SUPPORTING IMPACTFUL UK ARCTIC SCIENCE ENGAGEMENT

2025–2026

Photo: Iain Rudkin, BAS

Arctic Office
NATURAL ENVIRONMENT RESEARCH COUNCIL

UK Government

Introduction

The Arctic Council is the leading intergovernmental forum promoting cooperation in the Arctic. As the current Arctic Council Chair, The Kingdom of Denmark is actively pursuing an ambitious programme for their Chairship (2025–27).

The United Kingdom has been an active Observer to the Arctic Council since 1998. Researchers based in the UK have contributed extensively to the work of the six Working Groups and associated Expert Groups and Taskforces over many years, sharing expertise, working in partnership, collaborating on new data sources and conducting important analysis.

In recognition of the importance of the work of the Arctic Council, and the potential for increased engagement by researchers based in the United Kingdom, the Government has funded a new scheme for 2025–2026. 25 projects have been funded through this scheme which supports UK-based researchers in practical engagement that aligns with the work programmes of the six Arctic Council Working Groups and the priorities and initiatives of The Kingdom of Denmark's Chairship of the Arctic Council.

The scheme is being delivered in active partnership with the NERC Arctic Office and the UK Science and Technology Network.

Projects:

Principal Investigator:
Prof Bethan Davies, Newcastle University
Relevant Arctic Council Working Group:
SDWG

The Greenland Connection: Uncovering the Hidden Histories of UK Greenland Exploration

Over the past two centuries, UK-led expeditions mapped and studied Greenland, relying heavily on Greenlandic expertise and logistical support—yet this contribution is rarely acknowledged. This project aims to fill this gap by creating six interactive ArcGIS StoryMaps highlighting the roles of Indigenous peoples, women, and working-class men in these expeditions. These resources will showcase UK-Danish-Greenlandic collaboration and foreground Indigenous knowledge and support.

Principal Investigator:
Dr Karen Cameron, Glasgow University
Relevant Arctic Council Working Groups:
AMAP, CAFF

Snow Trap: Investigating the impact of glacial snow cover on trapping winter gases

Changes in climate have led to changes to Arctic environments, including increased observations of thick ice lenses within Arctic glacial snowpacks; formed as a result of substantial rain or freeze-thaw events during the winter. This project will study the impact of these lenses on the exchange of greenhouse gases (carbon dioxide and methane) from glaciers to the atmosphere. This innovative opportunity will study how climate change impacts glacial ecosystems, and how glacial ecosystems can impact the climate.

Principal Investigator:
Dr Iestyn Barr, Manchester Metropolitan University
Relevant Arctic Council Working Group:
AMAP

Forever Chemicals in Arctic Lakes (FOCAL)

'Forever chemicals' are synthetic persistent toxic chemicals found globally. One of the most infamous groups are PCBs (polychlorinated biphenyls). This project seeks to measure all 209 PCB compounds in Greenlandic lakes to assess global background levels and track changes over time. By studying these pristine sites, the team aims to evaluate the effectiveness of international pollution controls and improve future management of persistent 'forever chemicals'.

Principal Investigator:
Prof William Austin, University of St Andrews
Relevant Arctic Council Working Groups:
PAME, AMAP, CAFF

Seabed disturbance and the climate mitigation potential of Arctic fjords

This project will measure carbon content, accumulation rates, and organic carbon reactivity in Arctic fjord sediments to support recommendations for the protection of the most sensitive areas, and identify less vulnerable areas, which should be available to support livelihoods of northern communities and industry.

Principal investigator:
Dr Jinoop Arackal Narayanan, Teesside University
Relevant Arctic Council Working Groups:
PAME, SDWG

Sustainable large-scale 3D-printing of composite hydrogen storage and transportation systems for Arctic Maritime decarbonisation (SAM)

This project aims to accelerate Arctic maritime decarbonisation through the development and deployment of large-scale 3D-printed composite hydrogen storage and transportation systems.

Principal Investigator:
Dr Paul Mann, Northumbria University
Relevant Arctic Council Working Groups:
AMAP, SDWG, ACAP

Together for Resilient Air and Climate Engagement (TRACE)

The TRACE project builds a real-time air monitoring network in West Greenland to track high-latitude dust (HLD) from thawing permafrost, drying lakebeds, and human activity. Using sensors and dispersion modelling, it aims to identify dust sources, assess health risks, and develop community-informed mitigation strategies.

Principal Investigator:
Dr Lauren McWhinnie, Heriot-Watt University
Relevant Arctic Council Working Group:
PAME

Mapping whale watching activities in Arctic waters II

This project maps and quantifies whale-watching activity across Arctic waters to understand its scale, impacts on whale populations, and data needs for sustainable management. The goal is to guide responsible marine tourism that supports conservation and local economies.

Principal Investigator:
Prof Richard Essery,
University of Edinburgh
Relevant Arctic Council Working Groups:
SDWG, AMAP

InSnowLation (A study of the effect of snow on roofs)

This project investigates how snow on Arctic roofs affects building insulation. By combining building science and snow measurements in a field experiment, we aim to model the thermal performance of Arctic housing and improve sustainable design for remote communities.

Principal Investigator:
Dr Darren Ghent,
University of Leicester
Relevant Arctic Council Working Group:
AMAP

Validating Satellite-Derived Land Surface Temperatures in the Arctic: An In-Situ Radiometric Campaign in West Greenland

This project will deploy thermal infrared radiometers in West Greenland to collect land surface temperature data for validating satellite observations. This first permanent dedicated field station will provide year-round land surface temperature (LST) measurements to improve climate models and support Arctic Council monitoring goals.

Principal Investigator:
Prof Kate Hendry,
British Antarctic Survey
Relevant Arctic Council Working Groups:
CAFF, AMAP, SDWG

Feeding Biology with Glacial Flour

This project brings together scientists from the UK, Norway and Denmark to examine how glacial flour—fine particles produced by glaciers—releases nutrients and potentially toxic metals into marine and terrestrial systems. Through collaboration and a horizon scan, the team aims to identify key knowledge gaps in its role in global biogeochemical cycles.

Principal Investigator:
Dr Laura Hobbs, Scottish Association for Marine Science
Relevant Arctic Council Working Group:
AMAP

Midnight feast: What drives migration variability in a keystone Arctic species?

This project studies how individual differences in Calanus finmarchicus—such as size, diet, and energy reserves—affect their vertical migration patterns in the Arctic. By linking these traits to environmental change, we aim to understand impacts on carbon flux and Arctic ecosystems.

Principal Investigator:
Dr Cath Waller,
University of Hull
Relevant Arctic Council Working Groups:
AMAP, PAME

Marine Plastics in the Arctic (MaPinA)

This project builds trust and collaboration with the Uummannaq community in West Greenland to co-develop solutions to marine plastic pollution. Working with local partners, fishers, and hunters, it aims to understand impacts on people and ecosystems and create community-driven strategies for mitigation.

Principal Investigator:
Dr Filippa Lentzos,
Kings College London
Relevant Arctic Council Working Group:
EPPR

Navigating Online Risks for Trusted Health Emergency Response in the North – Strengthening Health Infrastructure and Emergency Literacy for Disaster Readiness (NORTHERN SHIELD)

NORTHERN SHIELD examines how health-related misinformation and disinformation affect emergency preparedness and public health in the Canadian Arctic. It aims to assess risks to crisis communication and vaccine uptake, evaluate local and institutional responses, and develop culturally informed strategies to strengthen community resilience.

Principal Investigator:
Dr Liam Kelleher,
University of Birmingham
Relevant Arctic Council Working Groups:
AMAP, ACAP

POLARSENSE+: Airborne Nano and Microplastic Sensing Across Svalbard

POLARSENSE+ aims to advance the monitoring of airborne microplastics and nanoplastics (MNPs) and associated chemicals in the Arctic, supporting AMAP's efforts to track plastic pollution.

Principal Investigator:
Prof Marc Macias-Fauria,
Scott Polar Research Institute
Relevant Arctic Council Working Groups:
SDWG, AMAP, CAFF

Leveraging Sub-Meter Satellite Imagery to Support Management of West Greenland's Heritage and Natural Systems

This project develops high-resolution, scalable tools to monitor and manage the Aasivissuit–Nipisat UNESCO World Heritage Site in West Greenland. Using satellite imagery and machine learning, it will map ATV (All-Terrain Vehicle) and wildlife tracks, classify land cover, and create visual resources to support conservation, planning, and community engagement.

Principal Investigator:
Dr Hamish Pritchard,
British Antarctic Survey
Relevant Arctic Council Working Group:
AMAP

Arctic Snowfall

The project 'Arctic Snowfall' aims to expand Arctic snowfall monitoring by adapting a new real-time measurement method for harsh conditions. Trials in Svalbard will lead to autonomous sensors capable of collecting benchmark data to improve weather forecasts and climate projections, supporting Arctic Council monitoring goals.

Principal Investigator:
Dr Craig Smeaton,
St Andrews University
Relevant Arctic Council Working Groups:
AMAP, ACAP, PAME

Aquaculture & the Arctic Carbon Cycle (AC2)

The AC2 project brings together expertise from the United Kingdom and Iceland to undertake the first comprehensive research study to understand and quantify how industrial aquaculture impacts the processes governing the burial and long-term storage of carbon in Iceland's arctic fjords.

Principal Investigator:
Dr Ishfak Malik,
University of Leeds
Relevant Arctic Council Working Group:
AMAP

TRAILS – Tracking Risk Assessment and Indigenous-Led Strategies: Ethnoclimatology of trail mobility in the Arctic

The TRAILS project explores how climate change affects Arctic trail mobility by co-producing research with Inuit communities in Canada. Using Indigenous knowledge, participatory methods, and climate modelling, it will develop projections of future trail access under different warming scenarios to support community-led adaptation and resilience.

Principal Investigator:
Prof Helen Wheeler,
Anglia Ruskin University
Relevant Arctic Council Working Groups:
AMAP, CAFF

Borealisation of the Arctic: understanding region- and ecosystem-specific ecological and societal impacts through research synthesis

This project investigates the ecological and societal impacts of Arctic borealisation—the northward expansion of species—by analysing regional variations, conducting systematic reviews, and interviewing researchers. It aims to horizon-scan future risks and integrate findings into Arctic Council reports on climate change impacts and adaptation.

Principal Investigator:
Dr Sarah-Anne Munoz,
Head of Research & Evaluation, National Centre for Remote and Rural Health and Care, NHS Education for Scotland
Relevant Arctic Council Working Groups:
SDWG, AHHEG

Traditions of Care: Gaelic and Indigenous Knowledge for Rural Mental Wellbeing

This project examines how Gaelic traditions of care—such as storytelling and land-based healing—support mental wellbeing in rural Scotland. Working with communities and comparing insights with Indigenous knowledge in Canada, it aims to inform culturally grounded approaches to health and foster international collaboration.

Principal Investigator:
Prof Philip Steinberg,
Durham University
Relevant Arctic Council Working Group:
AMAP

Developing a legal assessment of Arctic geoengineering to support AMAP's scoping exercise

This project examines the ethical and legal implications of Arctic geoengineering. Through expert workshops and a draft Justice Assessment Guidelines document, it will lay the groundwork for standards ensuring geoengineering is scientifically sound and socially just, respecting Indigenous rights and future generations.

Principal Investigator:
Prof Iwan Jones, Queen Mary University of London
Relevant Arctic Council Working Groups:
CAFF, PAME

Establishing the origin of the invasive pink salmon, *Oncorhynchus gorbuscha*, spawning in Icelandic rivers

This project uses otolith geochemistry to determine whether invasive pink salmon in Icelandic rivers are reproducing locally, confirming if self-sustaining populations exist. The findings will inform management of this invasive species and conservation of declining native Atlantic salmon.

Principal Investigator:
Prof Karen Milek,
Durham University
Relevant Arctic Council Working Group:
SDWG

Sustainable Agriculture in Iceland: Archaeological and Agricultural Science Knowledge-Exchange and Partnership-Building

This project builds partnerships between UK archaeological scientists and Icelandic agronomists to explore how medieval soil, plant, and genomic data can inform modern sustainable agriculture—and vice versa. Through workshops and joint analysis, it aims to open new research avenues and strengthen collaboration.

Principal Investigator:
Prof Helen Wilson,
Durham University
Relevant Arctic Council Working Groups:
CAFF, AMAP

Designing for coexistence in the Arctic: Urban kittiwake hotel

This project studies how kittiwakes (a re-listed species of gull) adapt to environmental change and what their move into urban areas means for planning and coexistence. It will assess 'kittiwake hotels,' build a network of Arctic urban sites, and explore conservation challenges in changing urban ecologies.

Principal Investigator:
Dr Yifeng Yang,
University College London
Relevant Arctic Council Working Groups:
PAME, AMAP

HyAIce-Dr: A Hybrid Hydrodynamic–AI Framework for Predicting Ice Floe Drift in the Arctic Marginal Ice Zone

This project aims to develop a hybrid model combining physics and AI to improve short-term forecasts of sea ice drift in the Marginal Ice Zone (MIZ). Using observational data and reanalysis products, it will create an open-access tool to support Arctic navigation, hazard warnings, and environmental monitoring.

Arctic Council Working Groups:

ACAP - Arctic Contaminants Action Programme
AMAP - Arctic Monitoring and Assessment Programme
CAFF - Conservation of Arctic Flora and Fauna
EPPR - Emergency Prevention, Preparedness and Response
PAME - Protection of the Arctic Marine Environment
SDWG - Sustainable Development Working Group

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