NERC data delivers solutions for society's challenges

Long-term NERC investment in environmental data benefits governments, businesses and communities - boosting the economy, building resilience and protecting the environment

Impacts

Housebuilding and infrastructure development: reducing costs, risks and environmental impacts

Natural hazards: increasing resilience to hazards such as flooding and subsidence, which cost the UK £billions each year

Offshore wind energy: enabling the UK to be a world leader while protecting the marine environment
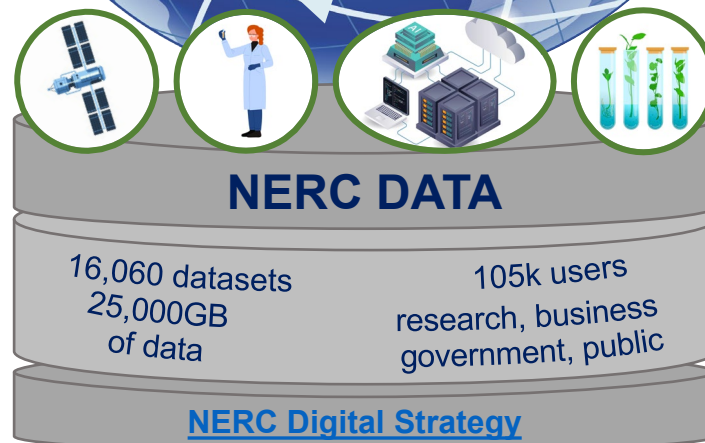
Climate: driving international action and the UK's journey to Net Zero

Investments

Data and collections: 100+ years of curated specimens, observations and measurements describing the environment and predicting environmental change

NERC Environmental Data Service: providing stewardship, data tools, experts and training, focussed on delivering FAIR data

NERC DATA

16,060 datasets
25,000GB
of data

105k users
research, business
government, public

NERC Digital Strategy

Data infrastructure including high performance computing: JASMIN, MonSoon2, Archer2, MAGEO

Skilled people: data experts and trained researchers

NERC-funded data on conditions and hazards above and below ground reduce the costs, risks and environmental impacts of developments

Unique nationwide data on geology, biodiversity and land use, plus long-term observations and predictions of hazards and environmental change

Supporting the economy and biodiversity

* Reduces costs and risks of major construction works
e.g. geological data reduced by 70% the need for in-tunnel testing for the new Farringdon Elizabeth Line station
e.g. land use data enabled Severn Trent Water to control pesticides at source, which meant that a planned £4.1m upgrade to a water treatment works was no longer needed

* Delivers cheaper, more effective hazard risk assessment
e.g. a contamination risk tool enabled Greater Manchester Combined Authority to rapidly assess risk for >3,000 potential housing sites on brownfield land
e.g. long-term river flow data saves >£5m per year for the Flood Risk Assessments required for new developments

* Enables cheaper, more effective action to meet environmental requirements such as 10% biodiversity net gain
e.g. a data-driven tool saves £100k's by automating identifying habitats and offset payments for protected Great Crested Newts

Contributing to:
UKRI Strategic Themes – Building a green future, Creating opportunities and improving outcomes
UN Sustainable Development Goals:

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

11 SUSTAINABLE CITIES AND COMMUNITIES

15 LIFE ON LAND

NERC-funded marine environment and hazard data has enabled the UK to become a world leader in offshore wind energy while protecting key marine species and habitats

Unique mapping and long-term data on seabed conditions, waves, tides, marine hazards and protected species

Supporting coastal economic growth and jobs, net zero and biodiversity

* Enables governments to select viable sites and robustly assess applications
e.g. data-driven tools to assess impacts on seabirds are embedded in government planning and approval processes
e.g. marine mammal data informed Scottish Government decisions on multiple large windfarms off the Scottish east coast

* Reduces costs, risks and uncertainty for developers
e.g. developers use data on seabed geology and marine hazards to optimise windfarm design and reduce construction risks, cutting the cost of developments such as Dogger Bank
e.g. marine mammal data has been used in environmental impact assessment of 76% of UK capacity, saving £millions
* Boosts biodiversity protection and compliance
e.g. seabird data is integral to EDF and SSE's seabird monitoring plans agreed with regulators

Contributing to:
UKRI Strategic Themes – Building a green future, Creating opportunities and improving outcomes
UN Sustainable Development Goals:

7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
13 CLIMATE ACTION
14 LIFE BELOW WATER

NERC-funded environmental records and predictions helps to protect UK communities, businesses and infrastructure from natural hazards, which cost the UK £billions each year

Unique nationwide records and predictions of natural hazards such as floods, subsidence and space weather

Increasing resilience and avoiding costs and harm

* Reduces risks and costs by helping governments and businesses to plan ahead
e.g. Geological risk data informs property purchases and lending decisions by the UK's largest commercial lenders
e.g. Flood modelling data enables new infrastructure to be designed to withstand major flood events, saving £millions
e.g. In response to space weather data the Government included space weather in the UK National Risk Register, which drives action to address risks

* Enables prompt, effective action before and during hazard events
e.g. Detailed, real-time flood prediction data is central to national flood forecasting services for England, Wales and Scotland
e.g. Space weather data powers Met Office early warnings of extreme space weather events that can disrupt critical infrastructure such as power grids, satellites and railways (1, 2)

NERC-funded climate measurement and prediction data underpin international climate negotiations and drive the UK's journey to Net Zero

Unique long-term measurements and modelling of the world's climate system, climate change indicators and UK conditions

Delivering compelling evidence of climate change and more accurate predictions which are central to keystone climate reports and tools such as IPCC reports, UK Climate Projections, UK Climate Change Risk Assessments and Climate Stripes

Which support net zero, resilience and health

* Powering international action to reduce emissions and to develop solutions for a greener economy
e.g. IPCC reports are the basis for UN climate agreements. 140 countries now have net zero targets, covering 88% of global emissions
e.g. Businesses worth 39% of global market capitalisation have emissions reduction targets aligned with the UN Paris Agreement

* Driving UK action to adapt to the effects of climate change
e.g. the UK Health Security Agency and Network Rail use the UK Climate Projections to reduce the impact of extreme high temperatures on the public, the NHS and rail infrastructure
e.g. Local Authorities such as Bristol City Council use localised climate projections to adapt services and infrastructure to the effects of climate change

Contributing to:
UKRI Strategic Themes – Building a green future, Building a secure and resilient world, Securing better health, ageing and wellbeing for everyone
UN Sustainable Development Goals:

3 GOOD HEALTH AND WELL-BEING
7 AFFORDABLE AND CLEAN ENERGY
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
11 SUSTAINABLE CITIES AND COMMUNITIES