Director of Research

AB, Dartmouth College
PhD, Columbia University
Geoscience Australia, 1985-1989
University of Texas, 1990-2001
University of Tokyo, 2001-2007
National Oceanography Centre, Southampton, 2008-
The National Oceanography Centre, Southampton (NOCS) opened in 1995 in a purpose-built, waterfront campus on the city’s Empress Dock. A collaboration between the University of Southampton and the Natural Environment Research Council, the centre houses around ~530 staff (180 principal investigators) and ~800 undergraduate and postgraduate students.


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Parent Organizations

University of Southampton
- students: 14,873 undergraduate / 6,599 graduate
- 2,168 faculty staff

Natural Environment Research Council
- one of seven UK research councils
Unique combination of:

• world-leading research and technology development (150 laboratories; 22,500 m²)
• education and teaching
• national coordination remit
• national facilities: Royal Research ships, inshore research fleet, international project offices
• sustained ocean observing
• knowledge transfer
• outreach

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Peer Institutions

IFM-GEOMAR (1980s), Germany
National Oceanography Centre, Southampton (1995)
Ocean Research Institute (1962), Japan
Scripps Institution of Oceanography (1903), USA
Woods Hole Oceanographic Institution (1930), USA
How we are organised

527 staff
~650 undergrad students
~150 grad students
Turnover US$61.6 million per year

Cdre David Lewis
Professor Phil Weaver
Professor Mike Coffin
Professor Andrew Roberts
Ruth Grimmer

180 staff
Geology & Geophysics
Biochemistry
Ocean Observing & Climate
Ocean Modelling & Forecasting
Palaeoceanography & Palaeoclimate
Coastal Processes

120 staff
Technology
National Marine Facilities Division (NMFD)

120 staff
NERC Strategic Research Division (NSRD)

62 staff
Corporate Services Division (CSD)

School of Ocean & Earth Science (SOES)

Central University/NERC Services

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Research and Education

Biological Oceanography

Chemical Oceanography

Marine Geology & Geophysics

Ocean Engineering & Technology

Physical Oceanography

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Beacon Themes

Arctic Science
Ocean Acidification
Geoengineering
Marine Biofuels/Renewable Energy
Marine Policy
Molecular Proteomics
Ocean Technology/Microsensors

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Recent Highlights

- Could Atlantic Conveyor switch off?
- World’s largest landslide discovered
- Iron fertilisation processes
- Antarctic marine life under threat
- CO₂ rise causes plankton to calcify
- Ice on Greenland – 20 million years earlier than previously thought

Ocean surface fluxes & Saharan dust, Eric Achteberg

Science Paper: Ocean drilling
Damon Teagle

Antarctic research makes Time Magazine’s top 10 list.

Swire Foundation Ocean monitoring, David Hydes

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World-Class NOCS Research
Some leading scientists at NOCS working on globally important problems...

Prof. Harry Bryden, FRS
Ocean circulation & rapid climate change
Some leading scientists at NOCS working on globally important problems...

Prof. Eelco Rohling
paleoclimate &
sea level change
Some leading scientists at NOCS working on globally important problems...

Dr Lisa McNeill & Dr Tim Henstock
Marine geophysics & tsunami generation

www.noc.soton.ac.uk
Some leading scientists at NOCS working on globally important problems...

Prof. Paul Tyler
deep-sea reproductive biology & ecosystems
Technology Development

Novel platforms

Autosub6000
- dimensions: 5.5 m x 0.9 m
- mass: 2000 kg
- payload: 500 litres
- max depth: 6000 m
- range: 1000 km @ 1 m/s

Communication and navigation challenges

Novel sensors

www.oceanography.ac.uk
Design, operations and support for Autonomous Underwater Vehicles

Design and build of Autosub6000 deep ocean geophysical survey AUV with 300 km range.

Current design for long-range hydrographic survey AUV for 6000m depth 6000 km range.

Designs for air-launched small AUVs, e.g., for dropping into oil spills to measure sub-surface oil.

Consultancy on use of AUV technology in support of offshore activities, including risk management, use in polar waters.

Scours at ~4200 m off the Canary Islands imaged with EM2000 swath bathymetry from the Autosub6000 AUV August

Contact: Prof. Gwyn Griffiths gxg@noc.soton.ac.uk
Sustained Ocean Observing

OPEN OCEAN CLUSTER
- AMT (SO 1)
- PAP (SO2)
- MOC, Drake (SO 3, 6)
- Ellett Line (SO 4)
- UK-GLOSS (SO 7)
- SOO (SO 8)
- Plus
  - SO5 Argo
  - SO9 Surface fluxes

COASTAL CLUSTER
- Coastal Observatories (SO 10, 11, 12)
- Arctic series (SO13)

PLANKTON
- CPR routes (SO15)

MARINE MAMMALS
- SO14 Marine Mammals

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National Marine Facilities

RRS Discovery

RRS James Cook

Isis Remotely Operated Vehicle

National Marine Equipment Pool (NMEP)

British Ocean Sediment Core Research Facility

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Partnerships, representation and coordination

The ABERDEEN DECLARATION
A New Deal for Marine and Maritime Science

The European Marine and Maritime Science and Technology Community:

Recognizing the great importance of the ocean and seas for Europe's economic, social and environmental development and in particular the major challenges posed by global environmental change and the significant opportunities offered by the global market economy;

The European Marine and Maritime Science and Technology Community:

- welcomes and supports the Commission's proposal for an all embracing European Maritime Policy Enabling the knowledge economy (Brussels 2000), and lining the foundation of a marine and maritime component of the European Research Area (ERA);
- is convinced that the proposed Maritime Policy is based on the principle of sustainable development (Rostock 2001), and considers that the Thematic Strategy for the Marine Environment, in the environmental pillar of the maritime policy, should include a clear definition of regional targets and indicators that will achieve Good Environmental Status based on the best scientific understanding;

Calls for urgent action by the European Commission and the Member States to further develop and achieve a partnership with the appropriate stakeholders to:

1. initiate by 2005 a comprehensive and integrated European Marine and Maritime Science, Research, Technology and Innovation Strategy;
2. establish an adequately resourced and sustained process to oversee the implementation and delivery of this Strategy within an inclusive European Maritime Policy;
3. initiate and support the necessary funding mechanisms, specialized infrastructures, data collection and information management, and capacity building essential to ensure one-on-one sector relationships with the oceans and seas.

The Strategy must enable:
- foresight activities to identify new and emerging scientific challenges and opportunities;
- trans-sectoral, multidisciplinary and interdisciplinary research partnerships;
- cooperation between research, industry and other stakeholders to enhance knowledge and technology transfer and innovation;
- development of scientific and technology capacity to strengthen the knowledge economy;
- sound risk planning and management of critical infrastructures on a Europe-wide basis.

Rationale: The above action will ensure the observance of the principles of the proposed EU Maritime Policy: delivering significant added value in key areas:

- Economic Development: Accessing Europe's share of the estimated $1.5 trillion global marine market economy through the development and uptake of innovative marine and environmental technologies;
- Environmental Management: to provide the knowledge and tools needed to implement EU Directives and Regulations, International Conventions and Regional National Action Plans;
- Ocean and Coastal Governance; enabling the application of the principles of marine spatial planning and the coherent approach to resource management within the European Union, with neighboring states and globally, supporting effective governance of the marine and coastal environment.

In this context, marine science will contribute significantly to Europe's response to one of the greatest challenges currently facing mankind – that of Global Climate Change. This can only be achieved through an intensive focus on:
- developing, deploying and evaluating new ocean observatory and data collection systems to better understand the sea and impact of climate change on the ocean and impacts on the wider earth system. This knowledge will improve protection and resource modelling and the development of appropriate adaptive strategies at European, regional, national and local levels to offset and cope with extreme and severe economic impacts.

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Science into policy

A Sea Change
A Marine Bill White Paper
March 2007

The Economics of Climate Change
The Stern Review

Marine climate change impacts
Annual Report Card 2007-2008

CLIMATE CHANGE 2007
THE PHYSICAL SCIENCE BASIS

SAFEGUARDING OUR SEAS
A Strategy for the Conservation and Sustainable Development of our Marine Environment

Ocean acidification due to increasing atmospheric carbon dioxide

Global Earth Observation System of Systems GEOSS

www.oceanography.ac.uk
Knowledge Exchange & Enterprise

Stewardship and Governance

INTERNATIONAL OCEAN STEWARDSHIP FORUM 2009

10 - 12 June 2009
National Oceanography Centre,
Southampton UK

Spin outs and licences

Strategic industry networking, partnerships and commissioned research, business breakfasts, technology marketplace.

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Education

University’s School of Ocean & Earth Science
✓ Around 800 under and post-grad students
✓ High quality teaching – top QAA rating
✓ Academic staff - attract more NERC funding than any other UK university (2005-6)
✓ Top of Russell Group universities for student satisfaction (2006)
✓ SOES second in satisfaction survey across UoS

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Opportunities in Education

Undergraduate Courses
BSc in Oceanography, Marine Biology, Geology, Geophysics, Ocean & Earth System Science: 3 years
MSc as above: 4 years with 1 yr in USA

Graduate School (GSNOCS)
MSc Oceanography, Marine Geology & Geophysics; Ocean Remote Sensing; Coastal Engineering; 1 yr
PhD 3 yr

WHOI
WUN

www.oceanography.ac.uk
The National Oceanography Centre, Southampton
Thank you!

180 scientists

350 support staff

Mike Coffin

m.coffin@noc.soton.ac.uk