

## The National Oceanography Centre

This document lists the large research infrastructure which is managed and operated by the National Oceanography Centre (NOC) on behalf of NERC/URKI for the benefit of the UK marine science community.

### NERC/URKI ships & large infrastructure in the National Marine Equipment Pool

#### Managed by the [National Marine Facilities \(NMF\)](#)

Royal Research Ships	Length
<a href="#">RRS Discovery</a>	99.7m
<a href="#">RRS James Cook</a>	89.2m
Remotely Operated Vehicles (ROV)	Depth rated
<a href="#">Isis ROV</a>	6,500 m
<a href="#">Hydraulic Benthic Interactive Sampler</a>	6,000 m
Autonomous Underwater Vehicles	Depth rated
<a href="#">Autosub6000</a>	6,000 m
<a href="#">Autosub Long Range</a>	6,000 m
Gavia AUV	500 m
<a href="#">ecoSUB</a>	
Sparus2	
<a href="#">Autosub Long Range 1500</a>	1,500 m
(in development)	
Autosub2KUI	
(in development)	2,000 m
Unmanned surface Vehicles	Number
C-Worker 4	1
<a href="#">Waveglider SV3</a>	2
Glider fleet	Number
<a href="#">Seagliders</a>	10
<a href="#">Slocum gliders</a>	23

#### Other National Facilities at the National Oceanography Centre:

##### [British Ocean Sediment Core Research Facility \(BOSCORF\)](#)

BOSCORF provides access to core samples taken from beneath the ocean by NERC ships and NERC-funded researchers.

##### [British Oceanographic Data Centre \(BODC\)](#)

BODC is a national facility for looking after and distributing data concerning the marine environment.

##### [Permanent Service for Mean Sea Level \(PSMSL\)](#)

The Permanent Service for Mean Sea Level (PSMSL) is responsible for the collection, publication, analysis and interpretation of sea level data from the global network of tide gauges, including the GLOSS Core Network.

## **International activities undertaken by NOC funded by the institutional ‘block grant’ funding received from NERC**

Only those international programmes involving NOC scientists on board our ships are included here.

### **The UK Argo programme**

The broad-scale global array of temperature/salinity profiling floats, known as Argo, is a major component of the Ocean observing system and an international collaboration that collects high-quality temperature and salinity profiles from the upper 2000 m of the ice-free global ocean and currents from intermediate depths.

A key objective of Argo is to observe ocean signals related to climate change. Over 10,000 profiles per month are delivered from the Argo array, and over 200 research papers are published per year, using Argo data covering a broad range of topics including: water mass properties and formation, air-sea interaction, ocean circulation, mesoscale eddies, ocean dynamics, seasonal-to-decadal variability, and global change analysis.

Since 2010 NERC, DECC and the Met Office have funded the UK Argo programme. NOC and BODC has responsibility for Argo science and data management respectively.

### **International partners: a global programme involving more than 30 nations.**

### **Global Sea Level Observing System**

The Global Sea Level Observing System ([GLOSS](#)) was established by the Intergovernmental Oceanographic Commission (IOC) of UNESCO in 1985 to establish a well-designed, high-quality *in situ* sea level observing network to support a broad research and operational user base.

The GLOSS Delayed Mode Data Centre is operated by the BODC in collaboration with PSMSL. It has the responsibility for assembling, quality controlling and distributing the ‘final’ version of GLOSS sea-level data sets, as well as all supporting metadata information.

### **International partners: a global programme involving more than 90 countries and territories.**

### **Climate Linked Atlantic Sector Science**

CLASS will deliver the knowledge and understanding of the Atlantic Ocean system that society needs to make evidence-based decisions regarding ocean management. We aim to address key knowledge gaps in our understanding of ocean variability, climate regulation and ocean services, and to assess how the ocean will evolve as a result of climate change and intensified human exploitation.

CLASS will be delivered through Marine National Capability underpinning activities.

## **1. Sustained Ocean Observations**

CLASS links existing long-term observational programmes into a comprehensive, integrated pan-Atlantic observing system that contributes to a globally coordinated programme of sustained observations.

### **Hydrography (ocean circulation and heat and freshwater transport)**

The RRS *James Cook* and RRS *Discovery* are used in the following programmes, as well as equipment from the NMEP.

#### RAPID array

A principal objective of the RAPID programme is the development and maintenance of a pre-operational prototype system that will continuously observe the strength and structure of the MOC.

#### **International partners**

National Science Foundation and the National Oceanic and Atmospheric Administration in the USA, the Netherlands Organisation for Scientific Research and the Norwegian Research Council.

#### OSNAP array

OSNAP is an international program designed to provide a continuous record of the full-water column, trans-basin fluxes of heat, mass and freshwater in the subpolar North Atlantic. The OSNAP observing system consists of two legs: one extending from southern Labrador to the south western tip of Greenland across the mouth of the Labrador Sea (OSNAP West), and the second from the south eastern tip of Greenland to Scotland (OSNAP East). The OSNAP expeditions use gliders from the NMEP.

#### **International partners:**

US, Germany, Canada, France, the Netherlands and China.  
Funded by NERC and the National Science Foundation NSF

### **Surface biology and biogeochemistry**

The [Atlantic Meridional Transect](#), a pan-Atlantic sampling programme (UK to the Falkland Islands) operating since 1995, provides observations of the structure and biogeochemical properties of planktonic ecosystems and access to the South Atlantic subtropical gyre.

#### **International partners**

Led by PML and involved 256 scientists from 22 countries.

## **Fixed point observatories**

The [Porcupine Abyssal Plain](#) Sustained Observatory (PAP-SO) is a sustained, multidisciplinary observatory in the North Atlantic coordinated by NOC.

For over 20 years the observatory has provided key time series datasets for analysing the effect of climate change on the open ocean and deep-sea ecosystems.

## **International partners**

The PAP Sustained Observatory contributes to ICOS, EMSO, OceanSITES and GOOS. EMSO, for example, involves Greece, Ireland, Italy, Portugal, Romania, Spain.

## **2. Modelling**

CLASS maintains and further develops world-leading [ocean modelling capability](#) to enable ground-breaking science, and to provide reliable predictions of environmental change to Government and international assessment efforts, including IPCC.

## **3. Technology**

CLASS enhances the observing infrastructure through the development of new [sensors](#) for biogeochemistry and biological measurements, and through improvements in the observing systems.

## **United Nations Decade of Ocean Science for Sustainable Development (2021 – 2030)**

The United Nations has proclaimed a **Decade of Ocean Science for Sustainable Development (2021-2030)** to support efforts to reverse the cycle of decline in ocean health and gather ocean stakeholders worldwide behind a common framework that will ensure ocean science can fully support countries in creating improved conditions for sustainable development of the Ocean.

NOC is working with the UK marine science community to contribute to this UN initiative and will be contributing our science expertise, for example:

### **Seabed 2030**

**Seabed 2030** is a collaborative project between the [Nippon Foundation of Japan](#) and the [General Bathymetric Chart of the Oceans](#) (GEBCO). It aims to bring together all available bathymetric data to produce the definitive map of the world ocean floor by 2030 and make it available to all. The Global Data Center is hosted at the British Oceanographic Data Centre at the NOC.

## Sustainable Oceans, Livelihoods and food Security Through Increased Capacity in Ecosystem research in the Western Indian Ocean (SOLSTICE)

Funded by the Global Challenges Research Fund, Research Council UK (RCUK) and NERC, the four-year SOLSTICE project that aims to strengthen capacity in the Western Indian Ocean (WIO) region to address challenges of food security and sustainable livelihoods for coastal communities. SOLSTICE combines marine robotics, ocean models and remote sensing for cost effective monitoring and predictions in data poor areas.

Gliders from the National Marine Equipment Pool have been used to collect data that supports a UK-Africa partnership aimed at improving understanding of [how regional fisheries are sustained](#).

### **International partners**

Nelson Mandela University, South African Squid Management Industry Association, Rhodes University, South African Environmental Observation Network, the University of Cape Town, the Institute of Marine Sciences (Zanzibar), the Western Indian Ocean Marine Science Association, the Tanzania Fisheries Research Institute, the Environment for Development – Tanzania, WWF Tanzania, Kenya Marine and Fisheries Research Institute, Coastal Oceans Research and Development – Indian Ocean, University of Seychelles, Mozambique National Institute of Fisheries Research and the Institut Halieutique et de Sciences Marines.

### **[MarineE-tech \(Expedition: DY094\)](#)**

MarineE-tech: marine ferromanganese deposits — a major resource of E-tech elements MarineE-tech is £4.2M programme funded through both NERC (UK) and FAPESP (Brazil). It address a major potential source of elements (E-tech elements), identified as critical to environmental technologies, for which there are concerns about security of supply.

Ship:	RRS <i>Discovery</i>
Large infrastructure:	Autosub6000, ROV HyBIS, sensor and mooring equipment, corers, dredgers, trawlers and ship-fitted equipment.

### **International partners**

The partnership, led by NOC, spans industry, academia and policy makers and includes the University of San Paulo (Brazil), the University of Bath, the British Geological Survey, SOPAC and the South Pacific Island Communities, the United Nations' International Seabed Authority, HR Wallingford, Gardline Ltd., and Soil Machines Division Ltd. Gateshead.

## **Ocean Facilities Exchange Group**

The UK was the pioneer and active partner in international mechanisms for bi-lateral (UK-USA) and multi-lateral (Ocean Facilities Exchange Group, OFEG) for international barter of ship-time and large marine research equipment

<http://www.ofeg.org/np4/home.html>

### **International partners**

France, Germany, Netherlands, Norway, Spain.

The National Marine Facilities engages in barter exchanges with international institutes which has an impact on the delivery of national strategy & international collaborations.

### **Prepared by**

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