

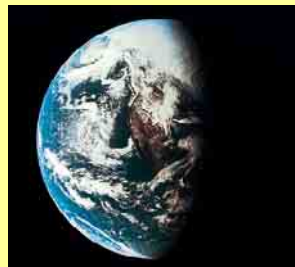
Initiative for a UK National Programme on Ocean Acidification

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Next Generation Science for Planet Earth

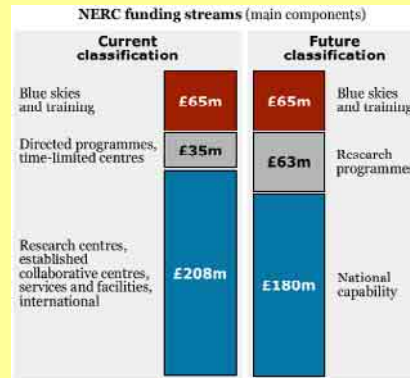
NERC Strategy: 2007-2012

Strategic goal: To deliver the scientific evidence needed for governments, business and society to respond urgently to the *increasing pressures on natural resources and global climate*

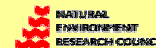


Earth System Science and FAB

- Linking NERC's ESS investments more closely to strategic priorities and user needs
- Research Programmes give greater flexibility and opportunities for partnership and interdisciplinary collaboration in ESS = better value, better science, better delivery of user needs
- National Capability funding creates longer ESS planning horizons and greater predictability = more time doing science, less time bidding/defending it
- Linking ESS funding allocations more closely to Government spending review cycles = more opportunities, less risk



FAB= Funding Allocation and Budgeting



NERC FRAMEWORK FOR THE STUDY OF OCEAN ACIDIFICATION - WHY DO WE NEED ONE?

Stakeholder need:

- UK government playing lead role in CC mitigation strategy
- UK Marine Bill & Climate Bill
- UK scientists have played a leading role OA to date
- The issue has only recently emerged – many important questions are unanswered, many uncertainties
- Questions by policy makers now starting to overtake current scientific knowledge

UK need:

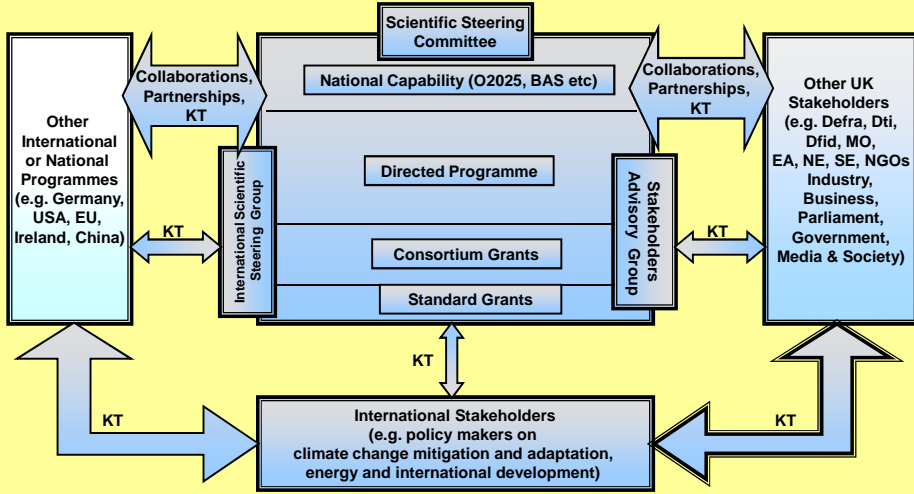
- OA is a strategic priority in NERCs 2007-2012 strategy
- NERC and others currently funding little work on OA and that is fragmented
- UK has key expertise across a number of disciplines that when brought together would form a strong national capability on OA
- UK has great strength in CC – but that is dealing with only half of the CO2 problem

International need:

- Other countries are investing large sums (e.g. US OA Bill \$30M/yr for 10 yr, Germany and Ireland following) – there is a danger that UK will fall behind in this area
- OA is priority in 1st call for EU FP7 programme (EPOCA consortium formed and proposal submitted – much UK involvement but money spread thin)
- Great opportunity for an international programme cf. WOCE and JGOFS

FRAMEWORK FOR THE STUDY OF OCEAN ACIDIFICATION - FUNDING, MANAGEMENT, ADVISORY AND COLLABORATIVE STRUCTURE AT INTERNATIONAL LEVEL?

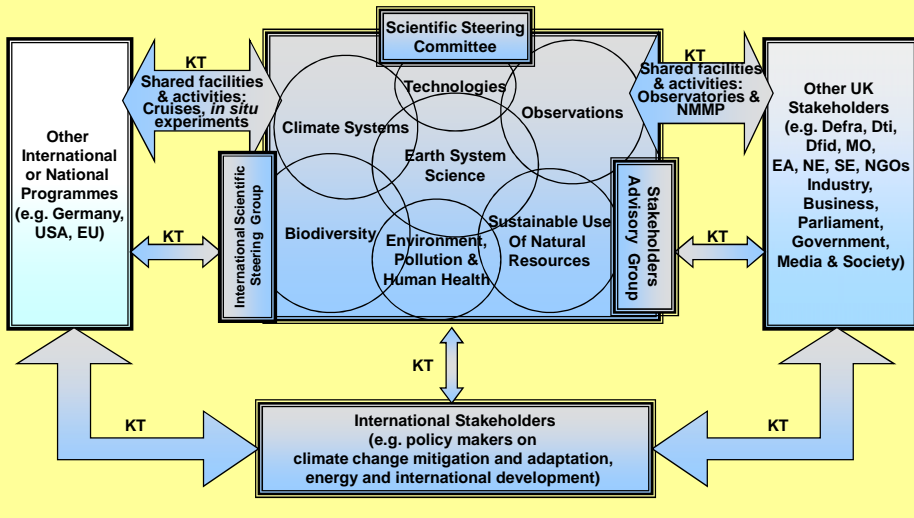
Key instrument in **knowledge transfer (KT)** and national **capacity building** for future generations



NATIONAL FRAMEWORK FOR THE STUDY OF OCEAN ACIDIFICATION - The Science is Multidisciplinary

Cross cutting NERC 2007-2012 Strategy Themes: Earth system science, Biodiversity, Climate systems, Sustainable use of natural resources, Environment, pollution and human health, Technologies

Key instrument in **knowledge transfer (KT)** and national **capacity building** for future generations



NERC Strategic Workshop on Ocean Acidification (30-31 October 2007)

Opportunity:

- See where the science challenges are
- To consult nationally and see what the community needs in order to move forward
- To form collaborations and partnerships
- To cross disciplines
- Meet the new Theme Leader(s) and present him/them with evidence to make strong case for a Research Programme
- To develop a plan (e.g. Research Programme, number of consortia, thematic programme)
- Consider bilateral agreements, collaborations and partnerships with other national programmes and possibility of an international programme similar to JGOFS and WOCE

Workshop Programme

A. Stakeholders and representative of German National programme plus 25 UK experts from a range of disciplines representing their communities perspective of ocean acidification and its effects in terms of :

1. Key issues
2. Key questions
3. Approaches
4. Requirements
5. How UK can contribute
6. Prioritise

B. On the issues of ocean acidification and its effects in terms of:

1. Impact
2. Adaptation/mitigation
3. Feedback
4. Prediction

C. Output:

1. Strategic Report to Earth Systems Science Theme Leader
2. Theme Leader will advise the NERC Science and Innovation Strategy Board (Feb 2008)
3. SISB will advise NERC Council (June 2008 decision)
4. Success????!!! Finger crossed, no guarantee.

UK Research Priorities – focus on key vulnerable processes, species and ecosystems

- **Food web “critical tipping points” with potential ecosystem and economic significance:**
 - Invertebrate and fish egg and larval development
 - Primary production and pelagic and benthic biodiversity
 - Trophic interactions
- **Biogeochemical cycles with potentially critical global feedbacks:**
 - Carbon cycle: the ocean CO₂ buffering capacity and efficiency of the biological pump
 - Nutrient and trace metal speciation and impact on photosynthesis and biodiversity
 - Trace gases and feedback to the Earth system and climate change
 - Pelagic-benthic coupling in shallow productive seas
- **Sentinel species for early warning:** The importance of these species may be in their perceived vulnerability, economic importance and as indicator species for habitats:
 - Habitat-forming cold-water corals
 - Aquaculture and fisheries species, including shellfisheries
- **Time and space scales:** It is important to look at and learn from impacts of acidification in the geological past and over the last decades to test for current change using long-term observations to help predict future impacts and shifts in biogeography.
- **Vulnerable “hot spots” were identified as important and appropriate for UK study:** These were identified as European productive shelf seas, Arctic, Antarctic and Northern NE Atlantic.
- **Synergistic effects:** the combined effects of temperature and pH changes in future CO₂ emission and stabilization scenarios.