

NERC Technologies Theme

Professor Ally Lewis
Technologies Theme Leader

Dr Bill Eason
Science and Innovation Manager

NERC Technologies Theme

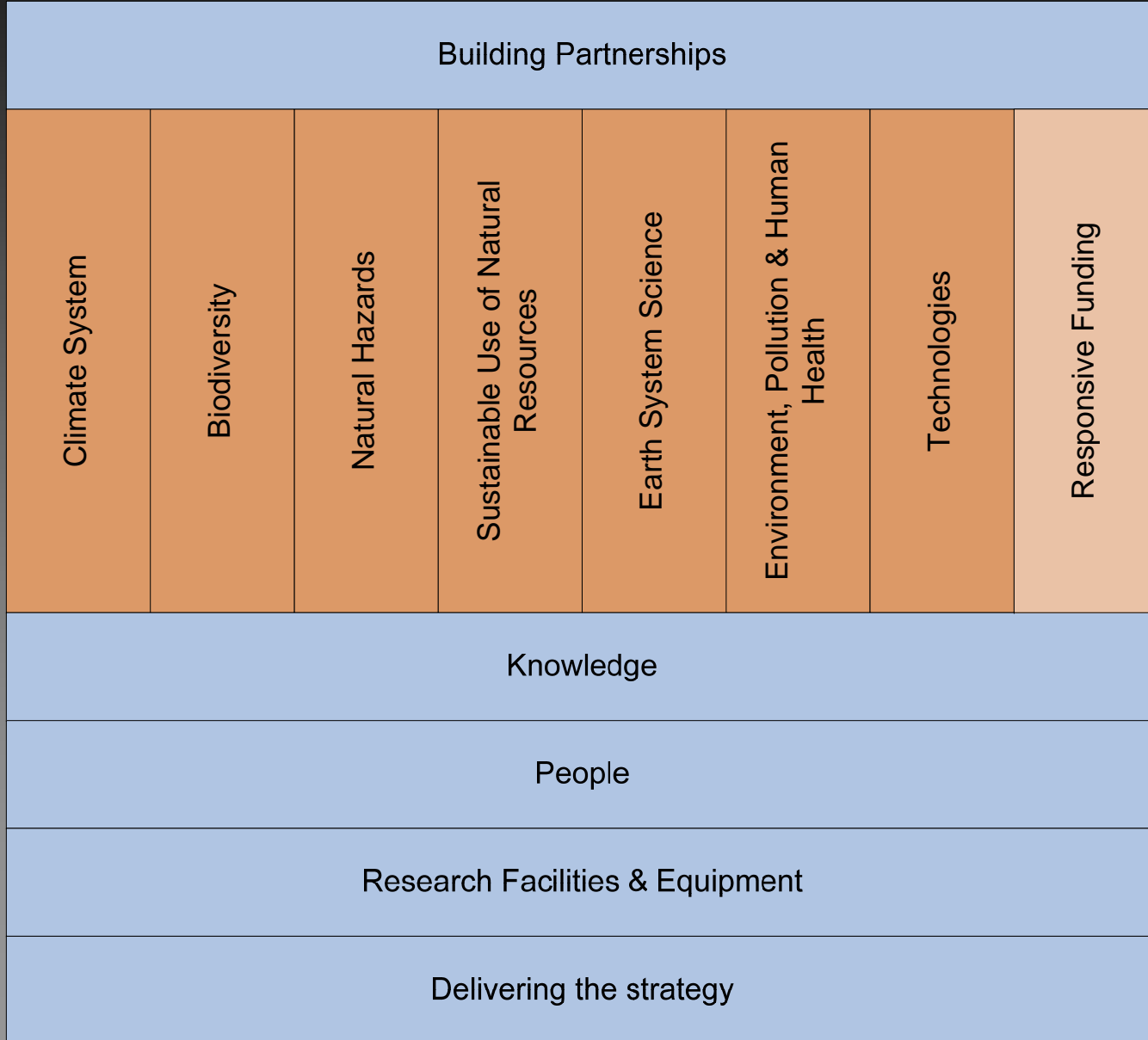
- The NERC Strategy and Science Themes
- Technologies overview
- Current and planned individual Actions



MEETING THE CHALLENGES

- Strengthen UK science and engineering capabilities in environmental technologies, fortifying existing research groups and building new, world-leading ones.
- Strengthen existing partnerships with organisations which share similar or complementary interests in technology development, such as our sister councils and the Technology Strategy Board.
- Embark upon new partnerships with both users and suppliers of technology.
- Develop a base of skilled people in crucial areas and monitor emerging technologies and new ideas.
- Manage the increasing wealth of environmental data and information so that it can be transmitted, distributed, stored, archived, analysed and visualised. Information and communication technologies are key to managing information effectively.
- Recognise and develop opportunities for knowledge and technology transfer, both nationally and internationally.

NERC Strategy



NERC Technologies Theme

Overall objectives:

- Novel innovative “technology-led” environmental science research
- Building capability and capacity across whole NERC remit
- Creating new partnerships – potential for dual purpose and wider impact

Technologies theme

| <i>Challenge Action</i> | EO and remote sensing | Field sensors and networks | Novel laboratory instruments | Models data and informatics |
|--|--|--|--|---|
| 2008 | | | | |
| Technology Clusters | Promoting technologies across disciplines | | | Promoting technologies across disciplines |
| Proof of Concept | Developing new technologies at TRL1-4 | Developing new technologies at TRL1-4 | Instrumentation for fundamental parameters | Developing new technologies at TRL1-4 |
| 2009 | | | | |
| Networks of sensors | | Scale up to high value demonstration networks | | |
| Analytical Science and technology | New cohort to translate technological developments | New cohort to translate technological developments | New cohort to translate technological developments | |
| 2010 | | | | |
| Next generation platforms | Mission science for aerial UAVs | Mission science for submersible UAVs | Instrument development | |
| Metrology of climate variables | Improving long and short term climate variables | Improving long and short term climate variables | Improving long and short term climate variables | |

Technology Clusters

2008 Action

- Innovative Technologies for Terrestrial Earth Observation
- InformaTEC: Informatics Technologies for the Environment Cluster

Technology Proof of Concept

2008 Action

- £5.4M to develop new technologies at TLR 1-4
- £4.2M allocated (Round 1)
- Covers all areas of NERC remit and all technology challenge areas

Technology Proof of Concept

Development of a laser-based sea-ice chlorophyll sensor

SEEBECK - using the Seebeck effect to power sea-ice instrumentation

Development of in-situ sensors for direct quantification of metal speciation and bio-availability

Analytical Science

2009 Action

- £2.3M joint programme with Royal Society of Chemistry
- 28 studentships supported
- Covers all areas of NERC remit and all technology challenge areas



Analytical Science

Novel advances in lab on a chip instruments for in situ measurement of trace metals in marine waters

The development of a tool for the determination of mobile radionuclides in contaminated land.

The development of a novel passive water sampler for highly-polar cytotoxic drugs in aquatic systems.

Environmental applications of cavity enhanced spectroscopy in the mid infra-red region

NANO structured Beta Detectors for Detection Of Tritium (NANODOT)

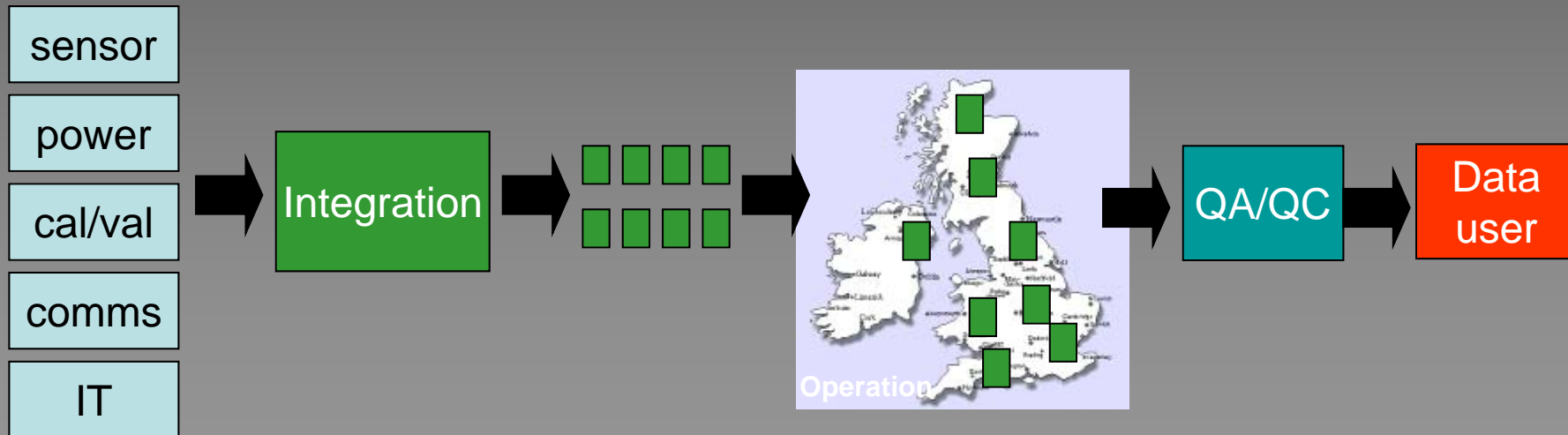
High Throughput Technique for Screening Archaeal Tetraether Lipid Cores in Sediments as Probes of Palaeo Surface-water Temperature

Hadamard Transform Proton Transfer Reaction Mass Spectrometry for Real-Time Atmospheric VOC Measurements

Networks of sensors

2009 Action

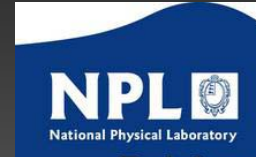
- Highly diverse technological approaches and applied science areas *e.g pollution, geohazards, rainfall.*
- Diverse partnerships needed enable end to end integration
- Up to five networks. **£5M from NERC** £0.9M from STFC, in kind DSTL.



| | | | | | | |
|------|-------------------|--------------------|--------------|--------------------------------|-----|---------|
| Who? | Different HEI/RCC | HEI/RCC or Private | Manufacturer | Govt. Agency or service sector | NMS | HEI/RCC |
|------|-------------------|--------------------|--------------|--------------------------------|-----|---------|

NEW: Metrology of climate variables

'New technology for better data quality'



Alignment of National Measurement System research programme with NERC needs.

New funding for NERC researchers to work specific on technology associated with long term observing metrology and data quality

- Two major research themes:
 1. Reducing uncertainties – EO data quality
 2. Gas and aerosol metrology
- 2010 – building evidence base of need, and potential impacts.

NEW: Sensing for next generation platforms

Aerial platforms: Upper troposphere lower stratospheric science using High Altitude Long Endurance UAVs.



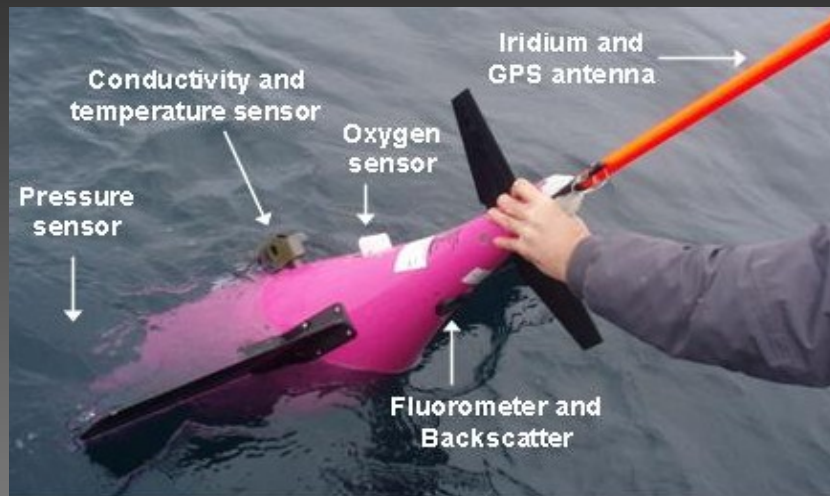
To support a consortium project to exploit a new NERC – NASA Dryden partnership for access to Global Hawk aircraft for geosciences research.

Projects can include any / all of the following components: forecasting, new instruments, mission science, data analysis.

Joint NERC/NASA community meeting 26th May

NEW: Sensing for next generation platforms

Submersible platforms: long duration autonomous observations.



Project might include any/all of the following components:
forecasting, new instruments, mission science, data analysis

Ongoing engagement with NERC community

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wre@nerc.ac.uk