

PROJECT TITLE: Designing the next generation global greenhouse gas observing systems

Project Science Theme: Climate Change and Risk

Project keywords: Greenhouse gases, observations, machine learning

Lead Institution: University of Bristol

Lead Supervisor: Kieran Stanley, University of Bristol, Chemistry

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Webpage: <https://www.bristol.ac.uk/chemistry/research/acrg/current/>

Project aims and methods:

There is an urgent need to expand global greenhouse gas (GHG) measurement networks. Our team's work has highlighted the urgent need for these systems, by identifying unreported emissions of banned substances, and providing evaluation of the UK's national emissions inventory. However, there are major hurdles that need to be overcome: appropriate measurement locations must be determined, and quality assurance systems must be improved to handle the vast quantity of data that will be generated.

In this project, you will help shape the future of the Advanced Global Atmospheric Gases Experiment (AGAGE) measurement network. You will design machine learning algorithms, trained on over 40-years of AGAGE measurements, to efficiently and accurately process and evaluate AGAGE data. Based on this system, you will propose how an expanded AGAGE network could be built, and propose new measurement locations, informed by ongoing UNEP and Horizon Europe-funded pilot projects.

The project can be tailored to focus on atmospheric measurements, atmospheric modelling or machine learning, depending on the student's interests. No prior knowledge of either of these fields is required. A strong background in physical sciences and scientific computing is essential.

Project Collaborative partner:

The Met Office will provide support for this project and provide in-kind contributions including the use of NAME atmospheric transport model.

Useful recruitment links:

For information relating to the research project please contact the lead Supervisor via:
k.m.stanley@bristol.ac.uk

Bristol NERC GW4+ DTP Prospectus:

<https://www.bristol.ac.uk/study/postgraduate/research/great-western-four-doctoral-training-partnership-nerc/>

How to apply to the University of Bristol:

<http://www.bristol.ac.uk/study/postgraduate/apply/>

The application deadline is Monday 13 January 2025 at 2359 GMT.