

# Space Weather Instrumentation, Measurement, Modelling and Risk (SWIMMR)

## A NERC perspective

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# Natural Environment Research Council

- NERC is the UK's leading public funder of environmental science
- We invest £330M each year in cutting-edge research, postgraduate training and innovation in UK universities and research centres



# We support



- 3,000 scientists and over 1,500 PhD students

- 1,000 research projects and 60 UK or international programmes

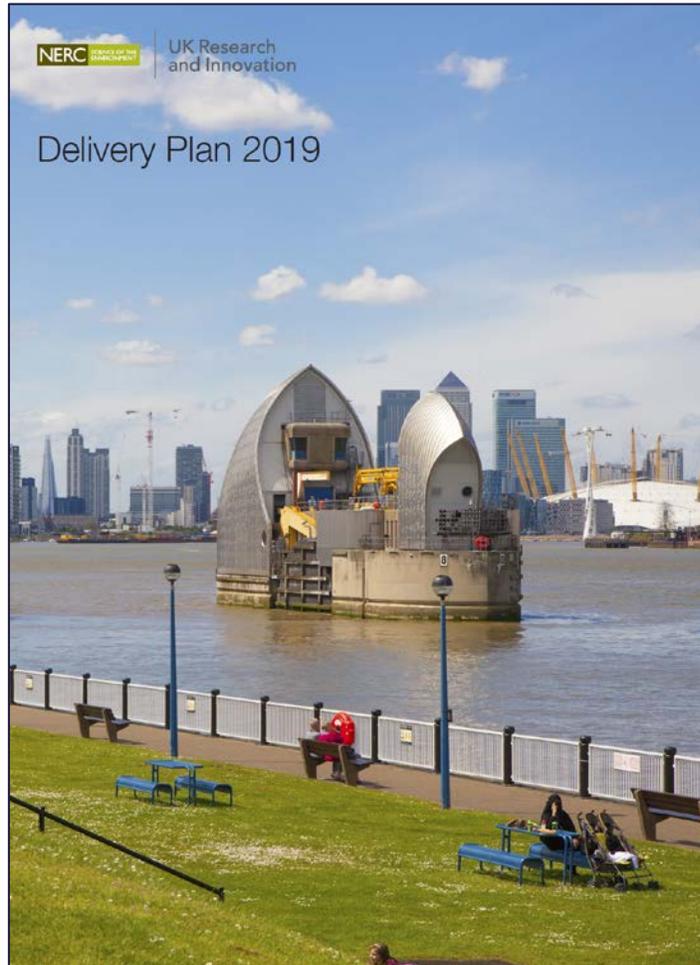


- 55 universities and 20 research institutes



- UK national capability: 3 ships (plus 1 being built), 6 aircraft, 6 polar bases, the NERC Data Service and 11 community research facilities

# NERC Delivery Plan



- Recognises the transition to UKRI and NERC's role within a new agile organisation
- Highlights the importance of interdisciplinary working and global partnerships to respond to environmental challenges
- Articulates NERC ambitions for the future and identifies eight priority areas

# NERC Priority Themes



## Environmental Solutions

- Champion the importance of environmental solutions in contributing to clean growth across UKRI, and create initiatives that meet this aim



## Resilient Environment

- Increase understanding of environmental hazards, environmental change and their interactions, to plan for and manage vulnerability, risk, response and recovery



## Productive Environment

- Promote research and innovation to enable a shift to a circular, resource-efficient economy, working with partners to translate research into effective business models



## Healthy Environment

- Increase understanding of the benefits of a healthy environment to health and wellbeing, and of feedback mechanisms between environmental systems and a healthy economy, society and culture

# NERC Priority Themes



## Pushing the frontiers of understanding

- Maintain the UK's considerable breadth of expertise across environmental science, to prepare for the unknown challenges of the future



## Global Environment

- Provide leadership in, and bring UK expertise to bear on, global challenges, aiding international development and responses to environmental emergencies



## Digital Environment

- Use cutting-edge technology to advance environmental outcomes, taking advantage of machine learning, miniaturisation, battery technology and wireless communications



## Best Environment for R&I

- Ensure a talent pipeline in environmental science that has the skills and expertise to resolve future unknown challenges and to lead and influence broad, systemic thinking for environmental solutions

# Resilient Environment

Forge collaborations that bring together the skills and expertise, for example in engineering, finance, economics and environmental science, that will bring about a more resilient environment and ensure capital markets, business and other financial systems are resilient to environmental risk in the short and long term.

Invest in research and innovation that advances understanding of environmental hazards, and the ability to plan, create policy, and manage vulnerability, risk, response and recovery in a changed and changing world. Through interdisciplinary partnerships and by bringing together outstanding researchers from different disciplines, we can devise solutions that make people, places, markets, systems and infrastructures safer and more resilient.

# Environmental Risks to Infrastructure Innovation Programme 2016-2020

- Multi-sectoral, industry focused 'club' approach
- 3 calls for proposals, 60 projects funded, NERC investment £4.8m
- Searchable Project database held by CIRIA
- Case studies developed and published
- Webinars and other knowledge transfer activities
- BGS multihazards survey

**ATKINS**



**edf**

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Environment  
Research Council



**HR Wallingford**

Working with water



**Translink**

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# NERC Highlight Topics, round 3 (2016)

- New insights into space weather impact on UK national grounded infrastructure SWIGS

<http://www.geomag.bgs.ac.uk/research/SWIGS/home.html>

- Modelling and forecasting the Earth's radiation belts

<http://www.rad-sat.ac.uk>

## NERC national capability – programmes and facilities – BAS and others

# WHY SWIMMR?

- Translating research and innovation into an operational service
- Pushing the frontiers of understanding
- Working in partnership across Councils and Government Departments to address a national strategic priority
- Contributing to national resilience
- Drawing on underpinning NERC funded national capability and facilities
- Enhancing UK capability and international leadership

# SWIMMR

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