

Briefing Paper 1a:

Climate Change: the British State's Scientific Response

Take home message: The British punch well above their weight on climate change science. Quite a few of the world's top climate science institutions are here. That does not translate into effective climate policy. UK Climate Policy is, to be as polite as possible, feeble.

As you'd expect, roughly a third of the British State's Research and Development budget goes on finding new and explosive ways of bollocking disobedient peasants in the Third World (check out www.sgr.org.uk and "Military dominates UK science, says report" Tim Radford, The Guardian Jan 20 2005).

www.science.mod.uk

Most of the rest of the funding seems to be funnelled through the Department of Trade and Industry (DTI), though DEFRA does have some serious money to throw around.

The Office of Science and Innovation, within the DTI, is responsible for UK Science Policy and for funding basic research allocated via the Research Councils. It aims to maximise the contribution made by our science, engineering and technology skills and resources to the UK's economic development, and to the quality of our lives.

www.dti.gov.uk/science/

This is headed up by



David King, Chief Scientific Adviser . Probably best known for his statement that **Climate change is a far greater threat to the world than international terrorism** (Jan 9, 2004)

Then again, he is also on the record as saying that a carbon dioxide concentration of 550 parts per million is the only attainable target. In which case we needn't bother campaigning, because everyone will die horrifically.

For more on the other scientific advisers from DEFRA, DfID and the MOD, and how it all fits together, see the end of this briefing paper

There are 8 research councils. Don't bother too much about this, the key one for our purposes is called NERC, and you'll meet it later on in this briefing. NERC has heaps of 'sub-projects' with cool names like RAPID, QUEST and CLASSIC and so forth.
www.dti.gov.uk/science/research-councils/index.html

Welcome to the Grand Challenge:

- *A major science and technology competition to find new ideas and innovation.*
- *A technology challenge directly relevant to the military challenges faced daily by UK Armed Forces.*
- *An opening into the UK defence market for new suppliers and investors.*

The challenge is to create a system with a high degree of autonomy that can detect, identify, monitor and report a comprehensive range of military threats in an urban environment.

The Grand Challenge is open to the whole UK science and technology base, large and small companies, research laboratories and academic science faculties. It is also a challenge to UK financial institutions to invest in UK. The MOD is keen to see the best solutions developed quickly into equipment for the UK Armed Forces.

The Grand Challenge will culminate in a grand finale in summer 2008.

Why do we have tinned food? Or mass production? Or commercial airliners? Or computers? Or t'internet? Or cheap antibiotics? Because for the last two hundred years, states have funded R and D through their military budgets....

www.challenge.mod.uk/

TIME LINE

- 1988 Intergovernmental Panel on Climate Change is formed cos it is seems likely that we are all going to fry...
- 1989 Maggie Thatcher makes *that* speech to the United Nations General Assembly
- 1990 Hadley Centre set up within Met Office
- 1997 UKCIP set up, at Oxford University
- 2000 Tyndall Centre established
- 2007 4th IPCC report comes out. Co-lead author of Working Group 1, Susan Solomon, says "It's later than you think"

Those clever folk at the Department of Trade and Industry also gaze into their crystal balls a bit:



Foresight, and its associated horizon scanning centre, aims to provide challenging visions of the future, to ensure effective strategies now. It does this by providing a core of skills in science-based futures projects and unequalled access to leaders in government, business and science.

www.foresight.gov.uk/HORIZON_SCANNING_CENTRE/Energy/PDF/Review_of_Futures.pdf

and here (www.sigmascan.org)

(This one can be deliriously funny, unintentionally...)

Welcome to the Sigma Scan, a collection of future issues and trends developed by the Outsights-Ipsos MORI partnership, commissioned by the UK Government's [Horizon Scanning Centre](#) at the DTI Office of Science and Innovation.

This is all tied up to with the concept of 'Resilience', which will be the subject of a separate briefing paper. While you wait, check out www.ukresilience.info

So, on to stuff you'll have heard about



www.royalsoc.ac.uk

*is the **independent scientific academy of the UK and the Commonwealth** dedicated to promoting excellence in science.*

The Society plays an influential role in national and international science policy and supports developments in science, engineering and technology in a wide range of ways. The Royal Society is the world's oldest scientific academy in continuous existence, and has been at the forefront of enquiry and discovery since its foundation in 1660.

The backbone of the Society is its Fellowship of the most eminent scientists of the day, elected by peer review for life and entitled to use FRS after their name. There are currently more than 60 Nobel Laureates amongst the Society's approximately 1400 Fellows and Foreign Members.

The Society is independent of government, as it has been throughout its existence, by virtue of its Royal Charters. In 1663, The Royal Society of London for the Improvement of Natural Knowledge was granted its Arms and adopted the motto "Nullius in verba", an expression of its enduring commitment to empirical evidence as the basis of knowledge about the natural world.

The Royal Society runs useful (and free!) events.

"The Royal Meteorological Society will continue to be a world-leading professional and learned society in the field of meteorology. It will encourage and facilitate collaboration with organisations that are active in Earth Systems Sciences. It will serve its professional and amateur members and the wider community by undertaking activities that support the advancement of meteorological science, its applications and its understanding."



The Royal Meteorological Society is the national society for all those whose profession or interests are in any way connected with meteorology or related subjects. It administers the national qualifications of the profession and under its Royal Charter pursues its purpose of *the advancement of meteorological science*. Recent developments have widened the interpretation of the term *meteorological science* to include its day-to-day application in weather forecasting and in disciplines such as agriculture, aviation, hydrology, marine transport and oceanography, as well as in the areas of climatology, climate change and the interaction between the atmosphere and the oceans.

Met Office weather and climate change forecasts for the UK and worldwide. World leading weather services for the public, business, and government.

www.metoffice.gov.uk/

Well, here's something I never knew about the Met Office;

*"In 1996 the Met Office became a Trading Fund within the **Ministry of Defence**. As a Trading Fund the Met Office is required to operate on a commercial basis and meet agreed performance targets as set by the Ministerial Owner."*



So, the Met belongs to the MOD, and the MOD uses it for things like:

The modern battlefield can cover thousands of kilometres of land, air, sea and increasingly space. But, as the UK's Armed Forces discovered this summer, there is now a way to view the entire battlefield using the Recognised Environmental Picture (REP). Using a secure IT network, the REP gives frontline military strategists a full environmental picture of the terrain; and, earlier this year, the Met Office's contribution to the project was demonstrated at the Coalition Warrior Interoperability Demonstration (CWID). This is an annual event where certain international defence communities, including NATO, gather to demonstrate and evaluate technologies that will support the exchange of information on the future battlefield. Demonstrations are run as a virtual war fought by a multi-national force in a fictional region of Africa. At CWID, the Met Office demonstrated a new system that can present meteorological and other environmental information for any required area, whenever and wherever it is needed, regardless of the computer technology being used. The system called the Joint Environmental Dynamic Data Server (JEDDS) took live data from the Met Office at Exeter and was able to feed them, on demand, to a number of the demonstration systems that were playing out the virtual war.

From Barometer, Met Office magazine issue 3

Within the Met Office, you have the Hadley Centre...

Hadley Centre

The Met Office Hadley Centre is the UK's official centre for climate change research. Partly funded by Defra (the Department for Environment, Food and Rural Affairs), we provide in-depth information to, and advise, the Government on climate change issues.

Hadley Centre aims to:

- *understand physical, chemical and biological processes within the climate system and develop computer models of the climate which represent them;*
- *use computer models to simulate the differences between global and regional climates; the changes seen over the last 100 years, and to predict changes over the next 100 years;*
- *monitor global and national climate variability and change;*
- *attribute recent changes in climate to specific factors.*

We undertake studies of the global climate using similar, though more extensive, models of the atmospheres, as are used for the prediction of weather conditions.

www.metoffice.gov.uk/research/hadleycentre/about.html

It was set up in 1990, back in the early days of public concern about Global Warming (remember *that* Thatcher speech from 1989...)

It hosts one of the biggest and best computer models of climate...

Random Trivia:

Peter Cox, boss of this, turns up on David Attenborough documentaries all the time.

They have some very big computers. And they borrow PCs, via the BBC.

It was the Hadley lot who hosted the pre-G8 Gleneagles conference on "Avoiding Dangerous Climate Change" Which Cambridge University Press turned into a scary scary book.



Avoiding Dangerous Climate Change

www.stabilisation2005.com/

A Tyndall Centre working paper said that some academics had identified a "closed-elitist" network between the Hadley Centre for Climate Prediction and Research and the UK government. **The former, one of the world's foremost climate modelling centres, is funded by the latter and was set up as a source of "science-for-policy" within government.** There is considerable political pressure for the UK to be a world leader in climate model development, and model developments are timed to coincide with the deadlines for reports of the Intergovernmental Panel on Climate Change..

"Mapping actors involved in climate change policy networks in the UK" by O'Riordan, T., & Jones, M

http://www.tyndall.ac.uk/publications/working_papers/wp66.pdf

which brings us neatly to:

Worst. Acronym. Ever.



If you want your brains to leak out your ears in protest, try reading any Hadley Centre Technical Papers. My personal favourite number is 24, Peter Cox's Description of the "TRIFFID" Dynamic Global Vegetation Model

This note describes the terrestrial carbon cycle component of the Hadley Centre's coupled climate-carbon cycle model (Cox et al (2000)).

TRIFFID (Top-down Representation of Interactive Foliage and Flora Including Dynamics) is a dynamic global vegetation model, which updates the plant distribution and soil carbon based on climate-sensitive CO₂ interface.

Google: Triffid 24 Hadley

The Tyndall Centre brings together scientists, economists, engineers and social scientists, who together are working to develop sustainable responses to climate change through trans-disciplinary research and dialogue on both a national and international level - not just within the research community, but also with business leaders, policy advisors, the media and the public in general.

Tyndall° Centre

for Climate Change Research

Vision

To become an internationally recognised source of high quality and integrated climate-change research, and to exert a seminal influence on the design and achievability of the long-term strategic objectives of UK and international climate policy.

Purpose

To research, assess and communicate from a distinct trans-disciplinary perspective, the options to mitigate, and the necessities to adapt to, climate change, and to integrate these into the global, UK and local contexts of sustainable development.
www.tyndall.ac.uk



Extremely useful working papers, friendly academics. Why hasn't the government shut this place down yet??

Titles of some of those working papers	Number
Global impacts of abrupt climate change: an initial assessment:	99
The effect of dredging off Great Yarmouth on the wave conditions and erosion of the North Norfolk coast:	98
Is this climate porn? How does climate change communication affect our perceptions and behaviour?	97
Growth scenarios for EU & UK aviation: contradictions with climate policy:	84
Avoiding dangerous climate change by inducing technological progress: scenarios using a large-scale econometric model:	77
Can microgrids make a major Contribution to UK energy supply?	70



The UK Climate Impacts Programme (UKCIP) provides scenarios that show how our climate might change and co-ordinates research on dealing with our future climate.

UKCIP shares this information, free of charge, with organisations in the commercial and public sectors to help them prepare for the impacts of climate change.

Set up in April 1997, UKCIP is funded by the [Department for Environment, Food & Rural Affairs \(Defra\)](#) and based at the [University of Oxford](#). We work with our stakeholders and co-ordinate research on how climate change will have an impact at regional and national levels. This means that our stakeholders or partners commission the research and determine the research agenda, ensuring that it meets their needs. UKCIP provides support and guidance throughout the process for both stakeholders and researchers, and provides a bridge between researchers and decision-makers in government organisations and business.

UKCIP has been the catalyst for a range of regional and sectoral studies into the impacts of climate change.

UKCIP is part of a wider programme of research into climate change being undertaken by [Defra](#).

<http://www.ukcip.org.uk/about/default.asp>

It gets most (all?) of its data from Hadley Centre. It does a really useful monthly digest of latest research:

http://www.ukcip.org.uk/resources/climate_digest.asp

So, on to specific ivory towers. This list is only a start...

University of East Anglia School of Environmental Sciences

<http://www1.uea.ac.uk/cm/home/schools/sci/env>

“is one of the longest established, largest and most experienced Schools of Environmental Sciences in the Europe. Our holistic approach to teaching and research, integrating physical, chemical, biological, social and geotechnical sciences into the study of natural and human environments, is truly a modern philosophy for the new millennium.”

And within the School for Environmental Sciences you will find, among others:

Climate Research Unit

www.cru.uea.ac.uk/

The Climatic Research Unit is widely recognised as one of the world's leading institutions concerned with the study of natural and anthropogenic climate change.

Consisting of a [staff](#) of around thirty research scientists and students, the Unit has developed a number of the [data sets](#) widely used in climate research, including the global temperature record used to monitor the state of the climate system, as well as statistical software packages and climate models.



The aim of the Climatic Research Unit is to improve scientific understanding in three areas:

- past climate history and its impact on humanity;
- the course and causes of climate change during the present century;
- prospects for the future.

For news on climate change and sustainable development, you must visit their “tiempo cyber portal” www.tiempocyberclimate.org



Centre for Social and Economic Research on the Global Environment

www.uea.ac.uk/env/cserge/

CSERGE consists of a number of collaborating disciplines including economics, political science, geography, information systems and the natural sciences. It has won national and international praise for its pioneering research on wetlands, forests, coastal management and climate change. It has also been commended for its work on the analysis of the governance process and for its innovative theoretical and applied environmental economics work. It is also one of the few institutes in which waste recycling and disposal and energy management issues, including life cycle analysis, have been researched and deployed in real world situations.

Through its policy and business contacts CSERGE has remained forward looking, anticipating new environmental problems and tailoring research to meet the future needs of decision makers locally, nationally and internationally. Our findings have been directly utilised by local authorities, government departments, the European Commission and international agencies such as the FAO, UN (Rome), OECD and the World Bank.

[Yeah, well, that's as maybe. It is also capable of producing extremely tedious and useless tosh- the two briefing papers I struggled through were crap even on their own terms.]

Centre for Environmental Risk

www.uea.ac.uk/env/cer/

CER's research activity spans a wide range of disciplines from Environmental Sciences through to Geography, Sociology and Social Psychology. Over the last decade CER has been at the forefront of UK research into the relationships between scientific risk assessment, risk policy and its communication, in public perception of risk, innovative methodologies, epidemiology and public health, geographic information systems and risk modelling, and toxicology.



The Centre for Ecology, Evolution and Conservation

www.uea.ac.uk/ceec/

One of the largest groups of ecologists and evolutionary biologists in Europe, with over 20 members of faculty and a community of around 70 research staff and PhD students.

Research in the centre includes work in terrestrial, freshwater and marine systems. Organisms studied include pro- and eukaryote micro-organisms, plants and animals, at spatial scales ranging from the microscopic to continental and global.

Oxford University Centre for the Environment

www.ouce.ox.ac.uk/

The Oxford University Centre for the Environment (OUCE) aims to be a world-class environmental research and educational hub spanning the natural and social sciences at the University of Oxford.

It's got three bits:

the Environmental Change Institute

CENTRE FOR RESEARCH, OUTREACH AND GRADUATE STUDIES IN ENVIRONMENTAL CHANGE AND MANAGEMENT

Centre for Research, Outreach and Graduate Studies in Environmental Change and Management

www.eci.ox.ac.uk/information/about.php

ECI is an interdisciplinary unit administered within the Oxford University Centre for the Environment that undertakes research on environmental issues, teaches an MSc in Environmental Change and Management, and fosters university-wide networks and outreach on the environment.

Founded 1991 through benefactions, ECI was designed to answer questions about how and why the environment is changing and how can we respond through public policy, private enterprise, and social initiatives.

ECI research and teaching is characterised by a focus on global and regional environmental change, projects that bring together the natural and social sciences, and by an orientation to applied and public policy. Many of the research projects have a goal of influencing and informing public policy and decisions about the environment.

The Institute is currently organized around three major research themes - [Climate](#), [Energy](#), and [Ecosystems](#) - the latter two with close links to the OUCE research clusters: [Climate Systems and Policy](#) and [Biodiversity](#).

The OUCE's research clusters are as follows

- [Arid Environmental Systems Cluster](#)
- [Biodiversity Cluster](#)
- [Climate Systems and Policy Cluster](#)
- [Spaces of Globalisation Cluster](#)
- [Technologies of Politics and Ecology Cluster](#)

[Climate Systems and Policy Cluster](#) examines the physical and human dimensions of the climate system including the causes and consequences of climate variability and change and associated societal responses. The research spans four key themes: climate change prediction; climate impacts; climate mitigation and climate policy. Within these themes there is a strong focus on Africa, Latin America, the United Kingdom and Europe.

School of Geography

www.geog.ox.ac.uk/

The School of Geography is the academic department at the heart of the [Oxford University Centre for the Environment \(OUCE\)](#). It has recognised international leadership in research in physical and human geography and in the interdisciplinary field of environmental science.

A good example of the cross-over between academia and industry is Dr Stephan Harrison. He's in the School of Geography, and "has a PhD in Quaternary Science and over 20 years research experience in climate change and mountain geomorphology. He has worked for nine field seasons on the glaciers of Patagonia studying their fluctuation histories over the last 15,000 years and the geomorphological impact of recent glacier retreat on valley-side slopes. He spent five years working on an EU-funded project which examined glacier retreat, climate change and hydrological responses in the northern Tian Shan mountains of Kazakhstan. In such arid regions of central Asia much of the water used for economic development comes from summer melting of glaciers and

permafrost, and these supplies are replenished during winter snowfalls. With global warming, such supplies are under threat and this will have profound political, economic and social repercussions.”

www.geog.ox.ac.uk/staff/sharrison.php

He is also director of Climate Change Risk Management www.ccrm.co.uk

Transport Studies Unit

www.tsu.ox.ac.uk/

The Transport Studies Unit has an established international reputation in the fields of sustainable transport, transport policy analysis, transport economics, transport and the environment, and transport and land use planning. The Unit's mission is to promote excellence in transport research and teaching. Particular emphasis is placed on understanding the social, economic, behavioural and environmental implications of transport over both time and space. The Unit's work ranges in geographic scale from the local to the global whilst the full spectrum of quantitative and qualitative research techniques is deployed.

Climate Change Risk Management

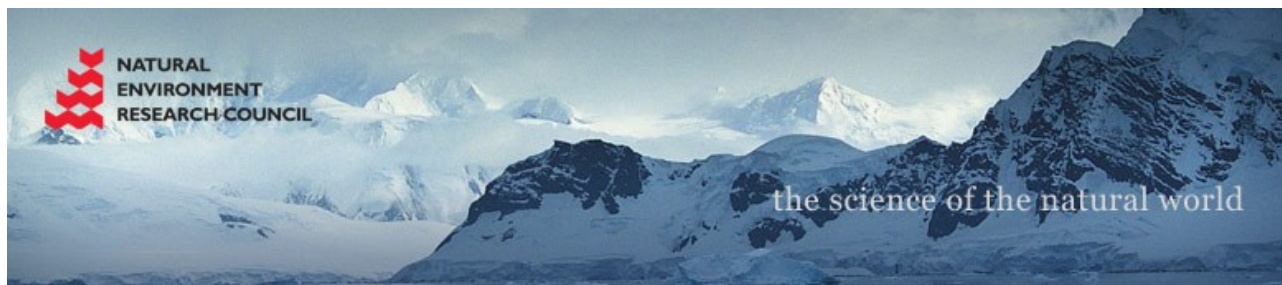
“a specialist scientific consultancy offering technical and scientific expertise on a range of issues associated with contemporary and future climate change. These include the following:

- *Modelling of future climate scenarios using General Circulation Models (GCMs). We have the expertise to assess and run computer model simulations of the future climate to assess the likely nature of climate change from anywhere in the World.*
- *Assessments of vulnerability of sites to sea level change.*
- *Hydrological modelling and flood risk analysis.*
- *Water supply variations, natural hazard variability and climate change risk assessments.*
- *Soil erosion and degradation of agricultural land associated with climate change.*

There are, of course, dozens of other universities chasing the new research money, but those will do for now...

So back to the Natural Environment Research Council

(one of the 8 councils that the DTI controls, and for the mo', the one that matters...)



www.nerc.ac.uk/

The Natural Environment Research Council delivers independent research, survey, training and knowledge transfer in the environmental sciences, to advance knowledge of planet Earth as a complex, interacting system.

Our work covers the full range of atmospheric, earth, biological, terrestrial and aquatic sciences, from the deep oceans to the upper atmosphere, and from the poles to the equator.

Our mission is to gather and apply knowledge, create understanding and predict the behaviour of the natural environment and its resources, and communicate all aspects of our work.

NERC is obviously much more than just a climate change outfit, but can justifiably boast that:

NERC spends about £40m each year on climate change research. Our scientists are world-leading authorities on this issue, and advise the Intergovernmental Panel on Climate Change, recognised worldwide as the definitive source for climate change information.

www.nerc.ac.uk/research/issues/climatechange/

NERC recently held a web-based “come on if you think you're hard enough” debate with the so-called sceptics. It makes for instructive reading:

www.nerc.ac.uk/about/consult/debate/climatechange/summary.asp

It's not as if the 7 other Research Councils are completely irrelevant. The Economic and Social Research Council bungs money to academics to study NVDA. Hmmm.

Meanwhile, back at the lab, the Engineering and Physical Sciences Research Council (EPSRC) and the UK Climate Impact Programme (UKCIP) have been investigating various aspects of the impacts of climate change on the built environment, infrastructure and utilities. And they are having a spiffing sounding conference in Manchester, late March 2007. www.k4cc.org
But this briefing paper is already too long, so let's pretend NERC is the be all and end all...

NERC also supports some pretty cool international scientific outfits...

NERC hosts several international science project offices at its research and collaborative centres, with the funding of these managed by the International Team.

- **International Polar Year (IPY) 2007-2009**
- **Climate Variability & Predictability (CLIVAR)**
- **Surface Ocean Lower Atmosphere Study (SOLAS)**
- **Global Ocean Ecosystem Dynamics (GLOBEC)**
- **Global Environmental Change & Food Systems (GECAFS)**
- **DIVERSITAS**

Its research centres include:



British Antarctic Survey (these guys moraine- I mean rock)
www.antarctica.ac.uk/
The British Antarctic Survey (BAS) is a component of the Natural Environment Research Council. Based in Cambridge UK, it has, for almost 60 years, undertaken the majority of Britain's scientific research on and around the Antarctic continent
*The UK launch of **International Polar Year** takes place on Monday 26 February 2007 at the Royal Society, London. For more information contact the BAS Press Office*



www.ceh.ac.uk/

The Centre for Ecology and Hydrology is the UK's Centre of Excellence for research in the land and freshwater environmental sciences. CEH's staff have specialist skills in a wide range of environmental disciplines, ranging from the smallest scale (the gene) to the largest scale (whole Earth systems). Our research is aimed at improving understanding both of the environment as we see it today and the natural processes that underlie the Earth's support systems - for example climate & water resources. We are particularly interested in the impacts of human activity on natural environments. We aim to generate workable solutions to today's pressing environmental problems.



Rapid Climate Change (RAPID) is a £20 million, six-year (2001-2007) programme of the Natural Environment Research Council. The programme aims to improve our ability to quantify the probability and magnitude of future rapid change in climate, with a main (but not exclusive) focus on the role of the Atlantic Ocean's Thermohaline Circulation.
www.noc.soton.ac.uk/rapid/rapid.php

QUEST assimilates information and expertise from many programmes and institutions in and outside the UK. Its unique focus is on highly effective, interdisciplinary research, closely targeted to help deliver a substantial improvement in our quantitative understanding of global environmental change.



Quantifying and Understanding the Earth System

Its "three big questions" are now four-

1. *How important are biotic feedbacks for 21st century climate change?*
2. *How are climate and atmospheric composition regulated on time scales up to a million years?*
3. (a) *How much climate (change) is dangerous?*
(b) *How much climate change can be avoided by managing the biosphere?*

Nice to know that someone is asking the biggies, eh?

<http://quest.bris.ac.uk/>

NCAS was created in April 2002 as a [Natural Environment Research Council \(NERC\) Collaborative Centre](#). In 2005 NCAS became a [NERC Established Collaborative Centre](#).



NCAS supports the national capability in atmospheric science research, especially in universities and other research institutes through its [research and support programmes](#), which address the following key scientific and technical challenges.

- Climate change science (particularly modelling)
- Small-scale atmospheric processes and weather
- Atmospheric composition (including air quality)
- Technology for observing and modelling the atmosphere

Forum for Atmospheric Science and Technology (FAST)

The role of FAST is to provide a forum for informed representatives of the major stakeholders to discuss top-level objectives and departmental needs and so ensure a full understanding of the directions in which each organisation is moving in the area of atmospheric science.

FAST is organised by the National Centre for Atmospheric Science (NCAS) and the [Natural Environment Research Council \(NERC\)](#).

Its terms of Reference

- To share information on the strategic aims and policy drivers of the participating organisations;
- Map NERC strategic science objectives to the policy drivers of Government Departments;
- Identify strategically important areas to which NERC should contribute;
- Identify potential opportunities and threats;
- Examine the directions in which atmospheric science in the UK is moving;
- Take an overview of international programmes in atmospheric science and to comment on potentially valuable interactions;
- Maintain awareness of the extent to which ideas are implemented and collaboration optimised.

From the viewpoints of NERC and NCAS, such a discussion is beneficial for forming its own priorities for new or continuing research programmes and in providing independent endorsement of its proposals.



Climate and Land-Surface Systems Interaction Centre

http://classic.nerc.ac.uk/mediawiki/index.php/Main_Page

The principal goal of CLASSIC is to reduce uncertainty in assessing the actual and potential effects of climate change through an improved understanding of the feedback mechanisms that exist between the land surface and the atmosphere. This will be achieved through the development of improved Land-Surface Schemes and Dynamic Vegetation Models, within both Global and Regional Climate Models, that fully reproduce these interactions and that can be driven by dynamic, spatially comprehensive data on the terrestrial biosphere, such as those provided from Earth Observation.

The Climate and Land-Surface Systems Interaction Centre (CLASSIC) is a [NERC](#) Collaborative Centre funded under the Earth Observation Centres of Excellence programme. Hosted at the [University of Wales Swansea](#), CLASSIC brings together a consortium of researchers from the NERC Centre for Ecology and Hydrology at [Wallingford](#) and [Monks Wood](#), the Universities of [Durham](#), [Exeter](#) and [Leicester](#) and the [Hadley Centre for Climate Prediction and Research](#).

And, sort of “within” NERC, but sort of not, too

www.ukerc.ac.uk/

How should the UK meet its future energy needs? How can the UK reduce demand? How should different supply technologies be exploited? And how can individual technologies be best combined to supply the whole country?

The UK Energy Research Centre (UKERC) aims to answer these questions. Its mission is to be the UK's pre-eminent centre of research on sustainable energy systems.

To achieve this, the centre is establishing a comprehensive database of energy research, development and demonstration competences in the UK. The centre will also act as the portal for the UK energy research community to and from both UK stakeholders and the international energy research community.

UKERC



The UK Energy Research Centre's mission is to be the UK's pre-eminent centre of research, and source of authoritative information and leadership, on sustainable energy systems.

UKERC undertakes world-class research addressing whole-systems aspects of energy supply and use, while developing and maintaining the means to enable cohesive UK research in energy.

See also: "Towards a Sustainable Energy Economy"

Investigating reliable, diverse, affordable, publicly acceptable and safe ways to supply energy.

The world's demand for energy is increasing. The challenge is to find reliable, diverse, affordable, publicly acceptable and safe ways to supply energy, while minimising climate-changing carbon dioxide emissions

<http://www.nerc.ac.uk/research/programmes/sustaineconomy/>

At the Royal Society meeting in March 2007 David King announced that there was going to be an **Energy Technologies Institute**, with a budget of a billion big ones over ten years. A public private partnership with the usual suspects (Shell, BP, EDF), its job is to get new energy technologies pulled through to the market.

See also www.dti.gov.uk/files/file34010.pdf

DEFRA produces the government's hot air on environment, food and rural affairs. They also fund some good stuff...

At any one time, Defra is responsible for around 2000 science-related projects. Most of these are research projects commissioned to underpin Defra policy formulation and development, but we also fund major 'Non-R&D' programmes covering our monitoring, testing and surveillance activities.

<http://randd.defra.gov.uk/>



Centre for Environment, Fisheries & Aquaculture Science

www.cefas.co.uk

Cefas is an internationally renowned scientific research and advisory centre working in fisheries management, environmental protection and aquaculture.

We have a staff complement of over 500 based at three specialist laboratories within the UK, our own ocean-going research vessel and over 100 years of experience. We have a long and successful track record in delivering high quality science to many customers around the world.

Many Cefas scientists are leaders in their fields and advisors on international bodies such as the International Council for the Exploration of the Sea (ICES).

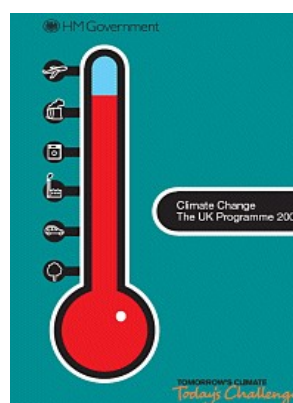
Cefas is an Executive Agency of the UK Government's Department for Environment, Food and Rural Affairs (Defra).

They've got an interesting sounding workshop coming up on ocean acidification in May 2007...

"The ocean is becoming more acidic as increasing atmospheric carbon dioxide (CO₂) is absorbed at the surface. It is thought that the pH of the global ocean has fallen by about 0.1 units over the past 200 years and that it could drop by a further 0.5 units by the year 2100 if CO₂ emissions are not regulated (Royal Soc, 2005;). A recent study of potential change in the North Sea suggests that pH change this century may exceed its natural variability in most of the North Sea. Impacts of acidity change are likely but their exact nature remains largely unknown and may occur across the range of ecosystem processes. This aspect of climate change is potentially a precursor to the longer-term thermal effects."

The UK Climate Change Programme is (mostly) Defra's baby

<http://www.defra.gov.uk/environment/climatechange/uk/ukccp/index.htm>



Within Defra you have the Global Atmosphere Division, which among many other things supports..

UK Global Environmental Change Committee

www.ukgecc.org

It is “an Inter-Agency Committee which provides a forum to coordinate UK involvement in the science and technology of climate change and other global environmental change, both nationally and internationally. It reviews the effectiveness of the national capacity, capability and performance in these areas and makes recommendations, including identification of lead agencies.”

The GECC works to ensure that UK Government policy is sufficiently informed by the work undertaken by the science base. It also seeks to ensure that its requirements are effectively communicated to those advancing the science and providing supporting observation and monitoring activities. As part of this, the GECC supports effective UK participation in international science and technology programmes.

The GECC reports to the Government's Chief Scientific Adviser through the Chief Scientific Adviser's Committee (CSAC). (On CSAC, see below)

Member outfits are as follows:

Biotechnology and Biological Sciences Research Council , British National Space Centre , Department for Environment Food and Rural Affairs , Department for International Development, Engineering and Physical Sciences Research Council , Economic and Social Research Council, Foreign and Commonwealth Office , Department of Trade and Industry, Meteorological Office, Ministry of Defence, Medical Research Council, Natural Environment Research Council, Northern Ireland Office, Office of Science and Technology, The Royal Society, Scottish Executive, Welsh Assembly

Notable in their absence; Hadley Centre and no Tyndall Centre. Possibly for reasons of bureaucratic infighting??

So, finally, three of those other scientific advisers

At **DEFRA** Howard Dalton <http://www.defra.gov.uk/science/how/adviser.htm>.

Has given some good speeches on the subject of global warming, <http://www.defra.gov.uk/science/how/documents/royalcollege.pdf> and blogged from Antarctica <http://www.defra.gov.uk/science/news/bas/default2.htm>

Department for International Development (DfID) is blessed with

Professor Gordon Conway, author of "The Doubly Green Revolution" and President of the Rockefeller Foundation for the last seven years, has been appointed as the first Chief Scientific Advisor for the UK Department for International Development (DFID). The post has been created in response to criticism that DFID has failed to give enough emphasis to science in its policy making. Conway's role at DFID will be to identify areas where science and technology can be applied to poverty reduction and improvements in health, food security, and other aspects of the UN Millennium Development Goals. He will also be expected to advise DFID on how its staff can access and understand science and technology, and to promote ways for DFID and other government departments to work coherently together to make greater use of science to reduce global poverty.

With a biography like that, who'd have guessed he is a big fan of Genetic Modification?!

www.guardian.co.uk/gmdebate/Story/0,,1599277,00.html

The **MiniPax** top science bod is Professor Roy Anderson, seconded from Imperialist College.

www1.imperial.ac.uk/medicine/people/roy.anderson/ and, less flattering but more enlightening; whale.to/m/all/anderson.html

And, inevitably, these guys and some others sit on...

The Chief Scientific Adviser's Committee (CSAC) is the principal committee at official level dealing with issues relating to science, engineering and technology (SET). Its membership consists of the Sir David King, Government Chief Scientific Adviser, acting as the Chair, and the Chief Scientific Advisers or their equivalent from all government departments and devolved administrations.

CSAC's terms of reference are to consider and advise the Government Chief Scientific Adviser on issues of relevance to Her Majesty's Government (and the devolved administrations) concerning SET. It provides advice to Ministers, primarily through the Cabinet committee on Science (SCI):

- discusses and facilitates implementation of policy on SE&T;
- identifies and promulgates good practice in SE&T-related areas, including the use of scientific advice in policy making, and
- facilitates communication on particular high profile SE&T-related issues and those posing new challenges for Government.

www.dti.gov.uk/science/science-in-govt/works/networks/csac/page26458.html

And, since you can never have enough committees, commissions, divisions, directorates, forums, agencies and councils on science policy...



The Council for Science and Technology (CST) is the UK government's top-level advisory body on science and technology policy issues.

CST's remit is to advise the Prime Minister and the First Ministers of Scotland and Wales on strategic issues that cut across the responsibilities of individual government departments. CST organises its work around five broad themes (research, science and society, education, science and government, and technology innovation) and takes a medium to longer term approach

www2.cst.gov.uk



The Environment Research Funders' Forum

brings together the UK's major public sector sponsors and users of environmental science, aiming to make best possible use of funding. Established in 2002, its current chair is Professor Howard Dalton, Chief Scientific Advisor to the

Department for Environment, Food & Rural Affairs. It aims to maximise the coherence and effectiveness of UK environmental sciences funding.

www.erff.org.uk

There are also outfits like the Campaign for Science and Engineering in the UK (www.savebritishscience.org.uk), and various select committees, all party-groups, renewable energy associations, but we're beginning to wander off topic...

What you can do to help us

If you liked it, email us and tell us so. It's good for our egos. writersbloc@climatecamp.org.uk

If you didn't, PLEASE email and tell us so. It's good for our souls, and for the next version of this paper.

Was there too much jargon? Too much flippancy? Not enough x, too much y? Let us know.

Get active yourself. Research is vital, and you get better at it very quickly. We need dozens and dozens of people investigating how to work effectively to save the planet.

Version 1, March 2007.

Other position papers: (provisional list only)

1 British State & its response to Climate Change	7. What do the general public know and think about climate change and climate activism
2 Corporate Strategy and Climate Change	8. China and Climate Change
3 Other UK actors in Climate Change (NGOs)	9. Contraction and Convergence
4 Europe and Climate Change	10. Aviation
5 International Governance and Climate Change (UNFCCC, Kyoto, Climate Action Network etc)	11. The United States: what's going on?
6. Universities and Climate Change: Is it worth looting the ivory tower?	12. Previous NVDA. What worked?

Disclaimers

The views expressed in this paper don't, and can't, represent the 'official policy' of Camp for Climate Action.

This is a rough and ready guide. While a moderate effort has been made to ensure the information provided is accurate and relevant (we spell-checked it), no responsibility can be taken for any failure on the reader's part to kick-start a grass-roots non-hierarchical movement that saves human civilisation from a future of mass extinction, cannibalism or a new Ikea superstore opening near their squat.

Contents may settle over time.