

# BGS infrastructure

Who we are.

What we have.

Where we are going.

How we will deliver?



**British  
Geological Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

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# British Geological Survey

- We are a world-leading geological survey focussing on public-good science for government, and research to understand earth and environmental processes.
- To be the best global geological survey, working with new technology and data to understand and predict the geological processes that matter to peoples' lives and livelihoods.

Instrumenting the Earth

A Geoscience Data Warehouse:

Going global



National geological repository



**British  
Geological Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

**NERC**

SCIENCE OF THE  
ENVIRONMENT

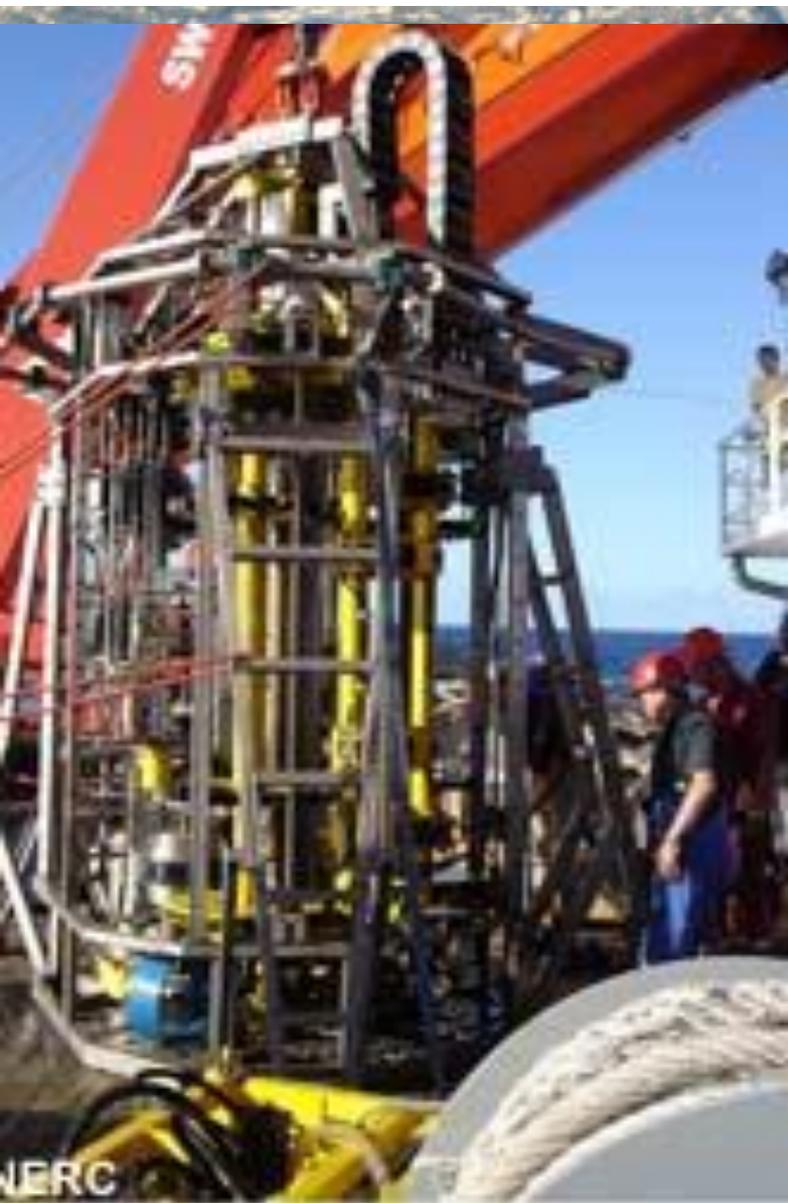
**Department of Energy &  
Climate Change**

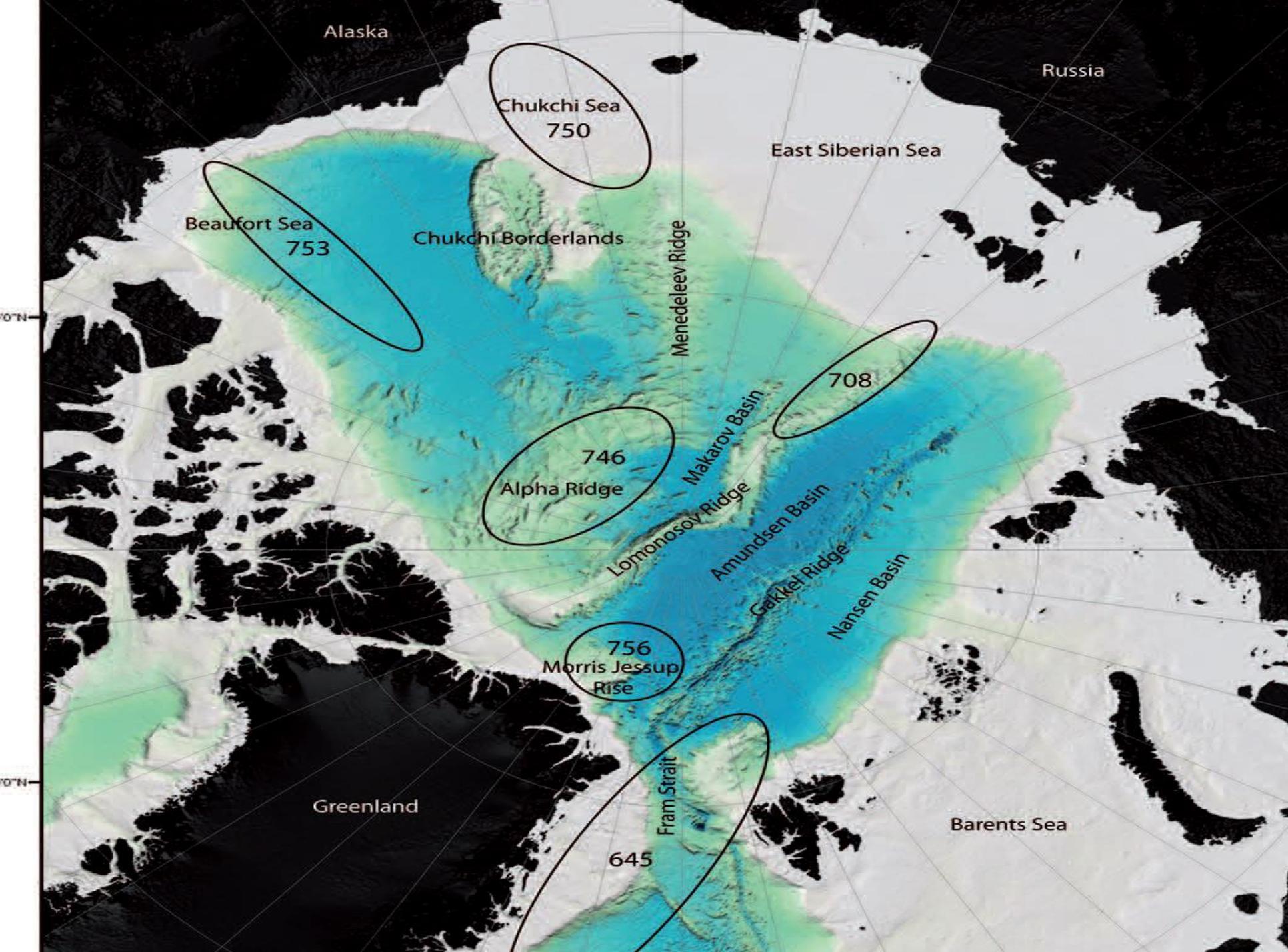


**GOV.UK**

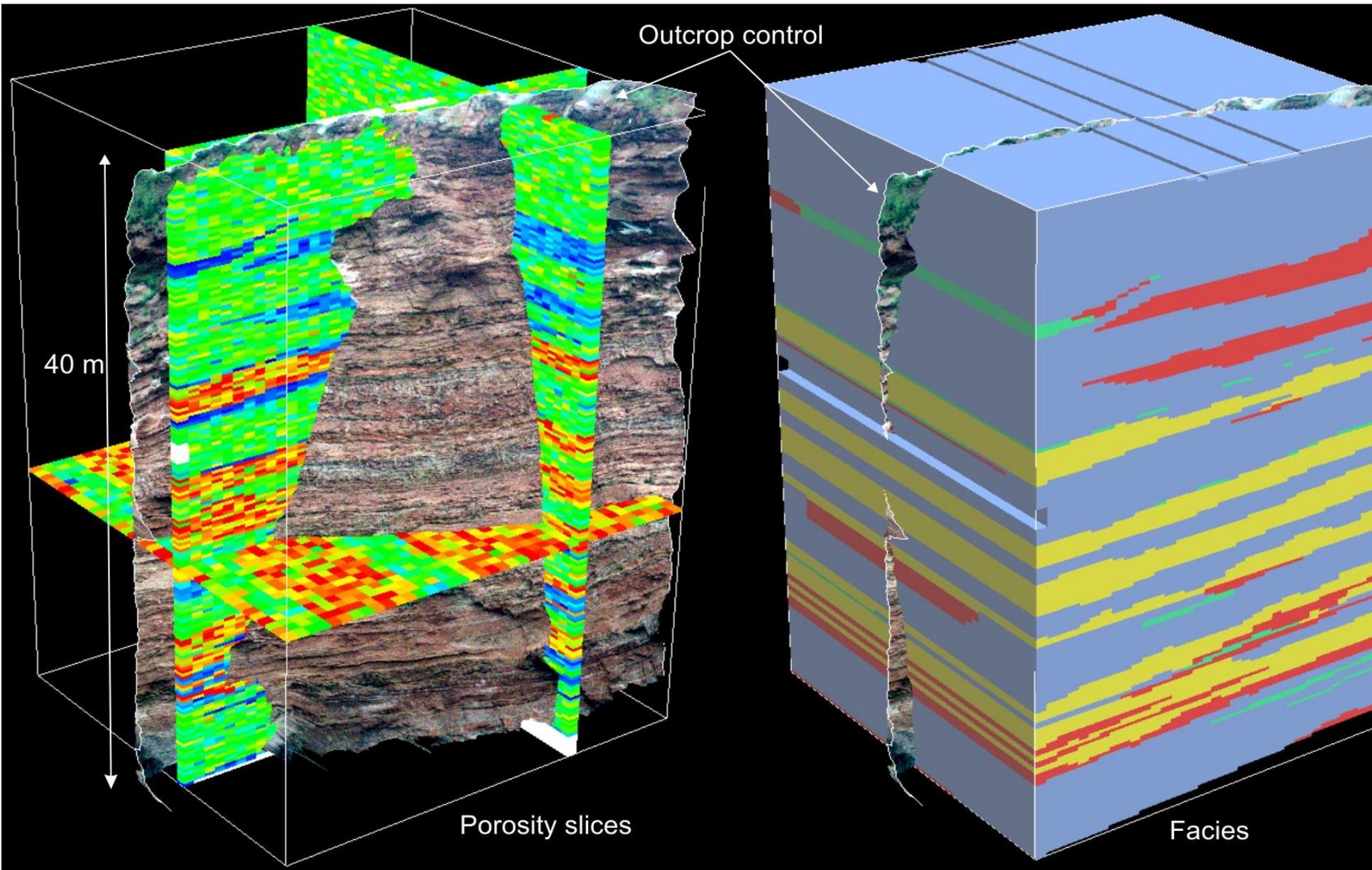


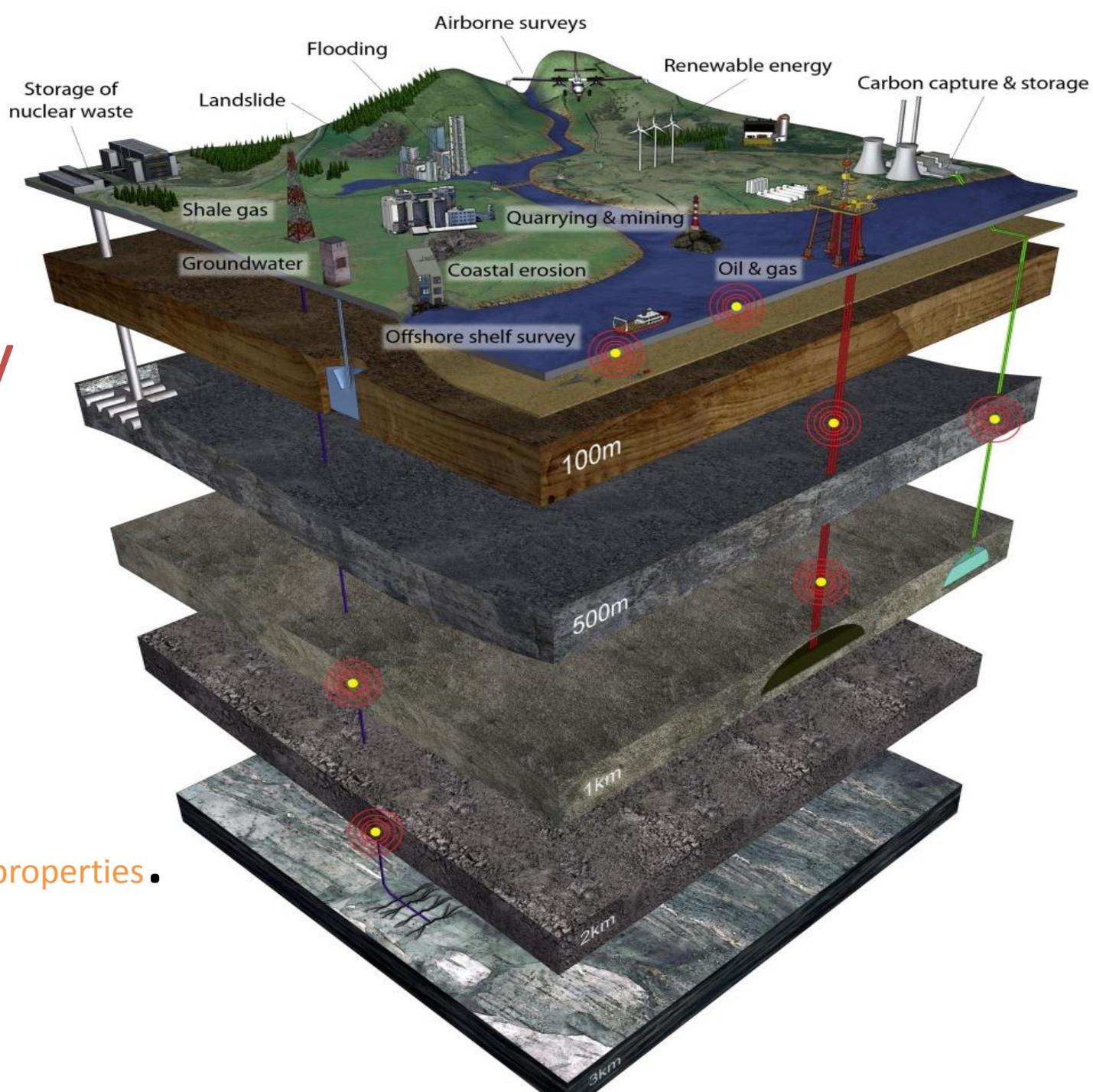
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# Experimentation, modelling





# The Energy Test Bed

- pressure,
- temperature,
- heat flow,
- seismicity,
- tilting,
- strain accumulation,
- fluid chemistry,
- physical and biological properties.

# Aspirational deliverables.....

The Energy Test Bed : integrated multi-component subsurface monitoring infrastructure eg., Improved earthquake monitoring across the UK with UK-Array

London and Thames catchment as an international Critical Zone Observatory

MareMap High resolution survey research and data base of the UK shelf to underpin infrastructure development

Global geohazard data bases and observing systems

# Partnership examples.. NERC & HEI

Geoscience campuses with Heriot-Watt University and the University of Nottingham

Delivery of the NERC Earth Sector Services and facilities & COMET and National Geoscience Data Base & Repository

Surface and subsurface sensor systems delivered with other NERC RC in an international context

Doctoral training partnerships and DTG with top UK universities

Launch BGD PDF programme 2014

Specific research delivery partnerships:

Strategic Mineral – Camborne, Exeter

UK Geophysics – Bristol, SeisUk, Edinburgh

CCS – Nottingham, Edinburgh & HWU

Subsurface fluid modelling – Lancaster & IC

# Partnership examples....cont.

UK Natural Hazards Partnership NERC. EA Metoffice etc..

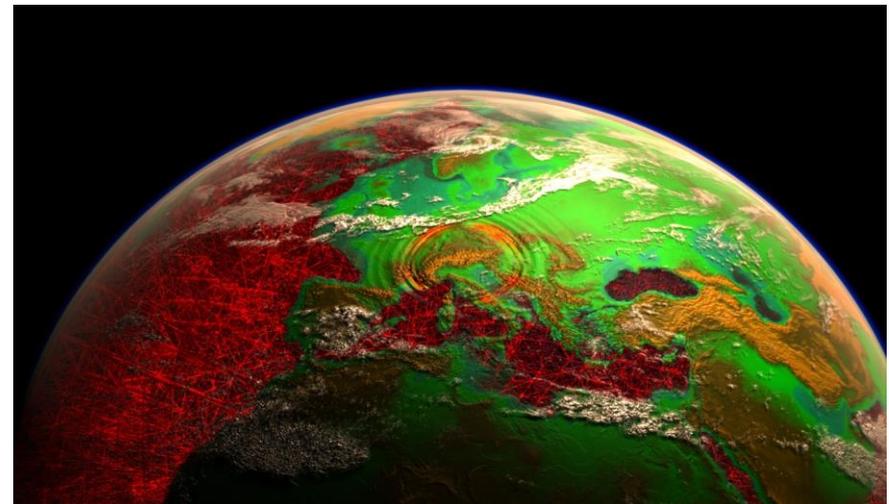
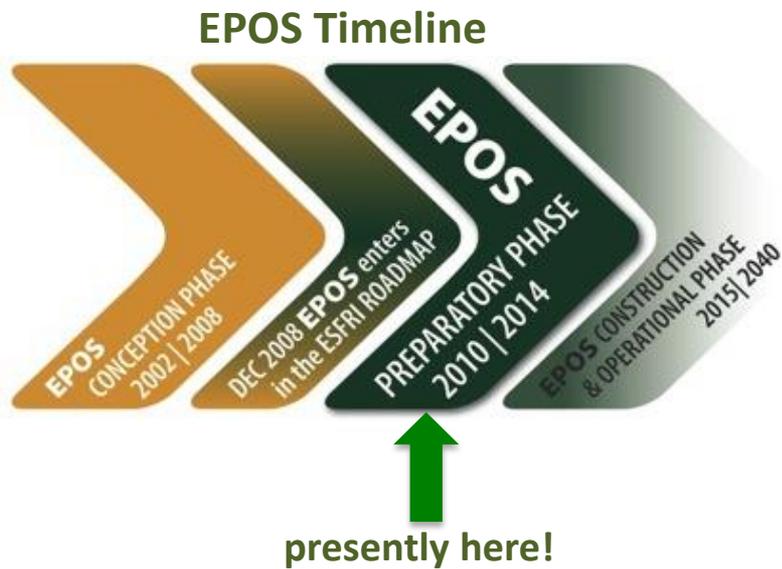
European observing systems and infrastructure  
(e.g. EPOS, EMSO, ECORD-IODP, ICDP)

European geological Surveys .. eg., NAG TEC project

International operational bases (Qatar, Singapore, Abu Dhabi, China ....)

# EPOS The European Plate Observing System (EPOS):

- represents a **scientific vision and approach** in which innovative **multidisciplinary research** is made possible for a better understanding of the physical processes controlling earthquakes, volcanic eruptions, unrest episodes and tsunamis as well as those driving tectonics and Earth surface dynamics.
- has a long-term plan to facilitate **integrated use** of data, models and facilities from mainly distributed existing, but also new research infrastructures, for solid Earth science.



# Added Value: scientific perspectives

- Strengthening of **collaborations** between dispersed research groups working in the same field;
- Design of **multidisciplinary measurements** tailored to particular investigations (Eyjafjallajökull 2010 eruption);
- Integration of research efforts using different methodologies to contribute to **geo-hazards** and **geo-resources**;
- Open community based software and web applications, with consequent improvements in the processing and interpretation of data and opening of new perspectives for **integrated Earth system models and simulations**;
- Development of **new technologies** for specific infrastructures, such as experimental laboratories or in-situ observatories;
- Closer links with other networks and infrastructures throughout the field of **Earth sciences**, including space marine and environmental sciences.

# The Energy Test Bed : integrated multi-component subsurface monitoring infrastructure

- enable research on the impact of new energy sources including shale gas drilling and associated hydraulic fracturing as well as processes related to carbon and waste storage.
- a unique package of monitoring capability and novel technology that would benefit industry by maximising efficiency of extraction and subsurface management
- will create partnerships with commercial geoscience organisations and the research community by enhancing national capability (for example around data and research knowledge) as well as improving training to enhance links with HEIs and industry.
- Future energy security requires low carbon approaches as well as developing new energy sources, for both of which the subsurface has a critical role to play.
- Lack of understanding and uncertainty on the potential utility of the subsurface feeds through to a lack of confidence amongst policy makers and industrial investors, as well as impacting on wider public acceptance.
- The UK would develop a unique package of monitoring capability and technology development that would benefit industry by maximising efficiency of extraction and subsurface management. This knowhow and data would also stimulate additional investment and speed new technology energy options to commercialisation, this in a global market in which this investment would provide a competitive advantage for British expertise and a major export

# Earth sector Services and Facilities

