



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

**NCAS Research Fellow in Polar Observational Meteorology,
National Centre for Atmospheric Science, Faculty of Environment**



Salary: Grade 7 (£35,333 to £42,155 p.a.)

Reference: ENVEE1595

Fixed term for 18 months due to external funding

We will consider job share/flexible working arrangements

NCAS Research Fellow in Polar Observational Meteorology, National Centre for Atmospheric Science, School of Earth and Environment, Faculty of Environment

Are you highly motivated with a background in atmospheric science, polar meteorology, remote sensing, physics or a related field? Would you like to be part of an exciting and internationally leading atmospheric science project in Greenland? If so, we'd love to hear from you!

The National Centre for Atmospheric Science (NCAS) and University of Leeds (UoL) is seeking an observational atmospheric scientist to take a leading role in the newest phase of the Integrated Characterization of Energy, Clouds, Atmospheric state, and Precipitation at Summit (ICECAPS) project.

The ICECAPS project has been operating continuously at Summit Station, Greenland since 2010. The project operates a sophisticated suite of ground-based instruments year-round for observing clouds, precipitation, and atmospheric structure, which includes a radar, two lidars, a ceilometer, two microwave radiometers, an infrared spectrometer, a sodar, precipitation sensors, and routine radiosondes. ICECAPS has amassed a large dataset over ten years, which has enabled novel research on cloud properties, radiation and surface energy, trace-gases, and precipitation processes over the Greenland Ice Sheet (GrIS). ICECAPS observations have contributed to process-based model evaluation, instrument retrieval development, and the acquisition of operational radiosonde data for weather forecast models.

In 2018, ICECAPS was expanded to include an Aerosol-Cloud Experiment (ACE) through a Natural Environment Research Council (NERC) funded collaboration with NCAS and the University of Leeds, which led to the deployment of additional instruments to measure aerosol concentrations and near-surface turbulent fluxes. This work has resulted in increased understanding of what controls the concentration of aerosols near the surface of the central GrIS, and how these aerosols may limit cloud formation.

This position will be focused on the newest phase of ICECAPS, entitled ICECAPS-MELT. MELT stands for "Measurements along Lagrangian Transects" and this phase of the project will expand the ICECAPS-ACE measurements from Summit along a transect across the percolation zone in SW Greenland. It will focus on investigating



processes that affect the surface mass and energy budgets as a function of elevation. As such, the work this role will support is divided between two major goals to:

- 1) Continue operation of the ICECAPS-ACE experiment at Summit Station,
- 2) Conduct a pilot program that will expand ICECAPS-ACE observations into the percolation zone, where a new autonomous observatory will be deployed for measuring surface mass and energy budget parameters.

This work is motivated by the fact that the coupled-system modelling community for Greenland frequently expresses the need for better measurements to improve weather and climate models for Greenland. The timing and the spatial distribution of precipitation are important because they diverge in different models in early summer, which then have a large impact (through the surface albedo and surface energy balance, SEB) in subsequent melt later in summer. The effect of clouds on surface radiation and the importance of snow deposition and erosion on snow surface microstructure across Greenland have also been emphasised.

Thus, the observations provided by the achievement of these goals will allow us to pursue the following critical science questions:

- 1) How do atmospheric and cloud properties vary on inter-annual time scales over the past decade at Summit Station? How are these properties influenced by synoptic variability in both the dry-snow and percolation regions of the GrIS?
- 2) What are the balances of the components of the surface mass and energy budgets as a function of elevation on the GrIS? How does the subsurface heat flux respond to atmospheric forcing as a function of elevation?
- 3) How is snowpack evolution (local mass balance) at different elevations influenced by synoptic forcing and the SEB? Under what conditions does melt water percolate versus freeze in the snowpack?
- 4) How do parameters of the surface mass and energy budgets co-vary in time? Do patterns of co-variability exist on similar temporal and spatial scales?

You will be joining the ICECAPS and NCAS team in Leeds and will work closely with the larger internationally-based ICECAPS team to achieve these goals. This will include visits to our collaborators and to our measurement sites in Greenland.



What does the role entail?

As an NCAS Research Fellow in Polar Observational Meteorology, your main duties will include:

- Working with and in support of Dr Ryan Neely, Professor Ian Brooks, Dr Barbara Brooks to ensure the project is successfully completed;
- Being an active participant of the international ICECAPS team and helping with the development, deployment and validation of the new autonomous measurement platform;
- Maintaining the UoL-ICECAPS instruments and data streams from the instrument to the data archive. This work will include hands-on technical interactions with the instruments, initial data processing, quality control, and data management of large data sets;
- Liaising with the National Science Foundation (NSF) logistics coordinators and technicians at the Greenland sites in a timely manner;
- Liaising with the UoL and NCAS to ensure the UK ICECAPS project is following best practices and safety procedures;
- Fully documenting instrument protocols and procedures;
- Generating and conducting original analyses of ICECAPS observations that lead to published peer-reviewed manuscripts (the expectation is for this role to lead to at least 1 manuscript per year);
- Developing research objectives and proposals and contributing to setting the direction of the research project and team including, where appropriate preparing proposals for funding in collaboration with colleagues;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own work;
- Communicating or presenting research results through publication or other recognised forms of output;
- Working both independently and also as part of a larger team of researchers, engaging in knowledge-transfer activities where appropriate and feasible;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;
- Contributing to the research culture of NCAS and the University, where appropriate;



- Contributing to the training of both undergraduate and postgraduate students, where appropriate, including assisting with the supervision of projects in areas relevant to the project.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

What will you bring to the role?

As an NCAS Research Fellow in Polar Observational Meteorology, you will have:

- A PhD (or be close to completing), or equivalent experience in atmospheric science, polar meteorology, physics, or a closely related field;
- A track record of high quality peer-reviewed publications focusing on the analysis of surfaced-based polar observations of aerosol and clouds;
- Polar field experience with a good appreciation of the necessary preparation, logistics and risks associated with working in these extreme conditions;
- Practical technical knowledge of and experience with surface-based atmospheric instrumentation; such as, but not limited to, optical particle counters, condensation particle counters, thermistor strings, eddy covariance flux systems, active remote sensing instruments (e.g. aerosol lidar, sodar and cloud radar), and passive remote sensing instrumentation;
- Experience working with Python and Unix/Linux;
- Familiarity with High Performance Computing (HPC) processing environments, for example JASMIN;
- Ability to plan, organise, prioritise, and manage your work effectively; meeting tight deadlines and working effectively under pressure;
- Proven ability to work effectively as part of a collaborative research team;
- Excellent written and verbal communication skills including presentation skills, with the ability to communicate effectively with a wide range of stakeholders;
- A willingness to undertake extensive periods of travel to contribute to field experiments (i.e. Greenland). Generally, there will be one deployment of up to 8 weeks away each year.



You may also have:

- Advanced certifications or training in, for example first aid, working at height, instrumentation or other similar skills which may benefit the team when you are deployed in remote areas of Greenland;
- Experience of basic electronics (for example, soldering, making up cables/connectors, etc);
- Experience in archiving datastreams to publicly available repositories;
- An ability to understand and use dispersion modelling tools (e.g. FLEXPART).

How to apply

You can apply for this role online; more guidance can be found on our [How to Apply](#) information page. Applications should be submitted by **23.59** (UK time) on the advertised closing date.

Please note: If you are not a British or Irish citizen, from 1 January 2021 you will require permission to work in the UK. This will normally be in the form of a visa but, if you are an EEA/Swiss citizen and resident in the UK before 31 December 2020, this may be your passport or status under the EU Settlement Scheme.

Contact information

To explore the post further or for any queries, you may have, please contact:

[Dr Ryan Neely III](#), Associate Professor of Observation Atmospheric Science

Tel: +44(0)113 343 6417

Email: ryan.neely@ncas.ac.uk



Additional information about the National Centre for Atmospheric Science

Find out more about the [National Centre for Atmospheric Science](#) and [its relationship with the School of Earth and Environment](#)

NCAS is committed to proactively encouraging an environment where diversity is celebrated and everyone is treated fairly, regardless of gender, gender identity, disability, ethnic origin, religion or belief, sexual orientation, marital or transgender status, age, or nationality.

Applications from under-represented groups in science research and administration are especially encouraged.

Additional information about the University

Find out more about the [School of Earth and Environment](#)

Find out more about the [Faculty of Environment](#)

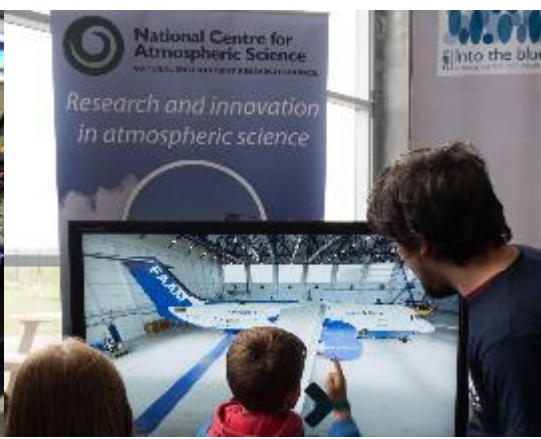
Find out more about our [Research and associated facilities](#)

Find out more about [equality](#) in the Faculty.

A diverse workforce

As an international research-intensive university, we welcome students and staff from all walks of life and from across the world. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the Faculty of Environment, we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian and ethnically diverse people; people who identify as LGBT+; and people with disabilities. Candidates will always be selected based on merit and ability.

The Faculty of Environment has received a prestigious Athena SWAN silver award from [Advance HE](#), the national body that promotes equality in the higher education sector. This award represents the combined efforts of all schools in the Faculty and



shows the positive actions we have taken to ensure that our policies, processes and ethos all promote an equal and inclusive environment for work and study.

Working at Leeds

We are a campus based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our [Working at Leeds](#) information page.

Candidates with disabilities

Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our [Accessibility](#) information page or by getting in touch with us at disclosure@leeds.ac.uk.

Criminal record information

Rehabilitation of Offenders Act 1974

A criminal record check is not required for this position, however, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be, in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our [Criminal Records](#) information.

