

£61 million boost for Europe's largest 'flying lab' to tackle climate change from the skies

- £61 million government cash injection to support UK scientists on the largest flying lab in Europe to tackle pressing environmental challenges
- funding helps scientists uncover the causes behind rising methane in the Arctic, understand the effect of biomass burning on our climate and monitor volcanic gases for warning signs of a potential eruption
- high altitude research enables businesses and researchers to drive innovative green solutions on the ground, helping the UK build back greener

Leading UK scientists will take to the skies on the largest flying laboratory in Europe to carry out crucial research into some of the world's most pressing environmental challenges such as climate change and severe weather events, thanks to £61 million government investment.

Announced today (Friday 20 November), the investment will enable the UK's most ambitious scientists and researchers to continue progressing environmental research missions at altitudes of up to 10 kilometres for the next 10 years on board the Facility for Airborne Atmospheric Measurements (FAAM) Airborne Laboratory, based in the UK. This includes collecting data on emission and pollution levels from remote locations around the world, such as above the North Sea and volcanoes in Iceland.

FAAM operates a specially adapted research aircraft based at Cranfield University and Airport, Bedfordshire, to make cutting-edge measurements in the atmosphere, almost anywhere in the world for about 400 hours a year. The aircraft is managed by a unique team of scientists, engineers, flight technicians and project managers providing a complete package of support for the scientific community.

Projects that the BAE-146 large research aircraft has previously conducted include searching for new sources of air pollutants during the Cape Verde dust season, measuring cloud atmospheres to improve weather forecasts, tracking the source of methane emissions in Africa and the Arctic to help combat global temperature rises.

The atmospheric data captured during future air missions will directly assist the government, businesses, universities and researchers on the ground by informing future policy, transforming industries with high carbon emissions like shipping, and assessing the impact of new environment regulations – helping the UK meet its net zero emissions.

The news of this investment comes following the Prime Minister setting out his [ten-point plan for a green industrial revolution](#).

Science Minister Amanda Solloway said:

Never has it been more exciting to be a scientist and nor have the challenges been greater.

Facilities like the FAAM Airborne Laboratory help ensure the UK remains at the forefront of tackling the most enduring threat to our planet while also supporting our innovative and brilliant scientific community. This funding is just another way we are supporting businesses and researchers to build back greener and drive the UK's Green Industrial Revolution.

The government's £61 million funding will secure the aircraft's operations for the next 10 years and will be provided through the Natural Environment Research Council (NERC), the UK government's main agency for funding and managing research in the environmental sciences.

The investment reflects the government's commitment to boost spending on research and development to £22 billion by 2024/25, supporting the UK's most ground breaking research, as set out in the government's ambitious [research and development roadmap](#) in July this year.

Head of the FAAM Airborne Laboratory Mr Alan Woolley said:

We operate the largest flying laboratory in Europe and, through our experience and expertise, offer a complete package of support for in-situ atmospheric measurements.

From measuring cloud microphysics to detecting complex chemical species, the aircraft is a highly capable flying laboratory.

It is capable of operating nearly everywhere in the world and supports global research initiatives, helping scientists and society to tackle the environmental challenges ahead, including climate change, air pollution and severe weather.

Research previously conducted by scientists on the flying lab has underpinned recommendations for the government's Clean Air Strategy including explaining the effects of vehicle emissions and the source of toxic gases in people's homes. This resulted in reductions in pollution in urban areas like cities, informing legal proceedings on diesel engines, improving pollution forecasts and encouraging investment in air pollution research.

UK Research and Innovation's Director of Strategic Partnerships for the Natural Environment Research Council Iain Williams said:

The FAAM aircraft makes an important contribution to UK environmental science by providing researchers with a unique

facility with which to monitor and analyse the atmosphere.

This investment of £61 million will enable this state-of-the-art airborne laboratory to operate for a further ten years providing a long-term commitment to advancing our understanding of the atmosphere and its impacts on us all.

FAAM's research aircraft is owned by UK Research and Innovation and managed through the National Centre for Atmospheric Science. The aircraft is headquartered at Cranfield University.

Case studies

Measuring ship exhaust emissions over the Atlantic

With emissions from ships a significant source of air pollution, UK-based scientists are collecting measurements to help quantify and measure the impact of incoming emission regulations designed to limit maximum ship emissions. While they are expected to change air quality and climate, ship emissions could also lead to a reduction in the brightness of clouds, which can help bounce sunlight back into space, that, in turn, contribute to a rise in global temperatures. Measurements taken in real time by the airborne laboratory will help in better understanding the overall impact of the regulations and the level of compliance.

Working to uncover the cause behind a rise in methane in the Arctic

UK-based researchers use the flying laboratory annually to better understand the cause and sources of a rise in atmospheric methane that threatens to accelerate emissions and increase the global temperature rise. By using the laboratory to study the composition of the atmosphere across different areas, scientists are better able to calculate the source of the methane.

Monitoring gases for warning signs of a potential volcanic eruption

Scientists have used the laboratory to monitor gas levels in the skies above Iceland's active volcanoes, helping to provide crucial information that could help signal a potential eruption in future and prevent a repeat of large-scale cancellation of flights following the eruption of the Eyjafjallajökull volcano in 2010.

Notes to editors

Approaching its 20th year in the sky, and supported by a dedicated team of scientists, engineers, and flight technicians, the FAAM Airborne Laboratory is a specially adapted research aircraft that operates around the world and flies for about 400 hours a year.

UK Research and Innovation (UKRI) works in partnership with universities, research organisations, businesses, charities, and government to create the best possible environment for research and innovation to flourish. They aim to maximise the contribution of each of their component parts, working individually and collectively. They work with their many partners to benefit everyone through knowledge, talent and ideas.

Operating across the whole of the UK with a combined budget of more than £7 billion, UK Research and Innovation brings together the seven research councils, Innovate UK and Research England.

NERC is the UK's main agency for funding and managing research, training and knowledge exchange in the environmental sciences. Their work covers the full range of atmospheric, Earth, biological, terrestrial and aquatic science, from the deep oceans to the upper atmosphere and from the poles to the equator. They coordinate some of the world's most exciting research projects, tackling major environmental issues such as climate change, environmental influences on human health, the genetic make-up of life on Earth, and much more. NERC is part of UK Research & Innovation, a non-departmental public body funded by a grant-in-aid from the UK government.