

<b>Job Title:</b>	NCEO Research Associate in Greenhouse Gases
<b>Grade:</b>	7
<b>Salary:</b>	£36,386 to £42,155 per annum pro rata
<b>Department:</b>	Physics and Astronomy
<b>Hours/Contract:</b>	Full time or job share considered, Fixed term until 31/03/2025
<b>Job Family:</b>	Teaching and Research
<b>Job Reference:</b>	7346

### Role Purpose

The National Centre for Earth Observation (NCEO) is a NERC-supported research centre which provides national capability for UK environmental science, its value lying in its use of transformational Earth Observation (EO) data and techniques to address Earth system science. This includes NCEO's ability to work at global to regional scales, across the interfaces between domains, e.g., land-atmosphere, ocean-atmosphere, and to fold global datasets into leading science models through mathematical (assimilation) techniques. Its 130+ scientists participate in and lead over 17 EO satellite missions, giving it a reputation for collaborative, rigorous science which is at the forefront of today's and tomorrow's EO. Its expert EO staff are based at key locations in the UK with its headquarters and Executive Director based at Space Park Leicester, a high profile facility for leading research and industrial space activities operated by the University of Leicester.

In this role, the successful candidate will focus on the retrieval, evaluation and analysis of Greenhouse Gases from satellite data. In particular, the candidate will be responsible for extending the successful University of Leicester GOSAT Proxy CH<sub>4</sub> retrieval algorithm to operate on the GOSAT-2 satellite, continuing this long timeseries of important climate observations. As part of this work, the candidate will investigate the potential to improve CH<sub>4</sub> retrievals over high-latitude Arctic locations and over the UK. The candidate will also contribute satellite retrieval expertise to the new GEMINI-UK (Greenhouse gas Emission Monitoring network to Inform Net-zero Initiatives over the UK) observational network, aiming to better constrain the UK's greenhouse gas emissions.

This role will contribute to the NCEO-led UK Earth Observation Climate Information Service (EOCIS). Earth Observations (EO) from space capture immensely valuable measurements of the climate of the UK and worldwide. EO data are complex, and transforming these measurements into information usable for world-class science, climate services and enhanced policymaking is challenging, scientifically and technically. EOCIS will address this challenge end-to end, demonstrating a resilient "UK climate data supply chain" for the first time, built on a strong, continuing heritage of research, data creation and national digital infrastructure. It builds on UK expertise in key aspects of climate data and their exploitation, ranging from polar ice change to carbon cycling to drought, while maintaining the UK's world-class expertise in climate data and providing a direct link from scientific skills in transforming EO data to climate services.

The successful candidate will be part of the Earth Observation Science Group in Physics and Astronomy and work within the National Centre for Earth Observation (NCEO) at the University of Leicester. This work will be under the supervision of Dr Robert Parker, and will contribute fully to the large portfolio of research conducted by the Group and wider NCEO activities. Collaboration with national and international partners will also be a key focus. The role will be based at the new Space Park Leicester site which houses state-of-art facilities.

The role includes opportunities to present results at local and international conferences and science meetings, write high-impact scientific publications as lead or co-author, contribute to the science of other studies being carried out in the Earth Observation Science Group and throughout NCEO, and supervise undergraduate project students.





## Main Duties and Responsibilities

### Research:

- To generate high-quality GOSAT CH<sub>4</sub> data using existing processing pipeline.
- To extend the existing GOSAT processing to the GOSAT-2 satellite.
- To focus on specific retrieval and filtering improvements that improve the data quality over the Arctic and UK.
- To perform analysis of satellite-based CO<sub>2</sub> and CH<sub>4</sub> observations (e.g. TROPOMI, MicroCarb, OCO-2), with a specific focus on understanding the UK's carbon emissions.
- To undertake the publication of your research results and outcomes with a view to developing a national/international profile.
- Contribute to high quality nationally/internationally excellent research by publishing peer-reviewed papers in top journals.
- To represent the research group and NCEO by disseminating results/findings at national and international conferences and the broader research community.
- To contribute towards the development of ideas and writing of proposals for future CH<sub>4</sub>-related opportunities.
- To provide guidance to other staff and students, working collaboratively within the University and NCEO.
- To actively seek opportunities to carry out multi-disciplinary research with other research groups, with the approval of the Lead Scientist.

### Professional Development:

- Duties and opportunities to engage in work that support your own professional development.
- Undertake training courses provided by the University and by NCEO.

### Impact and Knowledge Exchange:

- Network and contribute to the maintaining and furthering of the wider NCEO research programme and research area.
- To engage positively and pro-actively in research impact.

### Leadership and Citizenship:

- Pro-actively build networks and collaborations.
- Providing mentoring and coaching to Early Career Researchers and research students.





**Internal and External Relationships**

- You will work closely with Dr Robert Parker, the rest of Earth Observation Group at Leicester, and NCEO colleagues working on the NCEO International Science Programme.
- Frequent collaboration with international project partners.

**Planning and Organising**

You will be required to effectively manage your time to plan your research activity and to deliver on the priorities of the project:

- Responsible for planning own workload with support and guidance from Lead Scientist;
- Plan for specific aspects of research incorporating issues such as deadlines, project milestones and overall research aims;
- Adapt daily and weekly plans to accommodate new developments and be flexible to the changing priorities of the research project;

**Qualifications, Knowledge and Experience**

**Essential**

- Hold (or soon to obtain) a PhD in a relevant research field, such as environmental science with ideally physics, maths or geography background
- Good or emerging publication record with significant contributions to co-authored papers\*
- Evidence of analytical problem-solving capability

**Desirable**

- Research experience in Earth System science or Earth Observation
- Experience working with satellite-based retrieval algorithms\*
- Knowledge of atmospheric CO<sub>2</sub> and CH<sub>4</sub> or related carbon cycle processes\*
- Experience communicating research results at international conferences

**Skills, Abilities and Competencies**

**Essential**

- Ability to generate own research ideas
- Ability to meet project deadlines
- Python programming knowledge\*
- Evidence of continued development of subject expertise





- Excellent communication skills – written and verbal evidenced by the ability to communicate complex information \*
- Evidence of working effectively as part of a team and the ability to work independently \*
- Working towards independence and ability to be involved in collaborative research
- Working within a team and with a range of collaborators

### Desirable

- Familiarity with optimal estimation retrieval theory\*
- FORTRAN programming knowledge
- Familiarity with using Linux/Unix in a HPC environment\*

### *\*Criteria to be used in shortlisting candidates for interview*

### Reason for Fixed Term Contract

The reason for the fixed term contract is stated in section 1.9 in the summary of contractual terms in your contract of employment.

### Criminal Declaration

If you become an employee, you must inform your manager immediately, in writing, if you are the subject of any current or future police investigations/legal proceedings, which could result in a criminal offence, conviction, caution, bind-over or charges, or warnings.

### Supporting University Activities

As a University of Leicester citizen, you are expected to support key university activities such as clearing, graduation ceremonies, student registration and recruitment open days. We expect all staff as citizens to work flexibly across the University if required.

### University Values

**Inclusive** - We are diverse in our makeup and united in ambition. Our diversity is our strength and makes our community stronger.

**Inspiring** - We are passionate about inspiring individuals to succeed and realise their ambitions. We challenge our community to think differently, to get involved, and to constantly embrace new ideas.

**Impactful** - As Citizens of Change we will generate new ideas which deliver impact and empower our community

### Equality and Diversity

We believe that equality, diversity and inclusion is integral to a successful modern workplace. By developing and implementing policies and systems that challenge stereotypes across all aspects of our work, we have a culture that recognises and values the diverse contributions of our staff which benefits





everyone. Our strong values of inclusivity and equality support our efforts to attract a diverse range of high quality staff and students, and identify our University as a progressive and innovative workplace that mainstreams equality, diversity and inclusion.

