Applying BAS science to global challenges

Partnership opportunities

British Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

POLAR SCIENCE FOR PLANET EARTH

Much more than a polar organisation

British Antarctic Survey (BAS) has built a reputation as one of the world's leading polar research organisations – but today our science is increasingly called upon to address challenges away from the Poles.

We work closely with other research groups, governments, international development organisations, universities and businesses all over the world to collect and interpret crucial scientific data that shapes policy, protects the environment and ultimately improves people's lives.

If your organisation is addressing an environmental challenge in any of the areas shown in this leaflet, our multidisciplinary teams can apply scientific and logistics expertise honed in one of the most demanding places on Earth to help find a solution.

We can partner with you to secure vital funding – BAS has earned an exceptional track record of winning research grants by delivering science excellence and value for money.

To discuss the opportunities that working with BAS can bring, email **partnerships@bas.ac.uk.**

Image: Studying high-mountain glacier melt in the Himalayas

The BAS community

Partnering with BAS opens access to a team of more than 130 scientists spanning a wide range of scientific disciplines. These scientists are supported by our expert logistic, engineering, and laboratory teams. Wherever we work, BAS brings the same commitment to training and safety.

We can assemble and mobilise science teams that bring together combinations of specialists to many projects, whether working independently or augmenting your existing capability.

BAS is a component of the UK's Natural Environment Research Council and enjoys excellent links with the UK science community. By collaborating with us you will benefit from being a part of this network.

Resources

BAS scientists have access to a unique array of vehicles, facilities and scientific equipment. This includes:

- Cambridge headquarters accommodating an aquarium, controlled environment facilities, workshops and discrete laboratories for biological, geological, ice chemistry and micromolecular studies
- Two ice-capable ships: RRS *James Clark Ross* and RRS *Ernest Shackleton*
- Five aircraft capable of operating in remote areas and fully-instrumented for atmospheric measurements and a variety of remote-sensing roles
- Unmanned aerial and underwater vehicles
- Extensive and diverse range of research equipment including remote sensing technology (e.g. photogrammetric cameras, lidar)

Magnetometer pod and radar antennae on a BAS Twin Otter aircraft

Capabilities

Marine biology

Experts from BAS's science teams work with governments and conservation groups across the globe to capture invaluable scientific data revealing the complex interactions that shape underwater ecosystems.

Our research underpins advice we provide on fishery licensing, identifies conservation priorities and supports sustainable aquaculture controls.

- At Ascension Island in the South Atlantic we carried out marine biodiversity and habitat mapping and provided ecosystem information that will help to improve the sustainable management of their fisheries
- Through a Marie Curie European project CACHE-ITN we are exploring how increased seawater acidity is affecting shellfish populations, helping direct future aquaculture production

Oceanography and glaciology

Studying changes in our oceans and glaciers – particularly in relation to climate change – has equipped BAS with scientific data that has shaped government policy and justified decisions to safeguard our planet.

Using advanced scientific equipment, submersibles and remote sensing, we can model currents, map underwater topography and precisely measure changes to glaciers and ice sheets.

- In the Himalayas, we are using our experience of operating in inhospitable environments and airborne radar to map shrinkage in high-mountain glaciers on which 800 million people depend for water
- In the South Atlantic we are studying marine ecosystems to establish a base-line from which to measure future change

Sieving sediment from the ocean floor to study marine biodiversity

Autonomous ocean gliders are used for studying changes in our oceans

Capabilities *continued*

Geology and geophysical mapping

BAS has advanced geophysical research tools capable of digital geological mapping, aerogeophysical surveying and measuring change in glacial systems. In addition, instrumentation developed by BAS for use in the Polar Regions frequently proves to have unexpected uses.

Combined with our deep understanding of geophysical sciences, our technologies can reveal critical data that enhance prediction and form the basis for action.

- In Morocco we are using our ground-based radar equipment developed in Antarctica to record the levels of groundwater on which farming communities depend
- In locations around the world we are deploying hyperspectral instruments that may ultimately be capable of detecting minerals via aircraft or satellite

Meteorology and natural disaster defences

Changes to the world's climate pose tremendous challenges for communities worldwide. Rising sea levels, increased risks of flooding and even subtle shifts in weather are already affecting the lives of millions.

BAS is both measuring climate change and seeking to understand its causes and impacts. Our work includes creating detailed models predicting the consequences of sea-level rise, identifying coastal vulnerabilities and gauging the impact of weather fluctuations on local populations.

- In High Mountain Asia we are creating high-resolution models incorporating long-term climate observations to determine how precipitation will affect high-mountain glacier melt and the implications this will have for vast numbers of people in the region

Working with ground-penetrating radar in Morocco to record groundwater levels

Our scientists are seeking to understand the causes and impacts of climate change

Advanced science for a changing world

BAS is committed to harnessing the power of science to overcome environmental challenges, whether in the freezing climate of Antarctica or the hyper-arid heat of Saharan Africa.

By applying a rigorous scientific approach and equipment proven to be effective in some of the most inhospitable places on Earth, we are working to answer some of the biggest questions facing the world today.

Because the more we understand about how our world is changing, the better positioned we will be to respond to those changes, and to protect those most at risk.

We want to work with others who share this goal. So if your organisation is also working to protect our planet for future generations, and would benefit from the support of a world-leading multi-disciplinary organisation dedicated to excellence in science and with experience working in extreme environments, we would love to hear from you.

Contact **partnerships@bas.ac.uk** to talk to us about how we can help.

Unusual enzymes and other biomolecules produced by extremophile bacteria and fungi may have biotechnological applications that could benefit humanity

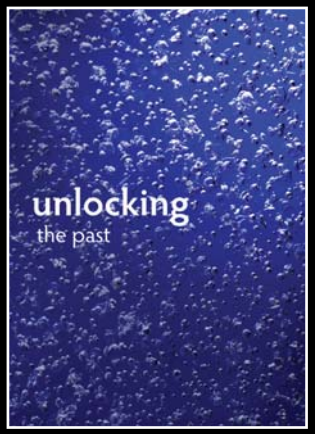
AURORA Cambridge

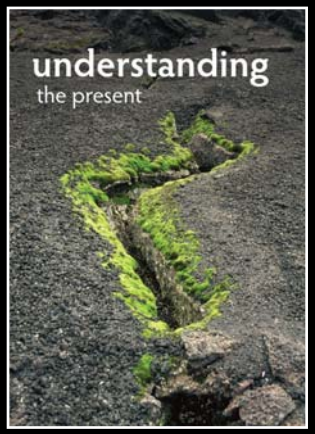
In 2017 BAS launched AURORA: a networking, conference and co-working space enabling direct collaboration with BAS at our Cambridge headquarters.

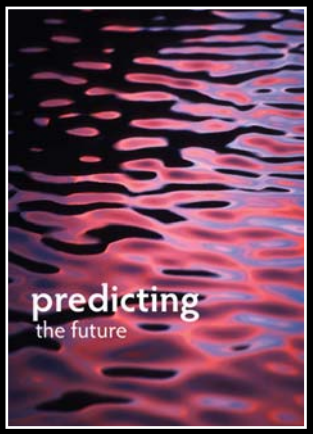
Comprising a 150-seat conference room, two seminar rooms and four meeting rooms, as well as 32 open-plan office desks, this modern facility supports cross-science co-operation by providing a hub for our work with partners and a venue for co-hosted events.

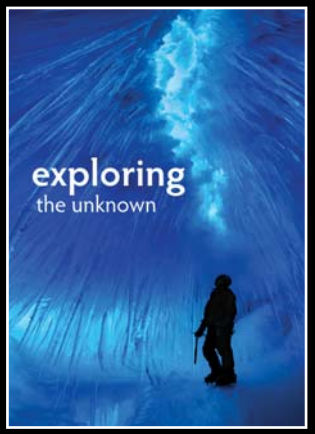
Visit **www.bas.ac.uk/aurora** to find out more.

AURORA
CAMBRIDGE









British Antarctic Survey (BAS), a component of the Natural Environment Research Council, delivers world-leading, interdisciplinary research in the Polar Regions. Its skilled science and support staff based in Cambridge, Antarctica and the Arctic, work together to deliver research that underpins a productive economy and contributes to a sustainable world. Its numerous national and international collaborations, leadership role in Antarctic affairs and excellent infrastructure help ensure that the UK maintains a world-leading position. BAS has over 450 staff and operates five research stations, two Royal Research Ships and five aircraft in and around Antarctica.

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