

SUMMATIVE REPORT ON 'EXPLORING POLAR ENVIRONMENTS' DAY 2023Roseanna Mayfield ^{1,2}¹ School of Geography Politics and Sociology, Newcastle University² Division of Agricultural and Environmental Sciences, School of Biosciences, University of Nottingham

roseanna.mayfield@nottingham.ac.uk

Motivation for the event

Representation of BIPOC (black, indigenous people of colour), women, and other minority people in geoscience is severely lacking, most significantly in polar sciences. For example, 16% of the UK population are BIPOC, yet only 3% of polar scientists are BIPOC (British Antarctic Survey, 2022). Polar sciences have a poor history of inclusivity, with field research being entirely dominated by white males until as late as 1980, when the first British female scientist conducted research in Antarctica (British Antarctic Survey, 2022).

Increased diversity can benefit scientific advancements through expanding perspectives and approaches to problem solving (Bernard and Cooperdock, 2018; Medin and Lee, 2012). Yet, underrepresentation is apparent at all stages of academic research, from undergraduate level to research staff to professorial level (Ghosh, 2021). Addressing this lack of diversity begins at a grass-roots level, by increasing participation of underrepresented groups in environmental and polar sciences at secondary school and undergraduate level and encouraging them to pursue further education in these areas.

In November 2023, Drs Bethan Davies and Roseanna Mayfield led an 'Exploring Polar Environments' event at Newcastle University. This day, targeting school children from diverse local schools, was designed to promote greater equality, diversity, and inclusion in polar sciences, and expand on the significant work carried out by the British Antarctic Survey, Polar Regions Department of the UK Foreign, Commonwealth and Development Office, and Polar community, including UK Polar Network. A previous event was held at Royal Holloway University of London in March 2022 (Jenkins et al., 2022). We

wanted to build on this success by hosting an event to engage with secondary schools in the North East.

The schools

The event was attended by over 200 pupils (years 9, 10, and 11) from nine local secondary schools in NE England. These year groups were selected to target pupils at a stage where they make pivotal decisions about their future careers. Schools with the highest proportion of pupils from BAME backgrounds and >50% pupils on free school meals were prioritised.

The event*Location and partners*

The 2023 'Exploring Polar Environments' Day was hosted at Newcastle University and The Great North Museum: Hancock, in collaboration with Durham University and University of Northumbria. In addition, the event was supported by the British Antarctic Survey (BAS), British Geological Survey (BGS), Centre for Polar Observation and Modelling (CPOM), Environmental Systems Research Institute (ESRI), Quaternary Research Association (QRA), Royal Geographical Society (RGS), Royal Holloway University of London, University of Liverpool, University of St Andrews, and UK Polar network (UKPN). The day was selected to coincide with Polar Pride Day (18th November 2023).

Volunteers

The day was supported by over 70 unpaid volunteers from Newcastle, Durham, Northumbria, and Royal Holloway universities, The Great North Museum: Hancock, BAS, BGS, CPOM, ESRI, and UKPN. The event was a genuine collaboration between institutions and organisations, brought together by their



Figure 1. Advert sent to schools and collaborators, and used to attract volunteers.

specialisms and passion for polar sciences. Volunteers ranged in career stage from undergraduate to senior professor, with a large number of postgraduate and early career researchers participating.

Structure of the day

The Polar Environments Day was structured around four central pillars:

- campus tour
- panel discussion on polar fieldwork
- panel discussion on polar careers
- interactive exhibition.

Campus tour

Local (undergraduate and postgraduate) students guided school groups around the Newcastle University main concourse, providing a personalised insight into university life. The tour showcased the Students Union, theatre, cafés, historical buildings, sculptures and artwork, gardens, and lecture buildings. The purpose of the tour was to provide deeper insight into university as a concept, demonstrate the availability of extracurricular opportunities, and may have been the students first experience of a university.

Panel events

The event held panels focusing on careers and fieldwork. Panellists were carefully selected based upon career stage, pathways, and experience (Table 1). For example, some of our career panellists have worked aboard, in industry, grew up in an Arctic community or the North East, or followed an Academic Summer School pathway to access university. Fieldwork panellists have experience working across both poles, including in Greenland, Scandinavia, Svalbard, Iceland, and Antarctic.

Exhibition

Table 1. Panellists selected to discuss career pathways and working as a field scientist.

Careers panel			
Chair	Prof Rachel Carr	Professor of Glaciology	Newcastle University
Panel	Dr Ingrid Medby	Senior Lecturer in Human Geography	Newcastle University
	Dr Christine Batchelor	Lecturer in Physical Geography	Newcastle University
	Dr Inès Ootosaka	Lecturer in Physical Geography	Northumbria University
	Dr Grace Nield	Post Doctoral Research Associate	Durham University
	Dr Devin Harrison	Marine Geoscientist	British Geological Survey
Fieldwork panel			
Chair	Dr Stewart Jamieson	Professor of Geography	Durham University
Panel	Dr Stephen Roberts	Quaternary Geologist	British Antarctic Survey

Dr Caroline Clason	Assistant Professor of Physical Geography	Durham University
Dr David Small	Assistant Professor (Research)	Durham University
Dr Sammie Buzzard	Director for Knowledge Exchange	CPOM, Northumbria University
Dr TJ Young and Ms Emma Cameron	Lecturer in Physical Geography and PhD Student	University of St Andrews. (Contributed remotely from Antarctica).

An interactive exhibition was held in The Great North Museum: Hancock to offer pupils the opportunity to complete hands-on experiments with experienced scientists and ask questions (Figure 2). Stalls covered a wide range of topics including melting ice, palaeoecology, biomarker trace fossils, biological adaptations, indigenous communities, and the role of satellites, artificial intelligence, and machine

learning in polar research. BAS provided a tent and field clothing offering the pupils to experience the practicalities of fieldwork in cold areas. There were stalls on menstruation health in the field, and celebrating past explorers and current LGBTQIA+ people in polar research.

Goody bags



Figure 2. Photographs from the exhibition halls. **A.** Addy Pope from ESRI talks about Geographical Information Systems. **B.** Dr Emma Pearson (Newcastle University) tells pupils about ancient chemical fossils of poo found in lake mud. **C.** Dr Owen King (Newcastle University) shows pupils images of melting mountain glaciers. **D.** Dr Louise Callard (Newcastle) introduces school groups to microscopic marine organisms and plant pollen which can be used to understand past climate and environmental change. **E.** Dr Ellie Honan (Durham/ BAS) shows pupils menstruation options which can be used in remote field settings. **F.** Dan Gordon (The Great North Museum: Hancock) talks about biological adaptations to living in cold regions.

As a souvenir of the day, each pupil received a “goody” bag with free educational materials and “goodies” from our supporting organisations. Goodies included pens, notepads, postcards, stickers, QRA and polar pride pin badges, bags, microfibre cloths, webcam covers, information leaflets, and water bottles (Figure 3). We included a detailed programme to provide the pupils with a written record of the day and help them recall their favourite parts. School teachers received “goody” bags and a USB

memory drive with educational and teaching resources designed for key stage 4/5 Geography students, and information on studying Geography at university and enrichment days at The Great North Museum: Hancock.

Catering

We provided free break time snacks and packed lunch for all attendees. This was one of our largest expenditures; however, it was important to us as

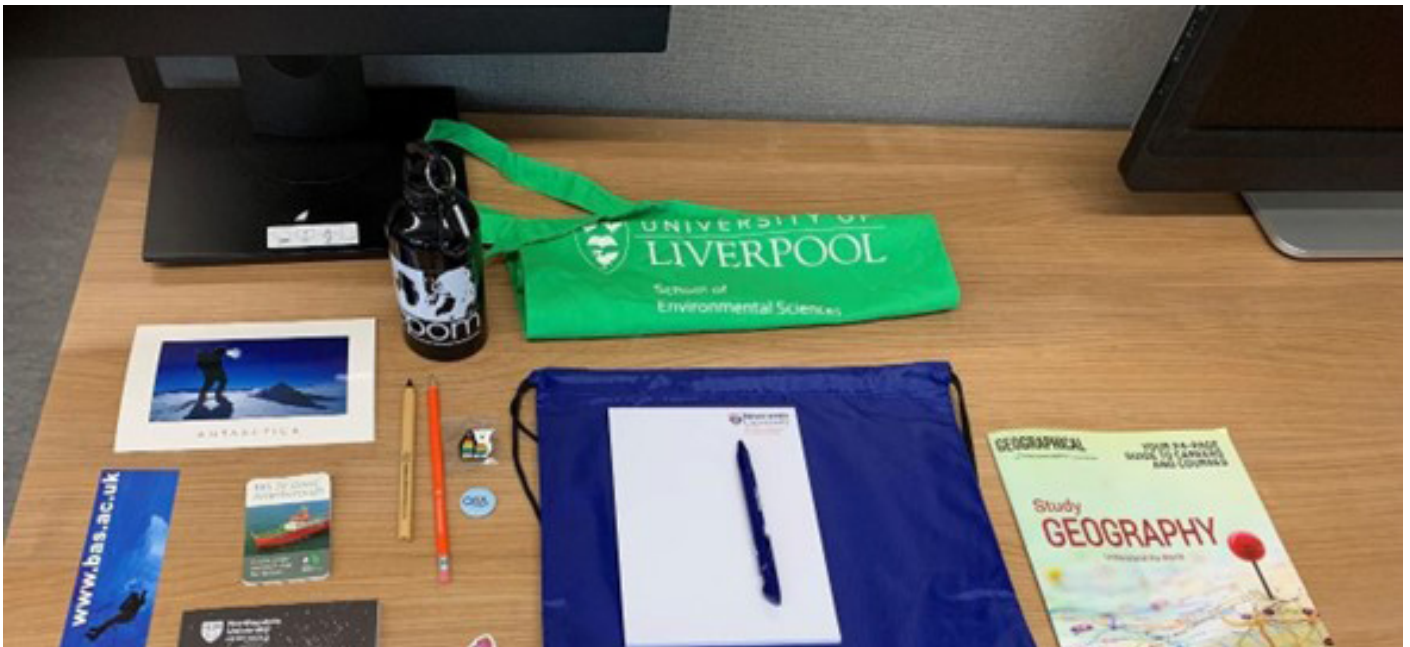


Figure 3. A selection of the materials included in the “goody” bags.

organisers as schools in the NE of England have the highest rate (29.1%) of pupils eligible for free school meals (Adams, 2022) and a large proportion (1 in 4) of school-aged students are living in poverty yet are not eligible for free school meals (Children North East, 2022). We felt supporting student attendance through lunch was essential, as we were concerned a high percentage of attending pupils would otherwise miss their free school meal, be hungry, or not attend.

Feedback on the event

Feedback indicated that 71.3% of pupils and teachers rated the day as 4 or 5 out of 5. The exhibition/museum, careers information, campus tour, talking to scientists, and free gifts were very popular with the pupils. Teachers asked for the event to be run again. Unfortunately, the least popular aspect of the day was the lunches.

The pupils particularly enjoyed the unique opportunity to interact with scientists and explore the interactive stalls (68 pupils, 39.3%, listed the exhibition as their favourite part). Pupils particularly enjoyed the “interactive” nature of the exhibition, the “range of displays/activities”, and how “friendly” the scientists were. A wide range of stalls were listed as favourites, including the BAS tent, bird and fish life, origami, cool images, polar gear, “the guy with a screen who makes maps”, microscopes, drones, and artefacts. Thus, indicating we succeeded in providing a wide range of activities to capture their interests.

Learning about careers was a common response in the feedback. Pupils commented: “the panellists were

kind and engaged with the crowd”, they appreciated the “honesty and openness of the panel”, and enjoyed learning about “why they became polar explorers” and “all the careers in geography”. Comments on “the opportunity to ask questions and get the answers” came up for all aspects of the day, and there were numerous references to the helpfulness of the university student guides.

Funding and expenditure

We received £10,000 funding to support this event: with £9000 from the three local universities and £1000 from the QRA. Funding was used to provide accommodation and transport costs for visiting keynote speakers, transporting BAS equipment, pay an administrative assistant to organise the event, and provide catering on the day. The funding from the QRA was used to support school attendance (e.g., transport costs).

Acknowledgements

This event could not have occurred without the immense support of very many people. Special thanks go to Dr Bethan Davies for all her work in making the day a success. Thank you to the QRA, Newcastle University, Durham University, University of Northumbria, and the Centre for Polar Observation and Modelling for their generous funding and support. Thank you to all the organisations who provided “goodies” for the goody bags. Specific thanks to the Newcastle University technical team for all their support in the organisation and running of the event. Thank you to the Newcastle University conference team, The Great North Museum: Hancock team,

Inclusive Newcastle team, the widening participation teams at Newcastle, Durham and Northumbria universities, and every one of the volunteers who so generously gave their time, energy and commitment to make the event a success.

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