



Northumbria University PhD students Ishbel Carlyle and Dylan Weston

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Northumbria students selected for prestigious space weather summer school

Two PhD students from Northumbria University are taking part in a highly competitive space weather summer school at the world-renowned [Los Alamos National Laboratory \(LANL\)](#) in New Mexico, USA, this summer.

Ishbel Carlyle and Dylan Weston are spending two months at the research facility, known globally for its cutting-edge scientific research and historic contributions to national security, energy, and environmental science.

Their selection reflects the growing international recognition of Northumbria's excellence in [space weather research](#).

The [LANL summer school programme](#) offers a rare opportunity for students to gain hands-on experience with state-of-the-art research tools, including some of the world's fastest supercomputers and unique datasets.

During their time at LANL, Ishbel and Dylan will undertake intensive research projects, attend lectures, and work alongside leading experts in the field.

They have both been awarded a prestigious Vela Fellowship, valued at \$14,000, around £10,500, which covers their travel and living expenses.

Both students were encouraged to apply by their PhD supervisor, [Professor Jonathan Rae](#), with the rigorous application process including a detailed project proposal and three letters of recommendation.

Their selected projects closely align with their ongoing PhD research and Northumbria's broader contributions to understanding the dynamic interactions between the Sun and Earth.

Ishbel Carlyle, who also works with Kielder Observatory and is taking a short leave of absence to attend, will focus her research on the onset of auroral substorms – the moment before auroras erupt into the dramatic, swirling displays that are both visually stunning and potentially hazardous to satellites and power grids.

“The aurora is on many people's bucket list, but behind that beauty is some powerful physics that can seriously affect our technology and infrastructure,” Ishbel said. “This project will allow me to explore that trigger point just before the aurora intensifies, which could help improve early warnings for both scientific and public use.”

Dylan Weston's project uses data from NASA's Van Allen Probes and will incorporate new datasets available at LANL to help improve models for forecasting space weather events.

He said: “I'm looking forward to expanding my skills in a new research environment. The history of Los Alamos is a huge draw – to work where so

much groundbreaking science has happened is incredible. It's also a chance to apply what I've learned in academia in a more industrial and governmental setting, which is invaluable for the future."

Both students' work fits into the wider national and international effort to better understand and predict the impacts of space weather on modern technology, particularly as interest in space-based infrastructure and tourism grows. Their participation at LANL underscores Northumbria University's role at the forefront of this research, building on previous successes with students attending in 2017 and 2022.

Professor Rae, who encouraged their applications, said, "We're incredibly proud of Ishbel and Dylan. Their selection reflects the strength of their work, and the momentum Northumbria is building in space weather research. Opportunities like this show our students are not only engaging with cutting-edge science but helping shape its future."

Northumbria University is powering the next generation of space innovation, working across a multitude of specialist areas, from [space physiology](#) and [solar and space physics](#), to [satellite communications](#) and [space law and policy](#).

Northumbria collaborates extensively with partners including UK Research and Innovation, the UK Space Agency, the UK Met Office, and over 40 other industrial partners.

In 2023, the University announced the development of the new [North East Space Skills and Technology Centre](#) (NESST), which is expected to open in 2026.

Described as a "game-changer" for the UK space economy, NESST is the result of a £50 million investment with partners including the UK Space Agency and Lockheed Martin UK Space. The Centre will bring together industry and academia to collaborate on internationally significant space research and technological developments, creating over 350 jobs and injecting over £260 million into the North East economy over the next 30 years.

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