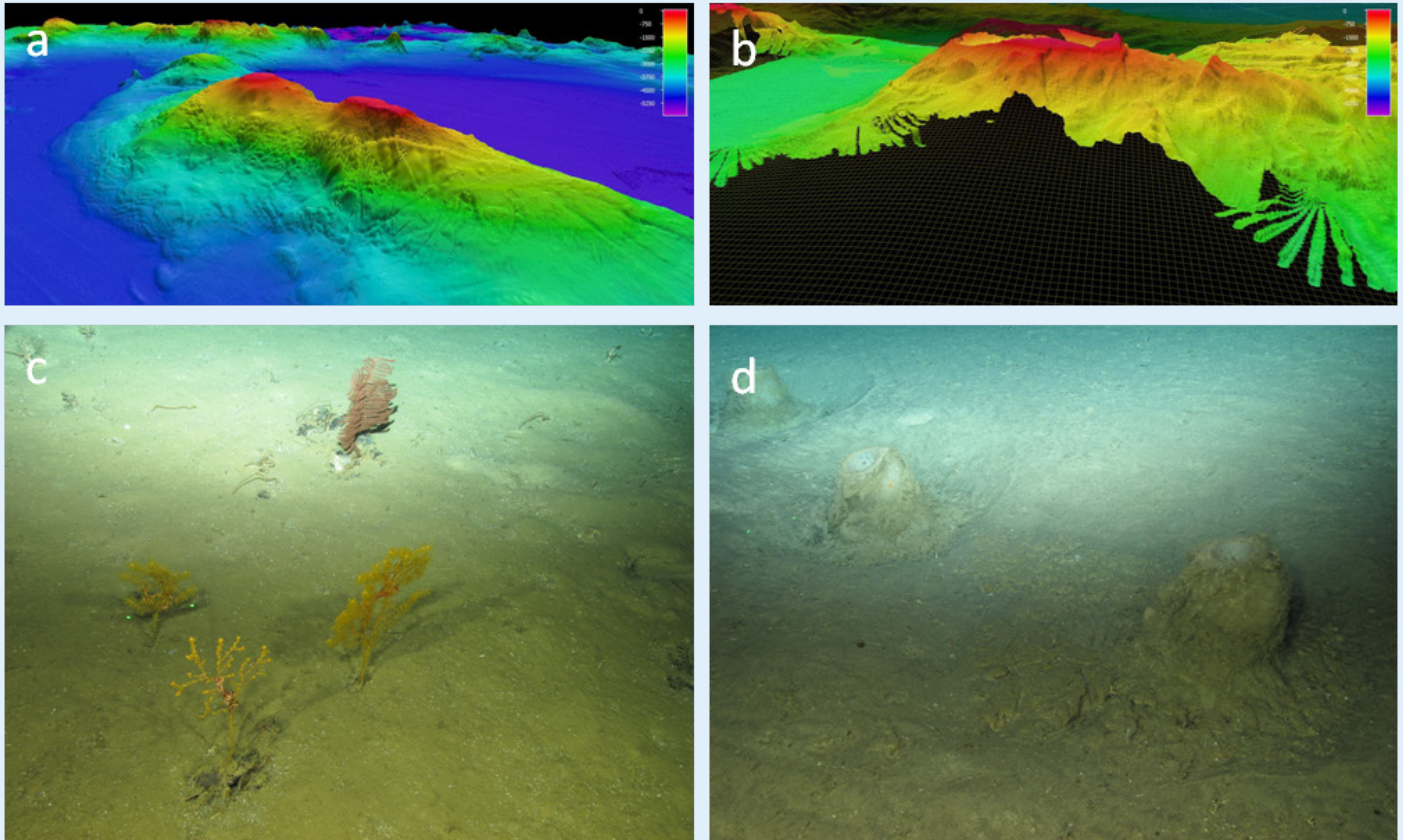
at different water depths, measuring the physical and chemical features. Further water samples have been collected to perform eDNA analyses.



*MEDWAVES participants Victor (IEO, Coruña) and Jesús (ARDITI, Madeira) collecting water samples from the CTD Rosette on board RV Sarmiento de Gamboa*  
©Cova Orejas

The characterisation of the benthic communities associated with the different water masses in the targeted areas was possible thanks to the remotely operated underwater vehicle (ROV) *Liropus* owned by IEO. More than 20 ROV dives were conducted, some of them down to 2,000 meters deep. Video footage revealed important discoveries including a spectacular range of coral gardens and glass sponges sitting in North Atlantic Deep Water on the Ormonde Seamount; an impressive array of coral gardens including high densities of rare trans-Atlantic gorgonian, bird's nest sponge habitats, and lollipop sponge grounds on the Formigas Bank. Several multibeam surveys were conducted to characterise the morphology of the study areas. A collection of the coral specimens collected by the ROV have been transferred to the aquaria on board and short-term ecophysiological experiments have been carried out in order to better understand the functionality of these organisms.

The ROV *Liropus* was equipped with manipulators to sample specimens. A Box Corer and Van Veen Grab collected samples of organisms to improve our knowledge of the biodiversity of the areas. Multicorer samples were taken to gather information on the connectivity between the Mediterranean and the Atlantic and genetic analyses will be performed in the laboratories back on shore.



3D multibeam bathymetry images from the Ormonde seamount (a) and Formigas seamount (b), obtained during MEDWAVES ©J. Rivera IEO-MEDWAVES/ATLAS; c) a coral garden at ca. 2000 m in Ormonde, d) Bird's nest sponges at the Formigas seamount ©IEO-MEDWAVES/ATLAS



a) MEDWAVES participants Javi and Ángel (IEO-University Málaga) processing sediment samples collected with a Van Veen Grab; at the Ormonde and Formigas Seamounts ©M. Bilan; b) MEDWAVES participants Anna (Museo CC Naturales-CSIC, Madrid), Joana (Ifremer, France), and Juancho (ICM, CSIC, Spain), processing a multiple corer ©Cova Orejas

*“MEDWAVES has been a fantastic experience. 38 scientists and technicians and 19 crew members have worked together to make MEDWAVES possible. During the 36 days at sea, more than 200 stations across the Mediterranean and the Atlantic have been sampled and the MEDWAVES team on board and at home are currently processing the information collected during the cruise, trying to find answers to the many questions that arose from this deep sea experience. The coming months will be an exciting time of discoveries and adding new data to answer the big question on the influence of the Mediterranean in the Atlantic and the connectivity between these two aquatic worlds.”*

*Dr Covadonga Orejas, IEO, MEDWAVES Cruise Leader*

## PUBLICATIONS

Cormier R, Kelble CR, Anderson MR, Allen JI, Grehan A, Gregersen Ó (2016). Moving from ecosystem-based policy objectives to operational implementation of ecosystem-based management measures. *ICES Journal of Marine Science*. DOI: 10.1093/icesjms/fsw181

De Clippele LH, Gafeira J, Roberts K, Hennige S, Lavaleye MS, Duineveld CGA, Huvenne VAI, Roberts JM (2016). Using novel acoustic and visual mapping tools to predict the small-scale spatial distribution of live biogenic reef framework in cold-water coral habitats. *Coral Reefs*. DOI: 10.1007/s00338-016-1519-8

Fox AD, Henry L-A, Corne DW, Roberts JM (2016). Sensitivity of marine protected area network connectivity to atmospheric variability. *Royal Society Open Science* 3: 160494. DOI: 10.1098/rsos.160494

Long R, Chaves MR (2015). Anatomy of a new international instrument for marine biodiversity beyond national jurisdiction: First impressions of the preparatory process. *Environmental Liability - Law, Policy and Practice* 6: 213-229.

Sampaio Í, Stokvis F, van Ofwegen LP (2016). New name for the soft coral *Alcyonium rubrum* Stokvis & van Ofwegen, 2006 (Alcyonacea, Alcyoniidae): *Alcyonium burmedju* nom. n. *ZooKeys* 619: 163-165. DOI: 10.3897/zookeys.619.10086

Soetaert K, Mohn C, Rengstorf A, Grehan A, van Oevelen D (2016). Ecosystem engineering creates a direct nutritional link between 600m deep cold-water coral mounds and surface productivity. *Scientific Reports* 6, 35057. DOI:10.1038/srep35057

## FEATURING ATLAS

### BBC News – Deep Atlantic: Scientists launch ocean mission

A BBC video report on the successful launch of the ATLAS project was aired in June 2016.

[bbc.in/1S8klKO](http://bbc.in/1S8klKO)



The screenshot shows the BBC News website interface. At the top, there are navigation tabs for News, Sport, Weather, and Show. Below that, a red banner reads 'NEWS'. Further down, there are sub-navigation tabs for Home, Video, World, UK, Business, Tech, Science, and Magazine. The main content area features a large image of an orange sea anemone on a dark seabed. Below the image, the headline reads 'Deep Atlantic: Scientists launch ocean mission'. The date is '17 June 2016' and it says 'Last updated at 06:03 BST'. A short paragraph below reads: 'British scientists are leading a mission to reveal the secrets of the deep Atlantic Ocean.'

### Euronews – A Technological Eye on the Future of our Seas

The ATLAS MEDiterranean outflow WATER and Vulnerable EcosystemS (MEDWAVES) research cruise was featured on the Futuris programme on Euronews in November 2016. Find out more about the MEDWAVES cruise on page 10. [bit.ly/2glwnaa](http://bit.ly/2glwnaa)



The screenshot shows a video player interface for Euronews. The title at the top is 'A TECHNOLOGICAL EYE ON THE FUTURE OF OUR SEAS AND OUR AGRICULTURE'. The Euronews logo is visible. The video content shows a large white and red research ship sailing on the water. At the bottom of the video frame, there is a blue banner with the text 'FUTURIS GLOBAL OBSERVATION'.