**NERC update for UKNCAR – July 2025**

## Strategic Science

**Highlight Topics:**
The evaluation of this funding round has taken place, and the results have been to Science Committee. The outcome will be announced in due course.

**Large Grants:**
It is the current intention to announce the next Large Grants outline funding opportunity in autumn 2025.

**Other active NERC polar research programmes:** (more information available if interested)

- International Thwaites Glacier Collaboration (ITGC)
- Sensitivity of the West Antarctic Ice Sheet to 2 Degrees Celsius of Warming (SWAIS2C)

## Other areas of interest and investment

**Digital environment:**

- The Earth Observation Investment Package (EOIP) has funded 19 additional Satellite Data in Environmental Science (SENSE) PhD studentships and supported 5 training courses on the Use of Machine Learning and AI in EO. Following early discussions at the SENSE Steering Committee in October 2024, the SENSE team are currently working with UK Space Agency (UKSA) on how best to feed into future EO discussions at UKSA.
- The Environmental Data Service (EDS), which includes the NERC Polar Data Centre, successfully passed a stage-gate assessment on 26th February and is being awarded an additional £500K in FY 25/26 from the UKRI Digital Research Infrastructure Fund to enhance data service provision for data flows from sensor networks via the AMPLIFY project. The programme aims to develop functional sensor data pipelines for active use cases thus demonstrating the capability.
- Innovation in Environmental Monitoring: 13 projects (£7m) have been funded under the funding opportunity in partnership with Defra, and as part of a wider programme of activity also with IUK (£13m in total). Successful projects are progressing well for both the NERC-led and IUK-led projects. An event was held in February 2025 bringing together award holders, policy makers and UKRI staff to support the community to collaborate across disciplines and end users' applications.
- The aim of the UKRI AI CDT is to deliver high quality, cohort-based doctoral training in the applications and implications of novel and existing AI technologies. Funding decision was made in autumn 2023 (https://www.ukri.org/what-we-do/how-we-work-in-ai/ukri-artificial-intelligence-centres-for-doctoral-training/ and https://www.ukri.org/news/ukri-invests-in-the-next-generation-of-ai-innovators/) to award £117m for 12 new CDTs based at 16 universities. NERC is leading on the relationship with the 'Intelligent Earth' (Oxford) and 'AI for Sustainability' (Southampton) CDTs on behalf of UKRI. The second cohort of Intelligent Earth applications closed on the 8th January 2025 (https://intelligent-earth.ox.ac.uk/how-apply). The AI for Sustainability Independent Advisory Board met on the 17th June in Southampton.
- Natural Environment Digital Twins: NERC, in partnership with the Met Office, previously awarded £2.8m in funding to 5 projects to develop digital twins of the ocean, ocean glider observations, operational flight of a research aircraft, water-related hazard forecasting and wave overtopping (https://www.ukri.org/news/digital-twin-projects-to-transform-environmental-science/?utm_medium=email&utm_source=govdelivery). All projects within this programme ended at the end of February 2025 and the end of programme event was held at the end of March 2025.
- Funded projects from the Automated Image Analysis for biodiversity monitoring programme focus on supporting the development of software systems for image analysis in the laboratory and in the field, to maximise the value of physical imaging technologies, are currently ongoing. In January 2025 a Programme Check-In Meeting was held for all AIAB Project Leads and their teams which was well received. Outcomes of this meeting were evidence of further and strengthening collaboration between Projects. NERC has provided a collaboration space for Projects to work together going forward.

- UKRI Digital Research Technical Professional Skills NetworkPlus – A £9.5m programme which NERC is administering on behalf of UKRI which directly contributes to the people and skills theme of the UKRI Digital Research Infrastructure programme. Following shortlisting and interview panels at the end of 2024, five NetworkPlus grants have been awarded which bring together disciplines, sectors, and domains to address cross-cutting challenges related to digital RTP skills and careers.
- The NZ DRI Network proposal was approved for funding in Dec 2024. The award is for £3.96m over 39 months and the programme started in January 2025. The co-coordinators held the first 'Network for sustainable Digital Research Infrastructure Vision and Expertise (NetDRIVE)' meeting in London in Feb 2025. This led to the development of the first funding call, and a call for Champions within specific thematic areas both of which are now closed. The NZ DRI Network Programme Board, which is responsible for overseeing the NetDRIVE programme and providing advice to ensure successful delivery of the programme's objectives, met for the first time on 21st March 2025.
- Since the launch of the Digital Strategy in 2022, NERC has been developing our strategic view of what is needed to revolutionise the use of environmental information in the UK. The team are scoping a concept for a potential investment, 'Environmental Data Research UK', which could catalyse a transformation in the UK's use of environmental information and critical technologies to address the pressing problems of our age.

**Research Facilities in the NERC portfolio:**

- NERC funds a range of research facilities and large research infrastructures, many of which are directly relevant to this community, all of these can found here, where you can also find links to the individual facility pages, with more info on services provided and access mechanisms.
- A new page on the UKRI website has recently been launched to communicate an overview of the availability around marine facilities (RRS James Cook, RRS Discovery, RRS Sir David Attenborough and other major infrastructures within the National Marine Equipment Pool) for the period 2024-2029. The page will be updated regularly, but the community is invited to not rely solely on this overview but to get in touch to discuss their requirements.

**Other relevant news:**

- Pushing the Frontiers: The latest round of Pushing the Frontiers is open and closes 16 July 2025.

- NERC Forward Look: NERC have published its Forward Look for Environmental Science. Developed in collaboration with our community and stakeholders, the Forward Look sets out our research and innovation priorities and how we will support the underpinning capabilities needed to deliver our science over a ten-year horizon. The Forward Look contains high level themes: Green Growth; Environmental Security and; Responsible Innovation.

- The Funding Service (TFS): TFS is now supporting an end-to-end service for grant submissions and award. This will speed up the recent delays experienced in awarding grants.

**Report from UK Polar Data Centre (PDC) for UKNCAR June 2025**

The UK Polar Data Centre (PDC) is the UK's National Antarctic Data Centre. It provides a secure long-term repository for polar and cryospheric data. Data are made available, normally using the UK Open Government Licence (http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/), and can be provided with a DOI to allow proper citation of the data. This enables scientists to comply with the UKRI Open Access Policy. It forms part of NERC's Environmental Data Service (https://eds.ukri.org) which is commissioned on a five- year basis. This service is two years into its current commissioning cycle with funding running from 2023-2028. The PDC is certified by the CoreTrustSeal. This is an internationally recognised certification scheme for data repositories that signifies a repository is sustainable and trustworthy, following best practices to manage the data it holds. Our original certification to this scheme ended in 2024 and we submitted a new application demonstrating improvements we had made over the last three years. We have now received recertification until June 2028.

**SCADM**

The UK member on the Standing Committee for Antarctic Data Management is Helen Peat who attends monthly video calls and presents an annual report on UK polar data management activities. The terms of reference for SCADM can be found in Appendix A. SCADM produced a new data policy for SCAR (https://www.scar.org/library/products/scadm/5767-scar-data-policy-2022/file/) which has been endorsed by the SCAR executive and published in 2022.

One of its primary aims is to support National Antarctic Data Centres in making Antarctic data FAIR (Findable, Accessible, Interoperable and Reusable). Finding data is facilitated by the Antarctic Metadata Directory (https://search.earthdata.nasa.gov/search?portal=amd) which is a metadata catalogue provided by NASA's EarthData Directory. In addition, SCADM has worked with other polar data communities to produce a Polar Data Search facility (https://search.polder.info/). This is a federated catalogue that collates results from many underly data catalogues.

SCADM is keen to work more with SCAR's research programmes and can provide data management advice, particularly when the research programme includes development of a data product. You can get in touch with Helen Peat (hjpe@bas.ac.uk) or the SCADM Chief Officer, currently Johnathan Kool at the Australian Antarctic Data Centre, if you would like to find out more.

Directly in support of SCAR over the last year, the PDC has:

- worked closely with the BAS mapping group (MAGIC) to provide DOIs for all layers within the SCAR Antarctic Digital Database of topographic information.
- published the BEDMAP3 grid output of the SCAR BEDMAP3 Action Group and were involved in the accompanying data paper:

  Pritchard, H., Fretwell, P., Fremand, A. et al. (2024). BEDMAP3 - Ice thickness, bed and surface elevation for Antarctica - gridding products (Version 1.0) [Data set]. NERC EDS UK Polar Data Centre. https://doi.org/10.5285/2d0e4791-8e20-46a3-80e4-f5f6716025d2

  Pritchard, H.D., Fretwell, P.T., Fremand, A.C. *et al.* Bedmap3 updated ice bed, surface and thickness gridded datasets for Antarctica. *Sci Data* **12**, 414 (2025). https://doi.org/10.1038/s41597-025-04672-y

- attended and participated to SCAR project meetings to provide informal advice and recommendations on data management as part of the AntArchitecture, Antarctic Geological Evolution (AGE) and the Antarctic Geological Boundary Conditions (ABC) group which is part of INSTANT.

- led the creation of a guide to publishing data for the Polar Research Community. This guide has had over 600 views and 540 downloads since its publication in April 2025:
  SCAR Standing Committee on Antarctic Data Management (SCADM), Arctic Data Committee (ADC), & Southern Ocean Observing System Data Management Sub-Committee. (2025). A Brief Guide to Publishing Data for the Polar Research Community (1.0). Zenodo. https://doi.org/10.5281/zenodo.15167022

**SOOS**

The Southern Ocean Observing System (SOOS), an international initiative of the Scientific Committee on Antarctic Research (SCAR) and the Scientific Committee on Oceanic Research (SCOR), focuses on sustained and coordinated observations of the Southern Ocean.

PDC has contributed to the SOOS activities in a number of ways:

- Co-chairing the SOOS Data Management Sub-Committee (DMSC), who advise on the management and publishing of Southern Ocean data from multinational or multidisciplinary scientific data observation programs
- Publishing guidelines to Early Career Researchers for data discovery here.
- Contributing to the Polar Semantics and Vocabulary Working Group open letter to improve the use of semantics in polar research here.
- Contributing to establishing a dedicated GitHub workspace (here) and structured workflow to streamline publication of datasets into the SOOSmap data portal

SOOS collaborates with the SCAR Standing Committee on Antarctic Data Management (SCADM) and is represented at SCADM by Petra ten Hoopen (PDC) and Michaela Miller (SOOS Data Officer).

Helen Peat 30/06/2025

**Appendix A: The Terms of Reference[1] for SCADM are to:**

1. Promote long-term preservation and accessibility of data relating to Antarctica and the Southern Ocean in sustainable repositories.

2. Assist in establishing and implementing Antarctic data management policies, priorities and best practices, taking into account and contributing to global best practices.

3. Promote a distributed, interoperable network of accredited National Antarctic Data Centres (NADCs), in accordance with ATCM XXII Resolution 4.1 (1998)[2].

4. Encourage and enable the community to make data Findable, Accessible, Interoperable, and Re-usable according to the FAIR Principles[3] by submission of metadata and data to the Antarctic Data Management System (ADMS).

5. Further develop, design, implement, and improve the ADMS - a system that encompasses the Antarctic Master Directory (AMD), NADCs, other interoperable, networked data repositories, and key data discovery tools.

6. Provide linkages and improve interoperability with other relevant data management systems, initiatives, and repositories; and thereby enhance the accessibility of data relating to Antarctica and the Southern Ocean.

7. Provide guidance to the AMD host.

8. Work with other SCAR groups, Council of Managers of National Antarctic Programs, Committee for Environmental Protection, Commission for the Conservation of Antarctic Marine Living Resources, the Antarctic Treaty Secretariat, and other relevant groups to identify, develop, and publish fundamental datasets of value to the Antarctic Community.

[1] The procedural parts of SCADM's mandate are covered in SCAR's "Rules of Procedure for Subsidiary Bodies", see https://scar.org/scar-library/search/governance/780-rules-of-proc-subsidbodies-aug10/

[2] http://www.ats.aq/devAS/info_measures_listitem.aspx?lang=e&id=258

[3] https://www.force11.org/group/fairgroup/fairprinciples

**UKPN Report - UKNCAR June 2024 - July 2025**

1. **Name of group:** UK Polar Network
2. **Principle UK Researchers:** Lucy Stephenson, Dr Louise Mercer, Dr Sam Hartman-Evan's, Dr Connor Shiggins

3. **Major activities and progress:**

Throughout the year (2024-2025), we have been busy developing the next generation of early career researchers (ECRs) in polar science, promoting equality and diversity in polar science, and offering exciting outreach to the wider public about the polar regions. It is our first year as a registered Community Interest Company.

**Highlights:**

**SKILLSET at-sea fieldwork training aboard the RRS Sir David Attenborough**

UKPN ran the first training cruise aboard the SDA. It was run in collaboration with Association Polar Early Career Scientists (APECS) Iceland, offering training to 9 UK/Iceland ECRs on the passage from Harwich to Madeira. The varied programme included training across a range of scientific instrumentation and aspects of the scientific cruise process. Furthermore it included collaboration roadmapping for future research collaborations. Associated comms were very visible through contributions to 'Ticket to Antarctica' and some social media with high reach. Feedback from participants was extremely positive. This was funded using a grant from the NERC Arctic Office UK - Iceland collaboration programme.

**Polar Beers**

We ran the first 'Polar Beers' event in a Cambridge pub. It was attended by 40 people who heard talks from 2 polar scientists, and took part in a polar themed quiz. An illustrator has designed our new Polar Beers branding which sets us up to take Polar Beers to other locations around the country. This replaces our previous Polar Pint of Science events.

**Polar Fieldwork Workshop: Impacts and Responsibilities (13 - 14 March 2025)**

In collaboration with UK CEH and the Scott Polar Institute at Bangor University we ran a workshop which addressed the question '*what is the impact of polar research and should we be more rigorous in what and how we measure?*'. It was attended by ECRs enrolled in postgraduate programmes, who all participated in sessions on responsible fieldwork practices, ethics and impact, and evaluation methods.. Funded by NERC Arctic Office.

**Submitted evidence to Parliament Environmental Audit Committee Enquiry into 'The UK and the Antarctic'**

On behalf of UK Polar Science early career researchers we submitted evidence to the above enquiry. Read final report and our evidence here.

**Conferences, festivals, events:**

**Cardiff Science Festival and Nottingham Festival of Science and Curiosity (February 2025 Half Term week)**

- Overall >200 people engaged with UKPN over the two events.
- Interactive activities around polar concepts such as melting sea ice and albedo.

**UK Antarctic Science Conference (October 2024)**
UKPN had an impressive attendance. Members chaired sessions which was a great confidence boosting activity. Committee members helped run an EDI workshop and we had a poster.

**Arctic Science Summit Week (March 2025)**
Highly attended by UKPN members. Used as an opportunity to peruse long term collaborations.

**Polar Early Career World Summit (March 2025)**
Contributed to the organisation of a workshop about womxn and polar fieldwork. Collaborated with our other APECS counterparts.

**CCfCS (Cambridge Centre for Climate Science) Polar Symposium**
In collaboration with BAS and the Institute for Computing for Climate Science. Programme included posters, science focused talks, humanities focused talks and ECR talks. This was followed by an ECR workshop.

**CINUK (Canada Inuit Nunangat United Kingdom Arctic Research Program) AGM and ArcticNet, Ottawa**
Attended by our EDI committee members who learnt about research in collaboration with, and to benefit, Inuit indigenous communities.

**Online seminar series**
5 seminars have been held so far in our 2025 online seminar series. The themes/topics have been varied, and we've been lucky to have some very inspiring scientists give talks. Attendance has been varied

**Equality, Diversity and Inclusion:**

- UKPN EDI officers act as an early-career voice on the Diversity in UK Polar Science Initiative committee (DiPSI), and also advise/support other networks (Challenger Society, EDIG, Women in Polar Science etc).
- Collaborated with DIPSI to submit a large grant proposal to UKRI call around 'Opening the Environment'
- In November UKPN supported Polar Pride celebrations - promoting it via our social media networks and through stakeholder groups.

**Antarctic Flags & Pen Pals:**

- Our most successful year yet for Antarctic flags - 312 schools involved, which translates to around 1200 individual flags. They have been split between 48 researchers, ship crew, engineers etc and have so far had flags back from Rothera, Signy, Port Lockroy and various points in the ocean from the SDA. We have also had staff travelling on tourist vessels. This creates fantastic visibility of UK researchers in Antarctica and actively engages many children in Antarctica.
- Flags have been sent from 11 different countries including the UK, Poland, Hong Kong and Greece - and have been sent back to the schools.
- Flags from RRS Sir David Attenborough also included a fantastic letter to send to schools from members of the crew - which was a lovely touch.
- Polar pen pals has continued to be a popular scheme, with school children receiving letters about polar science from UKPN members.

**International Collaborations**

- Polar Pen Pals scheme in collaboration with APECS France
- Webinar around Peer Review in collaboration with APECS USA
- Active collaborations with APECS Uruguay, South Korea, Norway, Iceland and Canada

**4. Major future initiatives and actions**

- October fieldwork training course in Yorkshire, bringing 20 ECRs for a holistic programme including different sampling techniques, fieldwork planning techniques etc
- Accessibility of At-Sea Fieldwork ECR Opportunities publication in prep for PLOS climate special issue

- UK Arctic Science Conference - We are planning a workshop themed around knowledge sharing for the IPY
- Online book club in collaboration with APECS France, Luxembourg, Italy and the Netherlands
- Day long science communication workshop in November
- UKPN Roadshow - networking and outreach events being brought to multiple locations around the UK, giving us greater reach/impact

**6. Selected Publications**

Dance M, Duncan RJ, Gevers M, Honan EM, Runge E, et al. (2024) Coming in from the cold: Addressing the challenges experienced by women conducting remote polar fieldwork. PLOS Climate 3(6): e0000393.https://doi.org/10.1371/journal.pclm.0000393

**7. Funding Awards**

British Antarctic Territory funding
NERC Arctic Office UK-Iceland Partnership Programme

**UKNCAR Reporting 2025**

*Provide up to two pages of information following the structure below, only filling out those sections where there is new information to report. We are particularly interested in hearing of key activities (e.g. expeditions/cruises/projects) publications, policy outcomes, future initiatives that you would like publicised, or where UKNCAR could help a group/programme liaise with other parts of SCAR.*

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|---|---|
| 1. Name of SCAR Group or Programme | DiPSI- Diversity in Polar Sciences Initiative |
| 2. Principal UK Researchers | Co-chairs Sammie Buzzard, Bethan Davies, Millie Harding |
| 3. Major activities and progress since previous year involving UK personnel/infrastructure | Continuation of reporting on outcome of the socioeconomic survey data, presented at SCAR open science conference (Chile, summer 2024).<br><br>Bea Schlarb-Ridley and Martin Siegert have stepped down as co-chairs after several years of service to DiPSI. Bethan Davies and Millie Harding have now taken up positions, with Millie's role being a newly established ECR co-chair.<br><br>DiPSI hosted a discussion at the UK Antarctic Sciences meeting at BAS (October 2024) on moving DiPSI forward as a community.<br><br>NERC 'Opening up the environment' call application unsuccessful. Had hoped to fund a training and mentoring scheme to support the ECR-permanent career transition which has been identified several times by UKPN as an area where support is lacking. |
| 4. Major future initiatives and actions involving UK personnel/infrastructure | IPY- DiPSI are keen to have the next IPY be as successful for EDI as the previous was for ECRs so please do keep us linked in to UK plans where we're not already.<br><br>Seeking funding for a website (currently hosted by BAS but more flexibility/ ability to maintain ourselves is required). |
| 5. Policy outcomes | |
| 6. Selected publications | |
| 7. Funding awards | |
| 8. Points for discussion at UKNCAR committee meeting | Funding for EDI initiatives is very low (recent NERC 'opening up the environment' call was highly competitive and future money is restricted to those successful in round 1).<br><br>Inclusion of DiPSI in IPY planning (or have those involved in planning join DiPSI). |

**UKNCAR Reporting 2025**

*Provide up to two pages of information following the structure below, only filling out those sections where there is new information to report. We are particularly interested in hearing of key activities (e.g. expeditions/cruises/projects) publications, policy outcomes, future initiatives that you would like publicised, or where UKNCAR could help a group/programme liaise with other parts of SCAR.*

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| 1. Name of SCAR Group or Programme | ADMAP |
| 2. Principal UK Researchers | Jordan T. |
| 3. Major activities and progress since previous year involving UK personnel/infrastructure | Publication of aeromagnetic survey data from 2023/24 field season. Of specific interest as was collected using a large UAV, which could be used for similar aeromagnetic data collection in other regions with lower direct logistical overheads (fuel into the field). |
| 4. Major future initiatives and actions involving UK personnel/infrastructure | |
| 5. Policy outcomes | |
| 6. Selected publications | **Jordan, T. A. and T. R. Riley** (2024). "Reinvestigating the Dufek Intrusion, through joint gravity and magnetic models." Physics of the Earth and Planetary Interiors 356: 107268. - Key use of legacy ADMAP data with newer survey data to re-investigate this region.<br><br>**T.A. Jordan, C. Robinson, T. Reed, R. Toomey, N. Jelev, J. Waters, N. Fenney, A.I. Weiss, and M. Lowe**. (In press 2025) Successful deployment of a large uncrewed aerial vehicle UAV for multi-disciplinary science from Rothera Research Station, Antarctica; 2024 season overview and lessons learned. Antarctic Science. Doi. 10.1017/S0954102025000136<br><br>**Lowe, M., T. Jordan,** M. Moorkamp, J. Ebbing, C. Green, M. Lösing, T. Riley and R. Larter (2024). "The 3D Crustal Structure of the Wilkes Subglacial Basin, East Antarctica, Using Variation of Information Joint Inversion of Gravity and Magnetic Data." Journal of Geophysical Research: Solid Earth 129(10): e2023JB027794. |
| 7. Funding awards | |
| 8. Points for discussion at UKNCAR committee meeting | |

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| 1. Name of SCAR Group or Programme | AntArchitecture |
| 2. Principal UK Researchers | Robert Bingham (University of Edinburgh; steering committee chair); Tom Jordan, Carlos Martín (British Antarctic Survey); Felipe Napoleoni (University of Edinburgh); Neil Ross (Newcastle University); Kate Winter (Northumbria University); Felix Ng (University of Sheffield); Rebecca Sanderson (PhD student, Newcastle University); Bernd Kulessa (Swansea University); Harry Davis, Clara Nyqvist (PhD students, University of Edinburgh); David Ashmore (UK Met Office) |
| 3. Major activities and progress since previous year involving UK personnel/infrastructure | 1. The group's long-awaited "white paper" outlining science progress and visions in the AntArchitecture remit, is in press in *The Cryosphere*.<br>2. UK-based researchers have made further scientific progress in tracing englacial layers and advancing science in both East and West Antarctica.<br>3. We have run both of our annual international workshops (for 2024 and 2025) in the last reporting period:<br>a. August 2024 workshop in Valdivia, Chile<br>b. April 2025 workshop in Vienna, Austria<br><br><u>White paper</u><br>In having its "white paper" "Antarctica's internal architecture: Towards a radiostratigraphically-informed age–depth model of the Antarctic ice sheets" accepted by *The Cryosphere*, the Action Group has achieved one of its main goals set out at inception in 2018. The paper lays out a status report and vision for science that members of this group see taking us into further research contributions over the timescale of the next decade.<br><br><u>Ongoing science from UK researchers in reporting period</u><br>• Rebecca Sanderson (Newcastle University) successfully defended her PhD thesis on East Antarctic *radar-derived englacial stratigraphy and structure* in October 2024, and lead-published research in *Journal of Glaciology*.<br>• Martin Siegert (University of Exeter) has provided scientific leadership on 2 papers arising out of NERC-funded international ICECAP project research.<br>• Carlos Martín (BAS) has provided scientific leadership on 2 papers implementing numerical modelling to radiostratigraphic data in Antarctica.<br>• PhD students at University of Edinburgh from 2023, Clara Nyqvist and Harry Davis, are respectively generating datasets and research outcomes focusing on East Antarctica's Wilkes Land and West Antarctica's Ellsworth Land.<br><br><u>AntArchitecture Workshop 2024 & activities at SCAR 2024, Chile</u><br>The group hosted its first in-person (also hybrid) annual workshop since 2019, organised primarily by Felipe Napoleoni (University of Edinburgh) and hosted by the Centro de Estudios |

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| | Cientificas, Valdivia, Chile. ~50 delegates first updated one another on progress over the Action Group's lifetime and latest relevant science developments, and then discussed plans for the future including further early-career-researcher integration and leadership. The hybrid format worked very successfully thanks to great efforts from the local organisers.<br>At the associated SCAR OSC meeting in Pucon, UK researchers Bingham, Davis, Napoleoni, Nyqvist, Sanderson and Ross also took the opportunity to present AntArchitecture research over the week.<br><br><u>AntArchitecture Workshop 2025 & activities at EGU 2025, Vienna</u><br>The group hosted its *2025* in-person (also hybrid) workshop to coincide with EGU in Vienna (April 2025). This time the focus was squarely on planning for delivery of Action Group products for 2026, the current end of AntArchitecture's Action group timeline, and thinking of activities and the format of AntArchitecture beyond that timeline. The meeting highlighted the huge remaining potential and opportunities, and the overall vibrancy of the group for taking this further. Several of the UK team also presented AntArchitecture activities at EGU, including R. Bingham presenting a "Highlight Talk" directed to the IPICS/climate community (via a session Frontiers in Ice Core Sciences).<br><br>The group next plans to convene in connection with SCAR 2026 in Oslo, and is anticipating that at that meeting it may apply for Expert Group status. |
| 4. Major future initiatives and actions involving UK personnel/infrastructure | Our activities do not impinge on infrastructure other than our aspiration that they will direct future aerogeophysical surveys, and we stay in contact with the facility via Tom Jordan and Carl Robinson.<br><br>The group is also in active discussion, as it has been throughout its lifetime, with SCAR groups Bedmap and RINGS about synergies.<br><br>We would like to become more directly coordinated with IPICS and the international ice-sheet modelling community (which does not have a clear single grouping within SCAR). |
| 5. Policy outcomes | The group is not advanced enough to influence policy outcomes at this stage. |
| 6. Selected publications **UK authors in bold** | **Bingham, R. G.**; J. A. Bodart, M. G. P Cavitte, A. Chung, **R. J. Sanderson**, J. C. R. Sutter and 48 others including **N. Ross**, **D. W. Ashmore**, **C. Martín**, **F. S. L. Ng**, **F. Napoleoni**, **M. J. Siegert**, **K. Winter**, **H. Davis**, **T. A. Jordan, B. Kulessa** & **C. J. Nyqvist** (the AntArchitecture Consortium) (in press) Antarctica's internal architecture: Towards a radiostratigraphically-informed age–depth model of the ice sheet. *The Cryosphere*. |

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| | https://doi.org/10.5194/egusphere-2024-2593<br><br>**Sanderson, R. J.**, **N. Ross**, **K. Winter**, **R. G. Bingham**, **S. L. Callard**, **T. A. Jordan** & D. A. Young (2024) Dated radar-stratigraphy between Dome A and South Pole, East Antarctica: old ice potential and ice sheet history. *Journal of Glaciology,* 70**,** article e74.<br><br>Ershadi, M. R., R. Drews, J. L. Tison, **C. Martín**, A. C. J. Henry, F. M. Oraschewski, V. Tsibulskaya, S. A. Sun, S. Wauthy, I. Koch, P. D. Bons, O. Eisen & F. Pattyn (2024) Investigating the dynamic history of a promontory ice rise using radar data. *Journal of Glaciology,* 71**,** article e1. https://doi.org/10.1017/jog.2024.70<br><br>Henry, A. C. J., **C. Martín** & R. Drews (2025) Modelling the three-dimensional, diagnostic fabric anisotropy field of an ice rise. *Journal of Glaciology,* 71**,** article e31. https://doi.org/10.1017/jog.2025.14<br><br>Lang, S. N., C. L. Liu, X. B. Cui, L. Li, B. Sun & **M. Siegert** (2025) Automatic identification of basal units in ice sheets based on ResNet and weight control. *IEEE Transactions on Geoscience and Remote Sensing,* 63**,** 15. https://doi.org/10.1109/TGRS.2025.3543487<br><br>Yan, S., M. R. Koutnik, D. D. Blankenship, J. S. Greenbaum, D. A. Young, J. L. Roberts, T. van Ommen, B. Sun & **M. J. Siegert** (2025) Holocene hydrological evolution of subglacial Lake Snow Eagle, East Antarctica, implied by englacial radiostratigraphy. *Journal of Glaciology,* 71**,** article e29. https://doi.org/10.1017/jog.2025.15 |
| 7. Funding awards | None over the reporting period. |
| 8. Points for discussion at UKNCAR meeting | Nothing particularly, but we hope the report invites interest and ongoing support. |

# BIOPOLE report for UKNCAR (2nd July 2025)

Geraint Tarling (British Antarctic Survey)

BIOPOLE is funded by UKRI NERC National Capability and comprises five of the major environmental research institutes in the UK who are working with national and international partners to address how rapid climatic change at the poles is affecting both the supply of nutrients and the processing capacity of their ecosystems. Specifically, it is addressing

Q1: What physical, chemical, and biological processes modify elemental balance en route from source to polar ocean ecosystems, and what are their sensitivities to climate change?

Q2: What is the influence of ecosystem processes on elemental balance and movement of carbon (C) to depth in the polar oceans, and how may these change in the future?

Q3: How may C sequestration by polar ocean organisms and the export of nutrients change in the future, and what impacts will this have on global ocean fish stocks and C cycling?

Now in its third year, the programme continues to make excellent progress towards achieving its objectives. A particular strength of BIOPOLE is in the interaction between its modelling and observational elements that have been used extensively in designing fieldwork plans and contextualising observational findings, as well as providing training and validation datasets for model refinement. Much of the fieldwork has now been successfully completed and moorings in the Southern Ocean (as well as the Arctic) have now been recovered, with much of their data and samples processed. Furthermore, BIOPOLE is capitalising on it is wide international network with which it is broadening its sampling capabilities and stimulating further opportunities in polar fieldwork and modelling. A number of peer-reviewed papers have been published and work has been widely disseminated via extensive outreach networks.

Below, we provide some highlights from the past reporting year.

**Rothera field campaign** – In December 2024, Kate Hendry (BAS) and Alanna Grant (UKCEH) undertook fieldwork around Rothera Research Station to assess the flux of organic and inorganic nutrients into Ryder Bay, the glaciated bay near research station. They sampled surface meltwater runoff later in the season, as the summer months progressed. As well as characterising freshwater inputs, the BIOPOLE researchers have been working with the Rothera Time Series (RaTS) project, together with Rothera Ocean Scientists Alice Clement and Sean McLoughlin, and Hugh Venables to sample marine waters within Ryder Bay. The BIOPOLE fieldwork was carried out in collaboration with NERC-funded project SiCLING. SiCLING team members from the University of Cambridge joined the expedition later in January and carried out sampling of marine sediments and waters.

*Figure 1: Rothera field campaign. Kate Hendry and Alanna grant sampling freshwaters near Rothera (Photo by Morgan Thompson); Kate on the small boat collecting marine waters as part of BIOPOLE and SiCLING (Photo by Alanna Grant).*

**South Georgia Regional biophysical model** – BIOPOLE has a highly active Model-Observation working group working on various biophysical models considering the fate of dissolved and particulate matter, as well as plankton, around key sites of biogeochemical activity. During the past reporting year, particular progress has been made on a South Georgia regional model. An existing model has been updated with new bathymetry, open boundary forcing and atmospheric forcing. It is currently undergoing validation, following which tracers representing nutrient supply from sediments and glacial melt will be added.

**Southern Ocean Research campaign on RRS Sir David Attenborough** - A major focus for BIOPOLE this year has been the Southern Ocean research cruise SD046 (Feb-Mar 2025). Numerous observations of the chemical and biological environment including zooplankton community composition, grazing and respiration measurements were made during this campaign. The biogeochemists were able to measure gradients of nutrients and organic and inorganic carbon across large oceanic transects across a range of temperatures and levels of productivity. For the biologists, a primary focus was on capturing late-summer copepod population dynamics, when diapausing species are expected to be descending and/or beginning the early phases of diapause. During the cruise successful deployment of shallow pelagic (0-200m), deep pelagic (0-1500m) and benthic (500m ,1500m) nets at six stations was accomplished (Fig. 2). Net catches were preserved for community composition analyses or picked for a suite of physiological measurements (lipid and elemental composition, direct and ETS respiration, grazing, activity monitoring, lipid sac size). Preliminary results indicate a general pattern of surface catches containing early lifestages (~CIV) of *Calanoides acutus* while deep nets typically contained both CV and female *C. acutus*, although abundances varied with station and depth (Fig. 3). There was also successful complementary benthic sampling with the C-EBS (Camera-Epibenthic sled) and Agassiz Trawl. The nine C-EBS deployments yielded a total

of 28 bulk and 548 benthos vials, of which 389 vials were cryovials for future lipid analyses. Finally, the successful recovery of the BIOPOLE mooring will now allow for the completion of sediment trap analyses and provide complementary temporal scale data on carbon flux within the BIOPOLE focus region of the Scotia-Weddell Sea region.

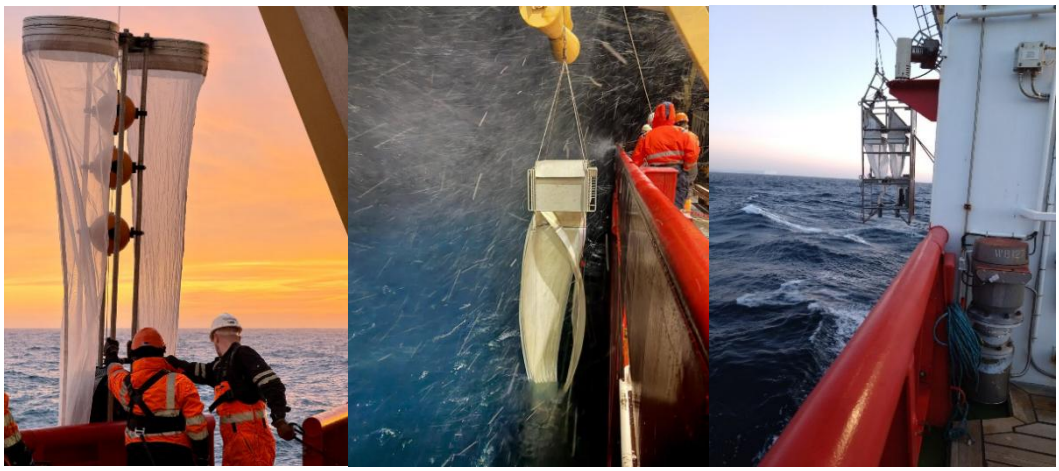

*Fig 2: From left to right: Bongo, MAMMOTH and Epibenthic sled deployments during SD046. (BIOPOLE II). Credit to Dan Mayor @oceanplankton Instagram and credit Katrin Linse)*

*Fig 3: An example of images of Calanoides acutus (stages CIV, CV, female) collected for lipid sac analysis. Credit: Jen Freer*

During SD046, there was also the first use at sea of an environmental Scanning Electron Microscope (Hitachi TM4000Plus) providing rapid analysis of zooplankton specimens in the field (Fig. 4).

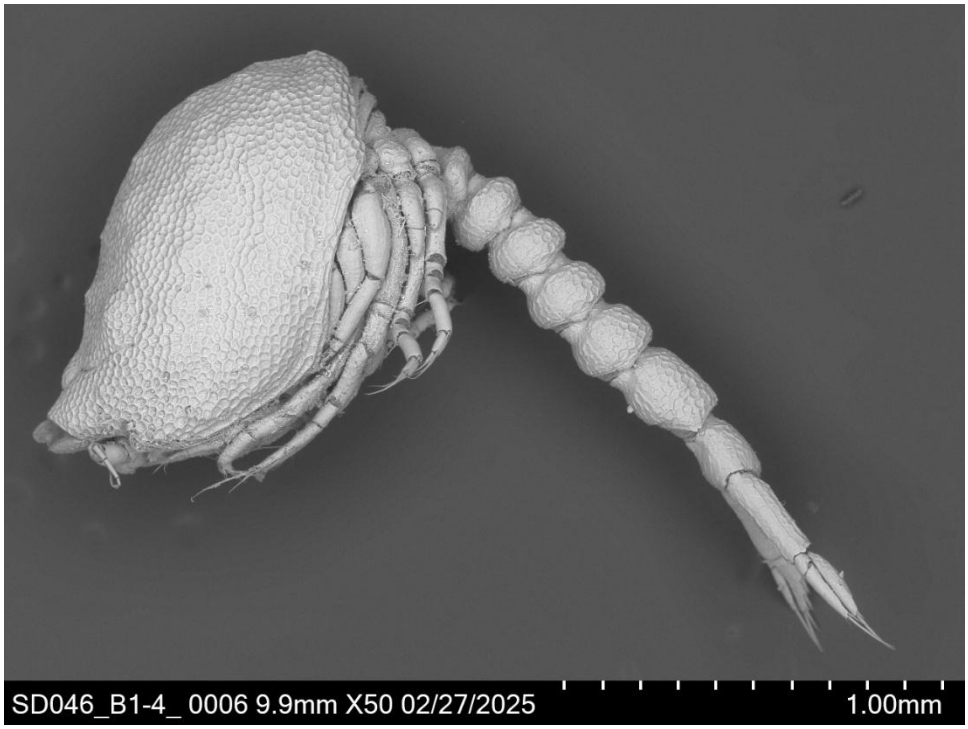


Fig. 4: Benthic Cumacean imaged by the field SEM during SD046. Credit: Katrin Linse

**Modelling distribution and advection of diapausing copepods** – Determining the fate of diapausing copepods and their contribution to C flux is a major challenge that requires detailed data collation and biophysical modelling. Over the past reporting year, BIOPOLE has made significant progress in this research area. Diapause descent and ascent behaviour of diapausing copepod *C. acutus* has now been implemented in the regional Lagrangian model HAL (Fig. 5) with the model code and full documentation now published on GitHub. Using this model the sensitivity of copepod transport and retention to key diapause parameters was completed and results presented at two national conferences. These model outputs were timely in supporting cruise planning for SD046 – as they identified potential 'hotspots' of copepod-seabed interactions.

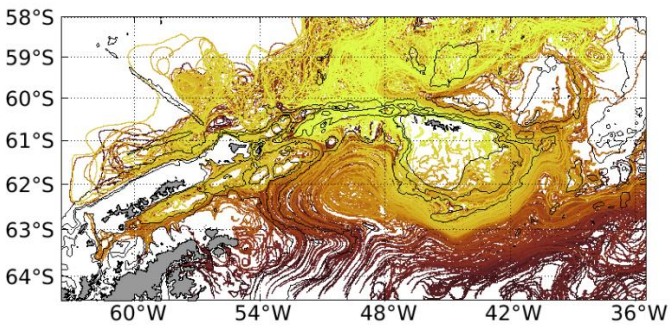


*Fig 5: The simulated trajectories for 245 days of transport for diapausing copepods released in the NW Weddell Sea. Colours represent individual particle trajectories.*

Existing *C. acutus* observational data has been collated within a substantial database which now provides the information required to provide detailed insights into the distribution and

abundance of lipid storing/diapausing copepods in the Southern Ocean. Furthermore, great progress has been made with developing and implementing a framework for modelling these species' distributions across seasons and depths. Firstly, corresponding environmental data from two alternative and regionally downscaled climate models (ERA5, HClim) have been processed for the hindcast period and, where possible, future time periods under various scenarios (provided by PolarRES collaborators). Secondly, a complex model framework has been devised to explain copepod abundance variability in terms of environmental data, and implementing this framework is underway. The approach uses shape-constrained GAM hurdle models to predict horizontal abundance (individual/m2) at 5-day time intervals. These can be further multiplied into depth-discrete occurrence probabilities to produce depth-discrete abundance predictions (Fig. 6). Preliminary outputs from this framework for *C. acutus* are taking shape and being refined before the framework is applied to other species of interest.

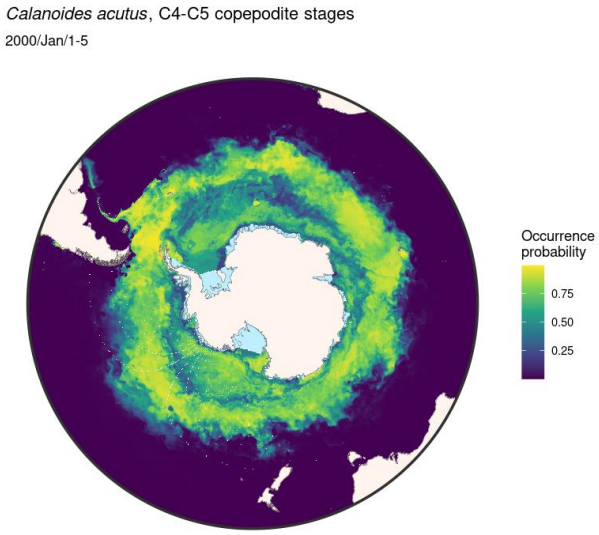


*Fig 6: Circumpolar occurrence probability of C. acutus copepodite stages 4-5 during 15/1/2000, estimated from a regression against 7 significant environmental variables. (Preliminary result).*

**BIOPOLE Early Career Researchers Network** - BIOPOLE has a particular focus on developing the careers of ECRs. Over the past reporting year, its ECR groups has grown from 17 to 29 members, with new members including PhD students participating in cruise SD046 (Fig. 7), PhD students at member organisations working on topics within the scope of BIOPOLE, and new staff members working full or part-time on BIOPOLE in their contracts. The ECR group have met for bi-monthly zoom calls to share updates and network across the year. They have contributed regular updates to the BIOPOLE newsletter and many ECRs have been highlighted in the 'meet a colleague' feature. It supports a mentoring scheming which now has 8 mentor-mentee pairs, with all reporting successful outcomes so far, with ECRs being supported in their development in many topics including:

- Being a first author for the first time- writing through to publication
- Learning about modelling with an ecology background
- Navigating a less traditional career path in science

- Handling being an ECR from an underrepresented background
- Dealing with imposter syndrome
- Taking on leadership roles in the field

The was also a BIOPOLE ECR Day in November 2024, where 15 ECRs from the project gathered and attended sessions including media and outreach training by BAS Head of Media Athena Dinar, a talk on scientist involvement with the IPCC from Professor Mike Meredith, and a Q+A panel session on life and wellbeing while on fieldwork, with panellists Nadine Johnston, Jen Freer, Kate Hendry, and Hugh Venables. The ECRs all found this day to be a very worthwhile opportunity, and appreciated senior scientists giving up their time to support this valuable opportunity for ECRs.

BIOPOLE ECRs collaborate with other ECR networks including the IMBeR Interdisciplinary Marine Early Career Network (IMECaN) as well as ECR communities in the Bio-CARBON and OCEAN ICE projects. BIOPOLE ECRs also submitted input to an OptimESM white paper about ECR engagement in EU research projects, highlighting the successes of the BIOPOLE ECR network so far, and what has been learnt that may contribute to the development of future ECR networks.

*Fig 7: BIOPOLE ECRs on the SD046 cruise in February to March, 2025*

**UKNCAR Reporting - IPICS**

*Provide up to two pages of information following the structure below, only filling out those sections where there is new information to report.*

| | |
|---|---|
| 1. Principal UK Researchers | Liz Thomas, Dieter Tetzner, Jack Humby, Thomas Bauska, Rachael Rhodes, Amy King, Chiara Giorio, Andrea Burke, Eric Wolff |
| 2. Major activities and progress since previous year involving UK personnel/infrastructure | **REWIND ice core drilling** – Successful first season included geophysical surveys to select the optimal ice core location. The field team (Liz Thomas (PI), Jack Humby, James Veale and Dieter Tetzner) established the camp, installed a weather station and drilled to 70 m using the intermediate (dry-) drill. They also successfully tested the new firn-air system, retrieving gas measurements for the upper 64 m of the borehole. A larger team will return in November, with the aim of retrieving a full Holocene record (and hopefully reaching bedrock at ~700 m).<br><br>**Brunt Ice Shelf drilling** – Second drilling of the RIFT-TIP (Rates of Ice Fracture and Timing of Tabular Iceberg Production) project. Four cores drilled on the Brunt Ice Shelf to explore physical properties of the ice (fracture and toughness) and deploy down-borehole instrumentation. The RIFT-TIP team (Emma Pearce, Liz Thomas, Oliver Marsh (PI), Alex Brisbourne (BAS), and Tom Mitchell (UCL)), are using seismic, radar, ApRES and GPS data to investigate the evolution of cracks. https://www.bas.ac.uk/project/rift-tip/<br><br>**Beyond EPICA oldest ice (BE-OI)** –The international drilling team had a very successful season, reaching bedrock at 2800 m. The record is expected to span the past 1.2 million years (with hopes that it may exceed this), making it the oldest ever continuous ice core. |
| 3. Major future initiatives and actions involving UK personnel/infrastructure | **Beyond EPICA oldest ice (BE-OI) analysis-**<br>BAS has been selected to lead on the impurities (chemical and particulate) analysis of the BE-OI core. The BAS team have been busy preparing the labs for this new analysis, which is analytically very challenging due to the exceptionally thinned layers. BAS has secured UKRI/NERC funding (Pushing the Frontiers) to support this analysis, with additional capital funding to increase our analytical capabilities (new ICP-MS QQQ). The BAS labs will host experts from across the European consortium, over a period of ~7 weeks, to measure the ice using our bespoke Continuous Flow Analysis (CFA) method. The ice is |

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| | currently being cut and sub-sampled at the Alfred Wagner Institute (AWI), Germany, and will arrive at BAS in mid-July.<br><br>**<u>New drilling in Greenland -</u>**<br>Planning underway for the Schmitt funded FETCH4 project to extract cores from Greenland for gas analysis (Spring/ summer 2026)- Rachael Rhodes and Thomas Bauska.<br><br>Next IPICS conference – Banff, Canada 2026 |
| 4. Policy outcomes | |
| 5. Selected publications | • Wolff, E.W., Mulvaney, R., Grieman, M.M. et al. The Ronne Ice Shelf survived the last interglacial. Nature 638, 133–137 (2025). https://doi.org/10.1038/s41586-024-08394-w<br>• Fischer, H., Burke, A., Rae, J. et al. Limited decrease of Southern Ocean sulfur productivity across the penultimate termination. Nat. Geosci. 18, 160–166 (2025). https://doi.org/10.1038/s41561-024-01619-7<br>• Tetzner, D. R., Thomas, E. R., Allen, C. S., McCulloch, R. D., Perren, B. B., McGuire, A., et al. (2025). The first firn core from the Cordillera Darwin Icefield: Implications for future ice core research. Journal of Geophysical Research: Atmospheres, 130, e2024JD043124. https://doi.org/10.1029/2024JD043124<br>• King, Amy C.F. , Bauska, Thomas K. , Brook, Edward J., Kalk, Mike, Nehrbass-Ahles, Christoph, Wolff, Eric W., Strawson, Ivo, Rhodes, Rachael H., Osman, Matthew B.. (2024) Reconciling ice core CO2 and land use change following New World-Old World contact. *Nature Communications*, 15. 9 pp. 10.1038/s41467-024-45894-9 |
| 6. Funding awards | (PI: E Thomas) NERC: Exploring the Mid-Pleistocene Transition using Antarctica's oldest ice core (MPT-ICE) 2025-2028<br>(PI: C Giorio) Leverhulme: Constraining the oxidising capacity of the Earth's atmosphere of the past |
| 7. Points for discussion at UKNCAR meeting | |

**UKNCAR Reporting 2025**

*Provide up to two pages of information following the structure below, only filling out those sections where there is new information to report. We are particularly interested in hearing of key activities (e.g. expeditions/cruises/projects) publications, policy outcomes, future initiatives that you would like publicised, or where UKNCAR could help a group/programme liaise with other parts of SCAR.*

| | |
|---|---|
| 1. Name of SCAR Group or Programme | SCAR Plastic Expert Group (PLASTIC-EG) |
| 2. Principal UK Researchers | Claire Waluda, Clara Manno BAS; Cath Waller, University of Hull (steering committee) |
| 3. Major activities and progress since previous year involving UK personnel/infrastructure | • SCAR Plastic Action Group (PLASTIC-AG) became a SCAR expert group in September 2024.<br>• Background paper on Plastic pollution hotspots originating from local sources in the Southern Ocean submitted to the 47th Antarctic Treaty Consultative Meeting (ATCM)/Committee for Environmental Protection (CEP) meeting (ATCM 47 - CEP 47; Milan, Italy 2025)<br>• Working paper on UK marine debris monitoring submitted to CCAMLR Working Group on Ecosystem Monitoring and Management (WG-EMM) Geilo, Norway 2025<br>• Manno represented SCAR at the Fifth session of the United Nations environment Program (UNEP) Intergovernmental negotiating committee to develop an international legally binding instrument on plastic pollution, including in the marine environment in Busan, Republic of Korea, 25 November–1 December 2024<br>• Waluda is co-chair of the CCAMLR group on Marine Debris |
| 4. Major future initiatives and actions involving UK personnel/infrastructure | PLASTIC-EG aim to review current knowledge of Southern Ocean plastics in 2026 – as a peer reviewed paper and for submission to ATCM/CEP. |
| 5. Policy outcomes | The PLASTIC-EG provided expert guidance to support the Netherlands-led resolution "Towards ending plastic pollution in Antarctica" (Resolution A 2025) which was adopted at ATCM 47 – CEP 47 in July 2025. |
| 6. Selected publications | Jones-Williams, K, Rowlands, E, Primpke, S, Galloway, T, Cole, M, Waluda, C, Manno, C (2025) Microplastics in Antarctica – a Plastic Legacy in the Antarctic Snow? *Science of The Total Environment*, 966 (). 12 pp. 10.1016/j.scitotenv.2025.178543<br>Roberts SJ, Hughes KA, Li C, Peel RH, Saunders KM, Schneider L, Waller CL (2025) Pollution in Antarctica. Antarctica and the Earth System p 164-185.<br>Savoca, MS, Abreo, NA, Arias, AH. et al. (2025) Monitoring plastic pollution using bioindicators: a global review and |

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| | recommendations for marine environments. *Environmental Science: Advances*, 4 (). 23 pp. 10.1039/D4VA00174E<br>Hunter, A, Thorpe, SE, McCarthy, AH et al. (2024). Microplastic hotspots mapped across the Southern Ocean reveal areas of potential ecological impact. Scientific Reports 14, 31599. https://doi.org/10.1038/s41598-024-79816-y<br>Johnston, LW, Manno, C, Salinas, CX (2024) Assessment of plastic debris and biofouling in a specially protected area of the Antarctic Peninsula region. *Marine Pollution Bulletin*, 207 (). 9 pp. 10.1016/j.marpolbul.2024.116844<br>Rowlands, E, Galloway, T, Jones-Williams, K, Manno, C (2024) How Might Plastic Pollution Affect Antarctic Animals? *Frontiers for Young Minds*, 11 (). 8 pp. 10.3389/frym.2023.1096038 |
| 7. Funding awards | |
| 8. Points for discussion at UKNCAR committee meeting | SCAR PLASTIC Expert Group supported the successful resolution "Towards ending plastic pollution in Antarctica" (Resolution A 2025) adopted at ATCM/CEP in July 2025<br><br>ATCM/CEP have asked SCAR to "periodically assess and synthesize existing knowledge and scientific data on plastic pollution in the Antarctic Treaty area, including on related risks to Antarctic species and communities, and report its findings to the CEP and ATCM, and make its synthesis reports available to the public." This work will be undertaken by PLASTIC-EG with annual reports to CEP/ATCM/CCAMLR and peer reviewed publications.<br>. |

**UKNCAR Reporting 2025**

*Provide up to two pages of information following the structure below, only filling out those sections where there is new information to report. We are particularly interested in hearing of key activities (e.g. expeditions/cruises/projects) publications, policy outcomes, future initiatives that you would like publicised, or where UKNCAR could help a group/programme liaise with other parts of SCAR.*

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| 1. Name of SCAR Group or Programme | **AGE** (Antarctic Geological Evolution) – SCAR Scientific Research Programme – in proposal stage for SCAR. |
| 2. Principal UK Researchers | Tbc – but likely wide interest. |
| 3. Major activities and progress since previous year involving UK personnel/infrastructure | Aims to explore complex 4D interactions between Solid Earth, Cryosphere, Ocean, Hydrology and Atmosphere and Biosphere components in Antarctica and assess their global impacts. It will develop an improved understanding of geological features and how these have contributed towards shaping Antarctica in both space and time.<br>Activities so far include:<br>• Successful presentation to SCAR committees and the Geoscience Standing Group at the SCAR Open Science Meeting in Pucón, Chile, August 2024.<br>• Initial proposal developed and online: https://scar.org/science/research-programmes/age#about<br>• Splinter meeting held at European Geosciences Union meeting in Vienna, April 2025. The meeting was to explore how the programme should evolve and how it will work alongside existing SCAR activities. There were ca. 100 attendees in person and online, indicating broad interest. |
| 4. Major future initiatives and actions involving UK personnel/infrastructure | • Ongoing development of full proposal (deadline 2026 at SCAR Open Science Meeting).<br>• An AGE discussion workshop will be held at the ISAES meeting in Punta Arenas in August 2025. |
| 5. Policy outcomes | |
| 6. Selected publications | |
| 7. Funding awards | |
| 8. Points for discussion at UKNCAR committee meeting | |

**UKNCAR Reporting 2024**

*Provide up to two pages of information following the structure below, only filling out those sections where there is new information to report. We are particularly interested in hearing of key activities (e.g. expeditions/cruises/projects) publications, policy outcomes, future initiatives that you would like publicised, or where UKNCAR could help a group/programme liaise with other parts of SCAR.*

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|---|---|
| 1. Name of Standing Committee, SCAR Group or Programme | Scientific Research Programme on Near-term Variability and Prediction of the Antarctic Climate System (AntClimNow) |
| 2. Principal UK Researchers | Tom Bracegirdle (BAS), SSC (Theme 5 co-lead; Antarctic Climate Indicators co-lead).<br>Rachel Cavanagh (BAS), Co Chief Officer.<br>Anthony Chan (University of Exeter), SSC (ECRs)<br>Caroline Holmes (BAS), SSC (monthly talk organiser).<br>Siobhan Johnson (BAS), SSC (communications). |
| 3. Major activities and progress since previous year involving UK personnel/infrastructure | AntClimNow (https://www.scar.org/science/antclimnow/home/) is focused on enhancing understanding of current trends and prediction of near-term conditions in the Antarctic climate system on timescales of years to decades. These time scales are highly relevant across multiple disciplines and to a range of stakeholders, whilst aligning strongly with scientific priorities identified by the SCAR Horizon Scan and with SCAR's Strategic Plan. Progress since the last report includes:<br>-**Antarctic Climate Indicators (ACI) project** (led by T. Bracegirdle, UK): developing a set of diagnostic indictors to monitor the Antarctic climate system in near real time.<br>-**Monthly science seminars** - focused on discussions of current research - successful in engaging membership and wider community (organised by C. Holmes, UK)<br>-Over the last year/upcoming this year, AntClimNow has sponsored/supported **international workshops,** involving UK personnel/infrastructure incl:<br>- Science session and workshop on Antarctic extreme weather, SCAR OSC, Chile, Aug 2024.<br>- SCAR leadership forum, Cambridge, April 2024.<br>- Series of online workshops to develop ACI project (2024-25).<br>- AntClimNow Predictability Workshop, Busan, Republic of Korea, July 2025.<br>- Planning underway for AntClimNow workshops and sessions at SCAR OSC26.<br>-**Growing membership**: ~160 full members, ~300 on our mailing list. 23 members are UK-based. |

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| | -**Data stewardship and development scheme** has delivered 7 projects this year, with 2 new projects beginning (one of which is UK-led, see section 7). These projects transform existing data into accessible and valuable resources for the broader research community, while developing frameworks that contribute to Antarctic climate research infrastructure. |
| 4. Major future initiatives and actions involving UK personnel/infrastructure | AntClimNow (including UK members) are actively contributing to the development of InSync and the IPY. |
| 5. Policy outcomes | UK AntClimNow members have continued to actively contribute to policy ensuring AntClimNow's scientific expertise informs decision-making. Including via:<br>-Policy papers e.g. contributions to ATCM 2025.<br>-Expert advice e.g. for joint CEP/SC-CAMLR workshop.<br>-Standing Committee to the ATS.<br>-SCAR Action Group on Climate.<br>-Contributions to SCAR Antarctic Environments Portal. |
| 6. Selected publications | Recent publications involving AntClimNow UK authors:<br><br>Amory, C., Buizert, C., Buzzard, S., Case, E., Clerx, N., Culberg, R., et al. (2024). Publisher Correction: Firn on ice sheets. Nature Reviews Earth & Environment. doi:10.1038/s43017-024-00524-2<br><br>This paper draws from an online workshop funded by AntClimNow, the International Firn Workshop / Symposium held in May 2022.<br><br>Bracegirdle, T.J., Caton Harrison, T., Holmes, C.R. et al. Antarctic extreme seasons under 20th and 21st century climate change. npj Clim Atmos Sci 7, 276 (2024). https://doi.org/10.1038/s41612-024-00822-y<br><br>The initial idea and plan for this paper was developed as part of AntClimNow workshop at BAS in September 2022 on the topic of connecting models and observations.<br><br>Holmes C, Doddridge E, Fretwell P. Antarctic Sea Ice #4: Record lows between 2022 and 2025 - Antarctic Environments Portal<br>This is a paper by AntClimNow SSC member C Holmes for SCAR's Antarctic Environment Portal |
| 7. Funding awards | UK-led data stewardship and development scheme project (see Section 3): "*Bellinghausen and Amundsen Sea Seal Tag Repository (BASSTR)*" led by UK-based PhD student Francis |

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| | Glassup (University of East Anglia): combining >decade of seal tag oceanographic measurements from multiple projects into an open-source dataset of temperature and salinity data for validating climate models.<br>Our travel scheme has funded several ECRs this year, including from the UK: Anthony Chan (University of Exeter) to attend and co-organise the AntClimNow Predictability Workshop; Siobhan Johnson (BAS) to attend the American Meteorological Society meeting in Denver. |
| 8. Points for discussion at UKNCAR meeting | |

**UKNCAR Reporting 2025**

*Provide up to two pages of information following the structure below, only filling out those sections where there is new information to report. We are particularly interested in hearing of key activities (e.g. expeditions/cruises/projects) publications, policy outcomes, future initiatives that you would like publicised, or where UKNCAR could help a group/programme liaise with other parts of SCAR.*

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|---|---|
| 1. Name of SCAR Group or Programme | Integrated Science to Inform Antarctica and Southern Ocean Conservation |
| 2. Principal UK Researchers | Kevin A. Hughes (BAS), Jasmine Lee (BAS/Monash University) Adrian Howkins (University of Bristol), Steve Chignell (University of Bristol), Jordane Liebeaux (University of Bristol) |
| 3. Major activities and progress since previous year involving UK personnel/infrastructure | Aside from its contribution to Antarctic and Southern Ocean conservation research and broader systems understanding, key achievements of Ant-ICON are related to capacity-building initiatives across the science-policy interface, inter- and trans-disciplinary research coordination and facilitation through workshops and other events, as well as efforts aimed at supporting greater awareness of science needs for policy. These key achievements include:<br>• A science-policy fellowship that enables early-to-mid career researchers to gain experience at the science-policy interface. Fellows contribute a SCAR paper based on their own research to the CEP or SC-CAMLR meeting and they participate as a member of the SCAR delegation. The fellowships have so far been a resounding success, with positive feedback received from, and about our fellows from the past two cohorts, with the third cohort having just been selected after the recent call for 2025 fellows. One fellow, Charlotte Walshaw, is from the UK, where she is studying for her PhD at Edinburgh University.<br>• A project that aims to re-interpret the CEP and ATCM's information and science needs through a scientific lens. The project addresses three overarching questions: What do the CEP and ATCM need to know from the science community in order to fulfil their functions? How could the identified information and knowledge needs be further refined to enable relevant and actionable research? How might Ant-ICON address some of those needs? The outputs of this work will take multiple forms, including a) an informal SCAR report primarily aimed at the Ant-ICON research community, b) a peer reviewed publication, and c) a paper to the CEP. This project will give rise to a clearer list of research questions that are: (1) of relevance to the policy community and (2) actionable through science. In achieving these outcomes, it will be necessary to engage the policy community in a process of co-production, ultimately bringing SCAR and the CEP/ATCM together to define what knowledge is required to underpin policy priorities.<br>• A series of workshops which including:, 1) interactive and interdisciplinary discussions on science to inform the development of MPAs (R1); 2) State of the Antarctic Environment Reporting (R2); 3) framing of Antarctic conservation (R3); and 4) knowledge exchange between scientists and policymakers, including a stakeholder workshop on the ATCM's and CEP's information needs (S1). |

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| 4. Major future initiatives and actions involving UK personnel/infrastructure | We are planning a large (up to 100 persons), in-person workshop in July 2025 in Paris, France, following the CEP in Milan, Italy, to bring together the Antarctic conservation research community, and some policymakers to present and discuss science that addresses the policy needs. |
| 5. Policy outcomes | Work undertaken in association with Ant-ICON has contributed to several papers submitted to the Antarctic Treaty Consultative Meeting and Committee for Environmental Protection, including:<br>• WP 22. Breeding bird diversity and sensitivity to disturbance at Antarctic visitor sites<br>• WP32. Review of the CEP Non-native Species Manual and exchange of biosecurity knowledge<br>• WP33. Reducing plastic pollution associated with Antarctic field operations<br>• IP77. The Antarctic Specially Protected Species conservation management tool<br>• IP147 Informing systematic protection of Antarctic terrestrial vegetation<br>• IP151 Systematic Conservation Plan for the Antarctic Peninsula Project Conclusions |
| 6. Selected publications | • Hughes, K. A., Convey, P., & Lee, J. R. (2025). Status assessment of non-native terrestrial species in Antarctica. *NeoBiota*, *98*, 197-222.<br>• Pertierra, L. R., Convey, P., Barbosa, A., Biersma, E. M., Cowan, D., Diniz-Filho, J. A. F., ... & Hortal, J. (2025). Advances and shortfalls in knowledge of Antarctic terrestrial and freshwater biodiversity. *Science*, *387*(6734), 609-615.<br>• Halfter, S., McCarthy, A., Cárdenas, L., & Hughes, K. A. (2024). Marine non-native species in the Southern Ocean and Antarctica. *Antarctic Environments Portal [Marine]*.<br>• Hughes, K. A., Gray, A. D., & Ager, B. J. (2024). Attainment of consultative status by parties to the Antarctic Treaty: past, present and future. *The Polar Journal*, *14*(2), 560-591.<br>• Chignell, S. M., A. Howkins, and A. Fountain. 2025. 18. Antarctic mosaic: Mixing methods and metaphors in the McMurdo Dry Valleys. Open Book Publishers: 355–376. doi:10.11647/obp.0418.18.<br>• Wright, A., C. Brooks, M. Gooseff, A. Howkins, and S. Chignell. 2024. An analysis of McMurdo Dry Valleys' lotic habitats within Antarctica's protected area network and addressing gaps in biodiversity protection. Arctic, Antarctic, and Alpine Research 56. Taylor & Francis: 2375176. doi:10.1080/15230430.2024.2375176.<br>• Terauds A, Lee JR, Wauchope HS, Raymond B, Bergstrom DM, Convey P, Mason C, Patterson CR, Robinson SA, Van de Putte A, Watts D, Chown SL. 2025. The biodiversity of ice-free Antarctica database. Ecology **106**: e70000. |
| 7. Funding awards | None |
| 8. Points for discussion at UKNCAR committee meeting | None |

**UKNCAR Reporting 2025**

*Provide up to two pages of information following the structure below, only filling out those sections where there is new information to report. We are particularly interested in hearing of key activities (e.g. expeditions/cruises/projects) publications, policy outcomes, future initiatives that you would like publicised, or where UKNCAR could help a group/programme liaise with other parts of SCAR.*

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| 1. Name of SCAR Group or Programme | Changes in Circumpolar Antarctic Gradients in Ecosystems (C-CAGE) Scientific Research Programme Planning Group |
| 2. Principal UK Researchers | Huw Griffiths & Cath Waller as two of the three lead proponents, along with 18 UK members of the of the core members |
| 3. Major activities and progress since previous year involving UK personnel/infrastructure | • Huw Griffiths was approached by SCAR senior leadership in Summer 2024 and asked to propose a new biologically focussed SRP.<br>• A Programme Planning Group proposal was submitted ahead of the SCAR OSC in Chile and Delegates Meeting where it was approved.<br>• A web page and mailing list were set up.<br>• A community survey was distributed to gauge the requirements of SCAR biologists.<br>• The results of the survey were used to write a draft SRP proposal which was submitted to SCAR in June 2025. |
| 4. Major future initiatives and actions involving UK personnel/infrastructure | • Huw Griffiths and Cath Waller will lead the leadup to final submission before the 2026 delegates meeting. This will include improving the proposal based upon SCAR leadership feedback and community input.<br>• We will organise a meeting at the SCAR OSC and use this year to build awareness and inclusivity of the group.<br>• The SRP in designed to compliment the new IPY and Antarctica InSync, we aim to contribute to these initiatives. |
| 5. Policy outcomes | |
| 6. Selected publications | |
| 7. Funding awards | |
| 8. Points for discussion at UKNCAR committee meeting | We ask UKNCAR members to give any feedback they have on the proposal and to share widely with their colleagues and communities to ensure awareness and participation from UK partners. |

**UKNCAR Reporting 2025**

*Provide up to two pages of information following the structure below, only filling out those sections where there is new information to report. We are particularly interested in hearing of key activities (e.g. expeditions/cruises/projects) publications, policy outcomes, future initiatives that you would like publicised, or where UKNCAR could help a group/programme liaise with other parts of SCAR.*

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| 1. Name of SCAR Group or Programme | **INSTANT** (**INS**tabilities and **T**hresholds in **ANT**arctica) |
| 2. Principal UK Researchers | Bentley, Jamieson, McClymont, Paxman, Nield, Small, Hazzard, Stokes, Deakin (Durham)<br>Bracegirdle, Thomas, Joanne Johnson, Hillenbrand, Larter, Sime, Hogan, Smith, Hodgson, Allen, Roberts, Pritchard, Fretwell, Lowe (BAS)<br>van de Flierdt, Nichols, Marschalek, Richards (Imperial)<br>Barlow (Leeds)<br>Bingham, Hein (Edinburgh)<br>Gasson, Siegert (Exeter)<br>Graham (Cardiff)<br>Silvano (NOC) |
| 3. Major activities and progress since previous year involving UK personnel/infra structure | • Successful INSTANT contributions to the SCAR Open Science Conference in Pucón, Chile, August 2024 and an INSTANT leadership meeting.<br>• Instant-related contributions and plans were at the forefront of the recent Royal Society Theo Murphy Meeting: Next Generation ice-sheet bed measurements (and associated RINGS workshops) – Edinburgh, UK. May 2025.<br>• Completion of BEDMAP3 (supported as a SCAR Working Group, and is a foundational dataset for INSTANT activities) – see outputs.<br>• UK leadership is very prominent in INSTANT. These include: Steering Committee Members Thomas (BAS) and Bracegirdle (BAS – representing SCAR AntClimNow research program); INSTANT Theme 1 (atmosphere, ocean, ice interactions) co-chairs Thomas (BAS) and Silvano (NOC) and subcommittee chair Gasson (Exeter) and committee member McClymont (Durham); Theme 2 (earth-ice interactions) co-chair Johnson (BAS) with subcommittee co-chairs Lowe (BAS and Kiel), Richards (Imperial) and outgoing co-chair Jamieson (Durham); Theme 3 subcommittee co-chair Barlow (Leeds).<br>• Theme 1 and Theme 2 are running seminar series to communicate their work and to solicit wider international collaboration.<br>• White papers for all INSTANT subcommittees are nearing completion (due September 2025).<br>• Successful delivery of a GIA workshop in British Columbia, Canada by POLENET which is working with INSTANT Theme 2 |

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| | (Scientific Committee member Nield from Durham; Johnson from BAS gave keynote talk). |
| 4. Major future initiatives and actions involving UK personnel/infra structure | • In-SYNC (with INSTANT members including Sime from BAS being one the two UK Science Coordinators and McClymont from Durham being a Steering Committee member) will take 'synchronous' measurements of many aspects of Antarctica including those related to INSTANT goals.<br>• INSTANT members are aware of and will contribute to the planning for the next IPY (2032-33) – very early stage/long-term awareness at present.<br>• The INSTANT-linked RINGS initiative is further developing survey plans for bed topography and mass balance in Antarctica. To this end, two white papers have been drafted that are led by UK contributors: Peninsula RINGS by Kate Winter (Northumbria); Weddell Sea RINGS by Neil Ross (Newcastle) and Jamieson (Durham).<br>• The establishment of the RAISED 2.0 initiative (led by Small at Durham) which will compile a spatial database of past Antarctic ice constraints as part of the Geological Boundary Conditions sub-committee of INSTANT.<br>• The establishment of a new Groundwater Action Group for SCAR with Bernd Kulessa (Swansea) as co-chair; Jamieson as steering committee member) which is designed to feed into INSTANT, especially Theme 2 of INSTANT (earth-ice interactions).<br>• Members of INSTANT Theme 2 (earth-ice interactions) are in discussion with future contributions to the proposed Antarctic Geological Evolution (AGE) science program which if accepted would begin as INSTANT ends and would therefore provide continuation for the solid earth components of INSTANT. |
| 5. Policy outcomes | Multiple UK INSTANT members provided written evidence to the UK Parliamentary Enquiry on 'The UK and the Antarctic Environment'. INSTANT members Bentley, Johnson and Siegert were invited to give oral evidence (witnesses) to the UK Environmental Audit sub-committee on Polar Research. The report and associated evidence is available here: https://publications.parliament.uk/pa/cm5901/cmselect/cmenvaud/499/report.html#heading-13 |
| 6. Selected publications | Gourmelen, N., Jakob, L., Holland, P.R. *et al.* The influence of subglacial lake discharge on Thwaites Glacier ice-shelf melting and grounding-line retreat. *Nat Commun* **16**, 2272 (2025). https://doi.org/10.1038/s41467-025-57417-1<br><br>Halberstadt, A.R.W., Gasson, E., Pollard, D. *et al.* Geologically constrained 2-million-year-long simulations of Antarctic Ice Sheet retreat and expansion through the Pliocene. *Nat Commun* **15**, 7014 (2024). https://doi.org/10.1038/s41467-024-51205-z |

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| | Klages, J.P., Hillenbrand, C.-D. *et al.* (incl. Larter, R.D., van de Flierdt, T.) Ice sheet–free West Antarctica during peak early Oligocene glaciation. *Science* **385**, 322-327 (2024).<br><br>Marschalek, J,W., Gasson, E., van de Flierdt, T., Hillenbrand, C.-D., Siegert, M.J., Holder, L. Quantitative sub-ice and marine tracing of Antarctic sediment provenance (TASP v1.0). *Geosci. Model Dev.* **18**, 1673-1708 (2025).<br><br>Miles, B.W.J., Bingham, R.G. Progressive unanchoring of Antarctic ice shelves since 1973. *Nature* **626**, 785–791 (2024). https://doi.org/10.1038/s41586-024-07049-0<br><br>Pritchard, H.D., Fretwell, P.T., Fremand, A.C. et al. Bedmap3 updated ice bed, surface and thickness gridded datasets for Antarctica. *Sci Data* **12**, 414 (2025). https://doi.org/10.1038/s41597-025-04672-y<br><br>Sanderson RJ, Ross N, Winter K, et al. Dated radar-stratigraphy between Dome A and South Pole, East Antarctica: old ice potential and ice sheet history. Journal of Glaciology. (2024);70:e74. https://doi.org/10.1017/jog.2024.60<br><br>Stokes, C.R., Bamber, J.L., Dutton, A. et al. Warming of +1.5 °C is too high for polar ice sheets. *Commun Earth Environ* **6**, 351 (2025). https://doi.org/10.1038/s43247-025-02299-w<br><br>O'Neill, J. F., Edwards, T. L., Martin, D. F., Shafer, C., Cornford, S. L., Seroussi, H. L., Nowicki, S., Adhikari, M., and Gregoire, L. J.: ISMIP6-based Antarctic projections to 2100: simulations with the BISICLES ice sheet model, The Cryosphere, 19, 541–563, https://doi.org/10.5194/tc-19-541-2025 (2025)<br><br>Wolff, E.W., Mulvaney, R., Grieman, M.M. *et al.* The Ronne Ice Shelf survived the last interglacial. *Nature* **638**, 133–137 (2025). https://doi.org/10.1038/s41586-024-08394-w |
| 7. Funding awards | UKRI-NERC highlight topic grant *BELLingshausen Ice Sheet System Investigation through Modelling and Observations* (*BELLISSIMO*) (PI: Larter; Co-Is: Bentley, McClymont, Graham, Hillenbrand, Thomas, Smith, Hogan) |
| 8. Points for discussion at UKNCAR | The next UK Antarctic Conference is being scheduled: for 3 days in the week of 6th-11th September 2026 (awaiting confirmation) at Durham University. Any key activities UKNCAR membership would like to see around this? |

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| committee meeting | |

**UKNCAR Reporting 2025: Geosciences**

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| 1. Name of SCAR Group or Programme | Geosciences (including biogeosciences) |
| 2. Principal UK Researchers | Claire Allen, Amber Annett, Mike Bentley, Robert Bingham, Filipa Carvahlo, Katharine Hendry, Sian Henley, Claus-Dieter Hillenbrand, Dominic Hodgson, Kelly Hogan, Joanne Johnson, Tom Jordan, Maeve Lohan, Clara Manno, Mark Moore, Victoria Peck, Teal Riley, Stephen Roberts, John Smellie, James Smith, Alessandro Tagliabue, Geraint Tarling |
| 3. Major activities and progress since previous year involving UK personnel/infrastructure | **BIOPOLE** (see full report for details)<br>Fieldwork continued, with the BIOPOLE II cruise to the Weddell Sea scheduled in Feb-March 2025 (Chief Scientist Tarling), and coastal sampling in Ryder Bay, Rothera Research Station, in late 2024/early 2025 in collaboration with NERC funding SiCLING project (PI Hendry). Opportunistic sampling was possible into June 2025 thanks to additional Collaborative Antarctic Science Scheme funding (BIOPOLE III cruise, and winter sampling in Ryder Bay).<br><br>**SPEG** (The Plastic-EG group):<br>1-Increasing collaboration with abroad permanent Marine observation system, including partnerships with EMSO (European Multidisciplinary Seafloor and Water Column Observatory, and permanent monitoring program, "MORSea - Marine Observatory in the Ross Sea" (http://morsea.uniparthenope.it/)<br>2-Generating a tool for identifying hotspot regions in Antarctic of ecological risk for plastic pollution and climate change (https://www.nature.com/articles/s41598-024-79816-y<br>3-Collaboration in IPASM fellowship scheme https://www.ypasm.my/research-grant/<br>4-Participation of SPEG in ISC (International Science Council) Working group<br><br>A**ntArchitecture:** Two hybrid science meetings (see separate report for details). |
| 4. Major future initiatives and actions involving UK personnel/infrastructure | **POLOMINTS – investigating the impacts of internal waves driven by glacier calving on heat and nutrient fluxes** (PI Michael Meredith (BAS), including Annett, Carvalho, Hendry). Upcoming fieldwork out of Rothera Research Station and the RRS *Sir David Attenborough*, from January 2026 onwards.<br><br>**IronMan – investigating the impacts of iron and manganese limitation on Southern Ocean biological productivity** (PI Tagliabue, including Moore and Lohan). Upcoming cruise on the RRS *Sir David Attenborough*, January – February 2026.<br><br>**SPEG** |

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| | -Collaboration in field work to expand investigation on long range pollution in Antarctica, funded with Uruguayan colleagues, and under submission with Chilean colleagues. |
| 5. Policy outcomes | **SPEG**<br>- Policy analysis to curb plastic pollution in Antarctic environment" work funded by COMNAP (Council of Managers of National Antarctic Programs, Environmental Protection)<br>-IAATO (International Association of Antarctic Tour Operator) ERCs Impact of Microplastic on Krill population around the WAP. https://iaato.org/node/74477<br>-Advocate the issue of plastic pollution in the polar region at the UN Environment Assembly Resolution to End Plastic Pollution INC-5 South Korea. https://www.unep.org/inc-plastic-pollution<br>-Presentation of Working and Informative Paper to the Antarctic Treaty aims to support actions to decrease local plastic pollution in Antarctica<br>- Mentor for Ant-ICON/SC-ATS fellow ERCs for participation to Antarctic Treaty in Milan June 2025 |
| 6. Selected publications | Riley, T. R., et al. (2025). Provenance and correlation of Permian successions from the Falkland/Malvinas Islands with West Gondwana: implications for a Natal Embayment palaeo-location. *Journal of the Geological Society*. 10.1144/jgs2024-282<br><br>Jordan, T.A. & Riley, T.R. (2024). Reinvestigating the Dufek Intrusion, through joint gravity and magnetic models. *Physics of the Earth and Planetary Interiors*. 10.1016/j.pepi.2024.107268<br><br>Riley, T.R., Curtis, M.L., Crame, J.A., Cantrill, D.J. & Macdonald, D.I.M. (2025). Geological map of Alexander Island, Antarctic Peninsula (1:500 000 scale). BAS GEOMAP 2 Series, sheet 8, British Antarctic Survey, Cambridge, UK.<br><br>Riley, T. R., et al. (2024). Tracking the tempo of a continental margin arc: Insights from a fore-arc succession in West Antarctica. *Geological Society of America Bulletin*. 19 pp. 10.1130/B37558.1<br><br>Perren, B.B., Kaiser, J., Arz, H.W. et al. Poleward displacement of the Southern Hemisphere Westerlies in response to Early Holocene warming. Commun Earth Environ 6, 164 (2025). https://doi.org/10.1038/s43247-025-02129-z [*most relevant to INSTANT*]<br><br>Jones-Williams, K. , Rowlands, E.,… & Manno, C. (2025) Microplastics in Antarctica – a Plastic Legacy in the Antarctic Snow?. *Science of The Total Environment*, 966 (). 12 pp. 10.1016/j.scitotenv.2025.178543<br><br>Savoca, M. S., et al. (2025) Monitoring plastic pollution using bioindicators: a global review and recommendations for marine |

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| | environments. Environmental Science: Advances, 4 (). 23 pp. 10.1039/D4VA00174E<br><br>Hunter, A., Thorpe, S. E. , McCarthy, A. H. , Manno, C. (2024) Microplastic hotspots mapped across the Southern Ocean reveal areas of potential ecological impact. Scientific Reports, 14. 12 pp. 10.1038/s41598-024-79816-y<br><br>Major review paper from AntArchitecture: Bingham, R. G., et al. Review Article: Antarctica's internal architecture: Towards a radiostratigraphically-informed age–depth model of the Antarctic ice sheets, EGUsphere [preprint], https://doi.org/10.5194/egusphere-2024-2593, 2024. (hoping will be included in a special collection on INSTANT for The Cryosphere). |
| 7. Funding awards | |
| 8. Points for discussion at UKNCAR committee meeting | Antarctica Insync (potential) opportunities (https://www.antarctica-insync.org/)<br><br>The SCAR Expert Group on Geological Heritage and Geoconservation (EG-GEOCON) are seeking to identify a series of sites of exceptional geological heritage value within various geo themes (called frameworks). They are working their way through the various frameworks and have made good progress on Archean Cratons and Meteorites. It's worth noting that this is ***not*** a process for seeking legal protection of the sites (that is a very different process run through the Treaty) but simply trying to come up with a list of the sites with high scientific value. If anyone is interested and would like to contribute, contact M. Bentley.<br><br>There has been a call to increase the leadership of UK within the research topic of Pollution in Antarctica (including plastic, POPs, heavy metals and other chemicals). |

**UKNCAR Reporting 2025**

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| 1. Name of SCAR Group or Programme | SCADM |
| 2. Principal UK Researchers | Helen Peat |
| 3. Major activities and progress since previous year involving UK personnel/infrastructure | The UK member on the Standing Committee for Antarctic Data Management is Helen Peat who attends monthly video calls and presents an annual report on UK polar data management activities. The terms of reference for SCADM can be found in Appendix A. SCADM produced a new data policy for SCAR (https://www.scar.org/library/products/scadm/5767-scar-data-policy-2022/file/) which has been endorsed by the SCAR executive and published in 2022.<br>One of its primary aims is to support National Antarctic Data Centres in making Antarctic data FAIR (Findable, Accessible, Interoperable and Reusable). Finding data is facilitated by the Antarctic Metadata Directory (https://search.earthdata.nasa.gov/search?portal=amd) which is a metadata catalogue provided by NASA's EarthData Directory. In addition, SCADM has worked with other polar data communities to produce a Polar Data Search facility (https://search.polder.info/). This is a federated catalogue that collates results from many underly data catalogues.<br>SCADM is keen to work more with SCAR's research programmes and can provide data management advice, particularly when the research programme includes development of a data product. You can get in touch with Helen Peat (hjpe@bas.ac.uk) or the SCADM Chief Officer, currently Johnathan Kool at the Australian Antarctic Data Centre, if you would like to find out more. |
| 4. Major future initiatives and actions involving UK personnel/infrastructure | |
| 5. Policy outcomes | |
| 6. Selected publications | |
| 7. Funding awards | |
| 8. Points for discussion at UKNCAR committee meeting | |

**UKNCAR Reporting 2025 - SCAGI**

*Provide up to two pages of information following the structure below, only filling out those sections where there is new information to report. We are particularly interested in hearing of key activities (e.g. expeditions/cruises/projects) publications, policy outcomes, future initiatives that you would like publicised, or where UKNCAR could help a group/programme liaise with other parts of SCAR.*

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| 1. Name of SCAR Group or Programme | SCAGI – Standing committee on Antarctic Geographic Information |
| 2. Principal UK Researchers | Louise Ireland (UK rep and Co-Chair)<br>Laura Gerrish (ADD Lead)<br>Elena Field (APC Secretary and Air Ops Maps Lead) |
| 3. Major activities and progress since previous year involving UK personnel/infrastructure | Antarctic Digital Database (ADD)<br>1. UK has produced and delivered new versions of the Antarctic coastline, rock outcrop, lakes, and moraine datasets in November 2024 - v7.10. Included updates to the Alexander Island region for the coastline, and the South Orkney Islands for the remaining.<br>2. Versions v1 (1993) to v5 (2010) of Antarctic Coastline have been published for public access in the ADD data catalogue.<br>3. A new Working Group has been initiated with the first meeting hoped for Autumn 2025. This aims to coordinate international efforts for the ADD.<br>Composite Gazetteer of Antarctica (CGA)<br>1. UK Antarctic Place Names Committee (APC) has fed all new gazetteer additions for British Antarctic Territory to the SCAR Composite Gazetteer of Antarctica (CGA). This consists of 26 new names.<br>Air Operations Planning maps<br>1. The UK map sheets for the Air Operations Planning Map series will be updated for 25/26 with the agreed specification. This includes the use of REMA v2.0 elevation data for spot heights and contours alongside standard updates for the latest coastline from the SCAR Antarctic Digital Database. Work is ongoing to establish the best way to include wildlife data for air operations usage.<br>SCAR Leadership forum<br>1. Took part in SCAR Leadership Forum in April 2025 and as part of this, SCAGI have submitted required strategic plan to SCAR with contributions from SCAGI membership. |
| 4. Major future initiatives and actions involving UK personnel/infrastructure | SCAGI will hold it's next annual meeting online in August. |

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| 5. Policy outcomes | None |
| 6. Selected publications | None |
| 7. Funding awards | None |
| 8. Points for discussion at UKNCAR committee meeting | None |

**UKNCAR Reporting 2025**

*Provide up to two pages of information following the structure below, only filling out those sections where there is new information to report. We are particularly interested in hearing of key activities (e.g. expeditions/cruises/projects) publications, policy outcomes, future initiatives that you would like publicised, or where UKNCAR could help a group/programme liaise with other parts of SCAR.*

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| 1. Name of SCAR Group or Programme | Standing Committee on the Antarctic Treaty System (SC-ATS) |
| 2. Principal UK Researchers | • Susie Grant (BAS) (stepped down as chief officer in Aug 2024, and handed over to Cassandra Brooks, US – but remaining on the committee)<br>• Rachel Cavanagh (BAS) - joined as AntClimNow representative in Aug 2024)<br>• Jasmine Lee (BAS/Monash University)<br>• Chandrika Nath (SCAR Secretariat)<br>• Other UK researchers from across SCAR groups have contributed to the development of advice and papers |
| 3. Major activities and progress since previous year involving UK personnel/infrastructure | SC-ATS coordinates the provision of SCAR's scientific advice to the Antarctic Treaty System (Antarctic Treaty Consultative Meeting (ATCM), Committee on Environmental Protection (CEP), Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)) – drawing upon expertise from across all SCAR programmes and affiliated groups. Many of the papers listed below were led or contributed to by UK researchers.<br><br>**CCAMLR**<br>SCAR participated in the CCAMLR Scientific Committee and Commission meetings (Hobart, Oct 2024) as an invited Observer, and presented papers on:<br><br>• SCAR Annual Report to CCAMLR.<br>• Antarctic and Southern Ocean climate change and the environment: update on recent research and SCAR activities relevant to CCAMLR.<br>• Antarctic fur seals as bioindicators of seasonal and ocean basin scale variation in the Southern Ocean food web (Ant-ICON/SC-ATS Fellowship paper).<br>• Observing systems in the Southern Ocean (SCOR & SCAR).<br>• Introduction to the SCAR Action Group on Fish (SCARFISH).<br>• SCAR Antarctic Biodiversity Portal update 2024 (Belgium, SCAR & SCOR).<br>• Update on High Pathogenicity Avian Influenza (HPAI) in Antarctica and the Southern Ocean (SCAR & IAATO). |

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| | **ATCM/CEP**<br>SCAR participated in the Antarctic Treaty Consultative Meeting (ATCM) and the Committee on Environmental Protection (CEP) (Milan, Italy, June 2025) as an invited Observer, and presented papers on:<br><br>• SCAR Annual Report to the ATCM<br>• Antarctic Climate Change and the Environment – 2025 update<br>• Update on High Pathogenicity Avian Influenza in Antarctica 2024/25 (SCAR, CCAMLR, COMNAP & IAATO)<br>• Update on Ross Sea region preparedness for HPAI (China, Italy, Korea, New Zealand, IAATO & SCAR)<br>• Report of International SCAR ImPACT/POLEMP Workshop on Monitoring Chemical Pollution in Antarctica<br>• Update on Antarctic RINGS<br>• Updates on emperor penguins: review of recent studies<br>• Geoengineering in Antarctica and the Southern Ocean<br>• Microplastics in Antarctic deep sea invertebrates: insights from biological collections (Ant-ICON/SC-ATS Fellowship paper)<br>• Biodiversity of ice-free Antarctica database (Australia, Belgium, UK & SCAR)<br>• SCAR Lecture at ATCM 47 - Urgent Messages from the South<br>• Creating and implementing solutions for systematic circumpolar monitoring of chemicals via the 5$^{th}$ IPY and Antarctica InSync<br>• Non-native species and biosecurity<br>• Informing systematic protection of Antarctic terrestrial vegetation (Ant-ICON/SC-ATS Fellowship paper)<br>• Update on plans for a fifth International Polar Year<br>• Scientific Updates on High Pathogenicity Avian Influenza in Antarctica during 2024-25 Season<br>• A summary of SCAR research relevant to climate vulnerability assessments of Antarctic species<br>• Systematic Conservation Plan for the Antarctic Peninsula Project Conclusions<br>• Antarctic Environments Portal<br>• Plastic pollution hotspots originating from local sources in the Southern Ocean<br>• Seal Populations and the Convention for the Conservation of Antarctic Seals<br>• Update on the Southern Ocean contribution to the United Nations Decade of Ocean Science for Sustainable Development<br>• Summary of activities across SCAR related to environmental monitoring |

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| | **SC-ATS/Ant-ICON science-policy fellowships**<br>The third round of SC-ATS/Ant-ICON science-policy fellowships were awarded to:<br>- Charlotte Walshaw (UK) for participation at the ATCM/CEP – vegetation mapping using satellite imagery<br>- Gabriel Stefanelli Silva (Brazil) for participation at the ATCM/CEP – microplastics and persistent organic pollutants in deep sea organisms<br>- Zuzana Zajkova (Spain) for participation at the CCAMLR Scientific Committee – long-term wintering distribution of Adelie penguins<br><br>These fellowships have been very successful in facilitating the participation of early/mid-career researchers in the CEP and SC-CAMLR, and helping them to gain an understanding of these policy forums. |
| 4. Major future initiatives and actions involving UK personnel/infrastructure | Participation in CCAMLR Scientific Committee and Commission meetings (Oct 2025) and CEP/ATCM (May 2026) – ongoing development of advice to inform policy discussions and decision-making, and provision of information as requested by these bodies.<br><br>A Joint CEP/SC-CAMLR Workshop on Climate Change and Monitoring will be held prior to the main CEP meeting in May 2026. SCAR advice on climate change and environmental monitoring is relevant to both bodies, and this workshop will be an important opportunity to identify specific research, monitoring and information needs that SCAR can help to provide. |
| 5. Policy outcomes | SCAR's scientific advice was very well received during the recent CEP/ATCM (June 2025), particularly on climate change, avian influenza, environmental monitoring, emperor penguins, and geoengineering. SCAR has been requested to continue providing relevant updates on all of these topics. |
| 6. Selected publications | |
| 7. Funding awards | |
| 8. Points for discussion at UKNCAR committee meeting | |