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Northumbria glaciologist secures funding for European Alps research

A Geography researcher will spend his summer doing fieldwork in the Miage Glacier after receiving a grant from the British Society of Geomorphology.

Dr Matt Westoby will travel to the Italian Alps to research how climate change is affecting the region's glaciers and mountain ranges after being awarded an Early Career Researcher Grant. His research will utilise advances in technology such as unmanned drones and photogrammetric surveying to focus on glaciers with a layer of debris on their surface. These so-called 'debris-covered glaciers' respond very differently to climate change than

'clean ice' glaciers. The 'debris' generally comes from the mountain slopes with frequent rock falls onto the glacier surface being one of the common causes.

Dr Westoby said: "Traditional methods to monitor just how much and how frequently debris is added to these glacier surfaces are typically indirect, such as digging pits in the surface debris, measuring its thickness, and using these data to estimate a debris flux. This is an extremely labour-intensive undertaking.

"Instead, this research will use a low-cost unmanned aerial vehicle (UAV) and cutting-edge advances in photogrammetric surveying technology to undertake repeat surveys of rock fall source areas in order to refine our estimates of how quickly these slopes are back-wasting and contributing to the growth of the surface debris cover."

The results of this research will contribute to numerical modelling to explore how such glaciers will respond to climatic change. It is hoped that the research will prime future projects in areas such as the Himalayas.

Dr Westoby is a Postdoctoral Research Assistant in the [Department of Geography](), at Northumbria, and is currently employed on a NERC-funded project to reconstruct the glacial history of the Heritage Range, Antarctica. He is also involved in consultancy-based coastal erosion monitoring for South Tyneside District Council alongside staff in the [Department of Mechanical and Construction Engineering](). His research interests are broad and varied and have to date included the 3D reconstruction and analysis of glacial landscape evolution using original surveying technologies as well as numerical modelling of catastrophic Himalayan glacial lake outburst floods. He has undertaken glaciological fieldwork in the European Alps, Norway, and the Nepal Himalaya.

The British Society for Geomorphology is a registered charity with a mission of fostering geomorphological research and outreach. It administers a range of grants to support geomorphological research by postgraduates and early-career and established researchers. For more information see [www.geomorphology.org.uk]()

Northumbria offers a range of courses in Geography and is ranked Top 30 in the UK based on research power following the results of the Research

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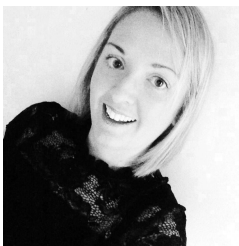rachael.barwick@northumbria.ac.uk
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