

Ensuring that NERC is a flexible fit-for-purpose organisation



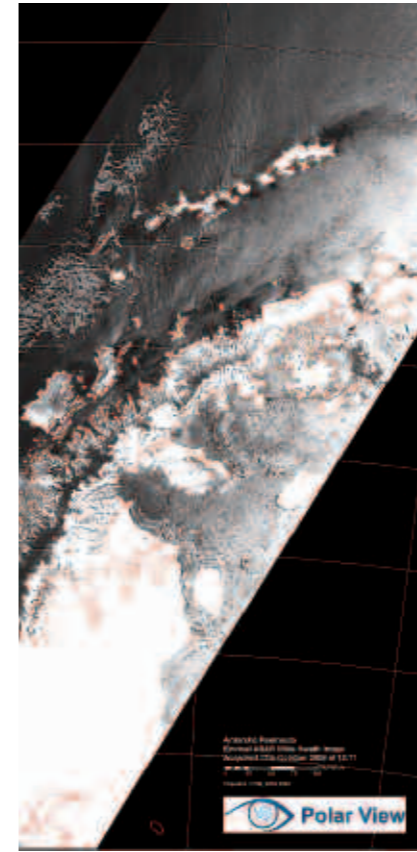
**Right:**

Example of a map available from the Polar View team.

NERC's newest research ship, the RRS *James Cook*, arrives for duty.

**Below:**

The seawater tanks used to measure acidity in the ocean in Norway.



**Polar View – global monitoring**

The British Antarctic Survey (BAS) was recently awarded a major contract to manage sea ice monitoring services for research ships, cruise liners and fishing boats in the Southern Ocean. The project is the Southern Ocean component of a new information programme, Polar View, which operates in the Antarctic and Arctic, delivering a range of polar environmental information services as part of the European Commission and European Space Agency's Global Monitoring for Environment and Security programme.

BAS is managing a consortium of organisations from Canada, Denmark, Germany, Italy, Norway and the United Kingdom, which deliver the Antarctic services. In the Antarctic these services will initially focus on near real-time satellite-based information about sea ice conditions to assist shipping. In the current climate of high fuel prices and increasing concerns about operational safety, better information contributes to improved efficiency and safety for vessels navigating in sea ice.

[www.polarview.aq](http://www.polarview.aq)

**New research ship**

The launch of a new ship is always a big event. In February the Princess Royal joined NERC Chief Executive Alan Thorpe to formally name the latest addition to NERC's research fleet, the Royal Research Ship *James Cook*.

The National Audit Office singled out RRS *James Cook* as an exemplary example of good management of a large project: it was delivered on time and within budget.

Project manager Howard Roe said, 'Her arrival is the culmination of a process that began some six or seven years ago. The result is quite simply the best oceanographic research ship in the world, with unrivalled capacity and versatility.'

The *James Cook's* maiden voyage caused headlines around the world as researchers embarked on an expedition to the Mid-Atlantic Ridge to investigate a large area, covering thousands of square kilometres, where the Earth's crust seems to be missing entirely. Here, the mantle – the deep interior of the Earth, normally covered by crust many kilometres thick – lies exposed on the seafloor.

**Oceans 2025**

Seven of the UK's leading marine centres have joined forces to implement Oceans 2025, a £120 million five-year programme funded by NERC.

Oceans 2025 is the first time that a single strategic research programme has been presented to NERC by its marine centres. This new 'self-assembly' approach to research planning has been designed to create a coordinated response to the serious scientific challenges of a changing marine environment. The strategic nature of the programme will enhance the research capabilities and facilities available for marine science.

Oceans 2025 will also support several national facilities including the British Oceanographic Data Centre, the Permanent Service for Mean Sea Level and the Culture Collection for Algae and Protozoa.

A key part of Oceans 2025 is the new Strategic Ocean Funding Initiative which will allow universities and other partners to bid for funds.

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### International collaboration: recovery of intact section of ocean crust

Recovering an intact section of ocean crust has been an elusive goal of scientific ocean drilling for decades. This goal has now been realised by the Integrated Ocean Drilling Program, funded in the UK by NERC. The team published their results in the American journal *Science* in May 2006.

The team aims to keep on drilling towards the base of the crust. They hope the sample will tell them how volcanic activity produces the Earth's crust and how it is cooled by hydrothermal systems.

Damon Teagle, a geochemist from the National Oceanography Centre, Southampton sailed on all three cruises, twice as co-chief scientist. Also working on the project were: petrologists John MacLennan, based in Edinburgh and Cambridge, and Sally Morgan, based at the University of Leeds and wire-line geophysical loggers from the University of Leicester, Samantha Barr and Mark Reichow.

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### Accreditation to international standards for safety, health and environment

The British Antarctic Survey was awarded the internationally recognised standard for Environmental Management Systems, ISO 14001. The standard requires an organisation to demonstrate its commitment to continuous improvement by identifying its most significant impacts, setting targets to improve environmental performance, and carrying out regular senior management reviews of its environmental performance.

At the same time the survey achieved accreditation to the Occupational Safety and Health Standard, OHSAS 18001.

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### Centre for Ecology & Hydrology restructuring

At its March 2006 meeting, NERC Council approved an investment of £44m for the Centre for Ecology & Hydrology's (CEH) ambitious business plan. The plan focuses CEH's new integrated science

programme on four sites. CEH is creating new facilities, enabling staff from the five closing sites to relocate. Staff numbers will fall from about 600 to 440. The first closures begin in mid-2007.

### Acid oceans

By the end of the century the oceans will be more acidic than they have been for 25 million years. Researchers from Plymouth Marine Laboratory, the Centre for Ecology & Hydrology and eight UK universities travelled to Bergen in Norway to study this largely ignored consequence of climate change.

Scientists working on the project, which is part of NERC's Post-Genomics and Proteomics programme, are currently analysing results to determine the effects of increased acidity on marine microbial communities.

The team set up a weblog to communicate the work they were doing in Bergen to the outside world.

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Left to right:

Damon Teagle (left) and his team with the recovered core.

Sea water tanks used in monitoring acidity in the oceans.

On top of the new observatory on Cape Verde.



### Next Generation Science for Planet Earth – the new NERC strategy

NERC's new strategy, *Next Generation Science for Planet Earth*, which defines our priorities from 2007 to 2012, has been developed by NERC's governing Council and the Science and Innovation Strategy Board.

The strategy is split into seven science themes and four organisational themes. The science themes are climate systems, biodiversity, sustainable use of natural resources, Earth system science, natural hazards, technologies, and finally environment, pollution and human health.

The four organisational themes are: knowledge, people, scientific infrastructure and delivery.

Central to the strategy is a major new initiative called 'Living with Environmental Change' which addresses one of the Treasury's five key challenges. 'Living with Environmental Change' will be a partnership across research councils, government departments and industry.

The strategy will be published in Autumn 2007.

### Environmental science boosts UK economy

Environmental science is worth hundreds of millions of pounds to the UK economy, according to an independent study commissioned by NERC. The report, *Economic Benefits of Environmental Science*, received widespread support. Chief Scientific Advisor Sir David King said, 'I am very glad this analysis has taken place. One of the most difficult messages to get across at any level is

where you have avoided risk or if you have significantly reduced risk.

'The whole issue around global warming is one of preparing our societies for the impacts of climate change and then reducing the impacts by reducing emissions. Now what is the economic value of those impacts? Massive,' he added.

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### New atmospheric and ocean observatory on Cape Verde

In January NERC opened a new observatory on the island of Cape Verde to provide continuous, long-term measurements of atmospheric composition above the Atlantic Ocean. The observatory will also investigate how the oceans and the atmosphere interact. The Cape Verdean Minister of Infrastructure, Transport and the Sea, Manuel Inocêncio Sousa, formally opened the centre, which is joint-funded with the Leibniz Institute of Marine Sciences in Germany and other European Union programmes.

Phil Newton, who represented NERC at the launch, said, 'Carbon dioxide measurements on Hawaii show the importance of long-term monitoring. The Cape Verde Observatory will fill a knowledge gap in the tropical Atlantic, with benefits to Africa, the UK and the rest of the world.'

[www.york.ac.uk/capeverde](http://www.york.ac.uk/capeverde)

### Trends in annual capital investment (£m)

	2003-04	2004-05	2005-06	2006-07
Major projects (>£400k)	10.4	14.9	21.4	27.1
Research Centre Infrastructure Fund	6.0	8.1	0.8	0.0
Minor projects and equipment (<£400k) (less capital sales income)	8.9	4.9	9.9	9.7
	0.0	0.0	-0.2	-0.3
Capital grants to HEIs* (excluding JIF)	0.0	0.0	0.0	13.2
<b>Total</b>	<b>25.3</b>	<b>27.9</b>	<b>31.9</b>	<b>49.7</b>

\*from 2006-07 classed as Capital HEI: Higher Education Institutions JIF: Joint Infrastructure Fund

### Going green

We have implemented many initiatives this year including: rainwater harvesting at the Centre for Ecology & Hydrology, Edinburgh; a new cycle store at Proudman Oceanographic Laboratory; and we are currently implementing new waste management strategies at the National Oceanography Centre, Southampton. We are planning other initiatives including wind turbines at the British Geological Survey.

During the year the British Antarctic Survey and the British Geological Survey successfully gained ISO 14001 environmental management accreditation.

We are pleased to announce that the Environment Centre for Wales, which opens soon, meets recognised standards for environmentally sustainable design. Construction begins on a new building at the British Geological Survey's site at Keyworth which meets the same criteria.

The NERC Green Team, made up of representatives from all NERC research centres, meet (via video-conference) every three months. During the next twelve months the team aim to formalise NERC policies to cover travel, waste

management and energy. These will then provide the basis for all individual site policies.

### Directed programmes

Eight of our directed programmes came to a close this year. We held end-of-programme events to highlight their achievements and discuss with policy-makers and industry how their outputs could benefit the UK economy. Much of the work is highlighted throughout this report and previous reports.

- Autosub Under Ice
- Lowland Catchment Research (LOCAR)
- Environmental Factors in the Chronology of Human Evolution and Dispersal programme (EFCHEd)
- Upper Troposphere and Lower Stratosphere Ozone (see page 23)
- Polluted Troposphere
- Core-Strategic Measurements for Atmospheric Science (COSMAS)
- Clouds, Water Vapour and Climate (see page 21)
- Ocean Margins Link (see page 26).

### House of Lords judgment on the Bangladesh case

In July 2006, the House of Lords dismissed an appeal by Mr Binod Sutradhar against NERC, bringing to an end a court case that had moved through the British legal system for over five years.

Mr Sutradhar had alleged that NERC was negligent because it did not test for arsenic when it conducted a pilot study into the hydrochemistry of groundwater in Bangladesh in 1991. At the time, there was no evidence that arsenic was present in water-soluble form on alluvial plains such as those in Bangladesh. Subsequently, it was found that groundwater in Bangladesh was contaminated with arsenic, and tragically many people have been affected by arsenic.

The House of Lords judgment concluded that there was not a case to answer and that scientists cannot be held responsible for research they decide not to do.

### Clear links with Defra

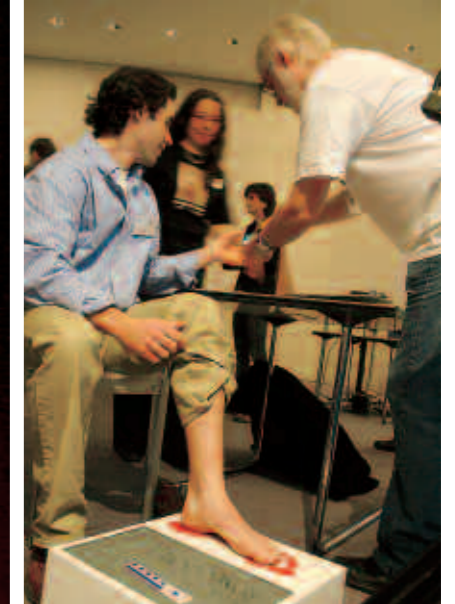
Close ties between NERC and government departments such as Defra are essential. In November we held a very successful NERC-Defra awayday to develop stronger links between our two organisations. About 70 people attended including directors of NERC research centres and collaborative centres and Defra institutes. Interactive activities helped to promote understanding of how each organisation works and the role of science in evidence-based policymaking.

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### Climate briefing for the Mayor of London

In November 2006, NERC arranged a briefing on climate change for Ken Livingstone and his team of advisers. They heard the latest on predictions of sea-level rise and storm surges; on carbon emissions with a focus on aviation; and an update on climate models, especially the new ensemble models. Three of the issues highlighted for London were

cooling the Underground if temperatures rise by two degrees; concerns that some models are based on rural rather than urban parameters; and a need for ever-more accurate forecasts of sea-level rises to predict the life expectancy of the Thames Barrier.



Top: And did these feet in ancient times: scientists demonstrate how they can date a footprint.

Left: Ouch! Phil Harding from the Channel 4 programme *TimeTeam* demonstrates the ancient art of flint making at a NERC end-of-programme event.