

UNIVERSITY OF
Southampton

A changing Arctic: Merging scientific perspectives

**Strengthening scientific diplomacy between
Russia and the United Kingdom**



This policy brief sets out to address the importance of Arctic relations in both Russia and the United Kingdom, highlighting their major scientific interests and policy priorities. Several scenarios are proposed that seek to strengthen collaborative science that will contribute towards informed national and international policy.

KEY SUMMARY

1. The Arctic is rapidly changing

A region of international residence, resource and security, the Arctic is undergoing considerable environmental transformation as it adjusts to climate change. Representing nearly half of the 4 million people living in the Arctic, and 53% of the Arctic coastline, Russia has a great national interest in the sustainable development and environmental prosperity of the region. As the Arctic's nearest neighbour, change poses a direct threat to the UK's sustainable development, resource interests, national security and biodiversity.

2. 2021: Russia chairs the Arctic Council

Opportunity as Russia chairs the Arctic Council, an intergovernmental forum supporting the sustainable development and environmental protection of the region. In recent decades, Arctic member states have invested significant resources into international and national policy legislation for protection and development in the Arctic.

3. Arctic economic, social and environmental development

Russia's second chairing of the Arctic Council will focus on environmentally sustainable economic and social development, whilst committing to respect interests between member states in environmental projects, industry and trade. These commitments also include international collaboration on scientific advances.

4. The UK as an Arctic Council Observer

The UK's involvement in Arctic relations builds on a long history in polar exploration and international cooperation within research and diplomacy. Components of climate change, including sea-level rise, warming, and biodiversity change are shared challenges that influence the resilience and adaptation potential of coastal and marine communities.

5. Shared commitments for a prosperous future

Both Russia and the UK have committed to innovative science and development in response to continual and dynamic change in the Arctic region. Initiatives are facilitated by governmental and cross-governmental networks, including the Foreign and Commonwealth Development Office (FCDO) Polar Regions Department, and the UK Science and Innovation Network (SIN) in Russia. Both the Russian and the UK governments have regularly updated their Arctic policy.¹

6. An international push for strengthened environmental policy and action

The confluence of entering the United Nations (UN) Decade for Ocean Science for Sustainable Development (2021-2030), Russia chairing the Arctic Council and the UK hosting the UN Climate Change 26th Conference of the Parties (COP26), provides a unique opportunity and impetus to build cooperative opportunities to inform and support informed policy in the Arctic region.

¹ President of the Russian Federation. Basic Principles of Russian Federation State Policy in the Arctic to 2035. (2020). <http://publication.pravo.gov.ru/Document/View/0001202003050019> [In Russian]

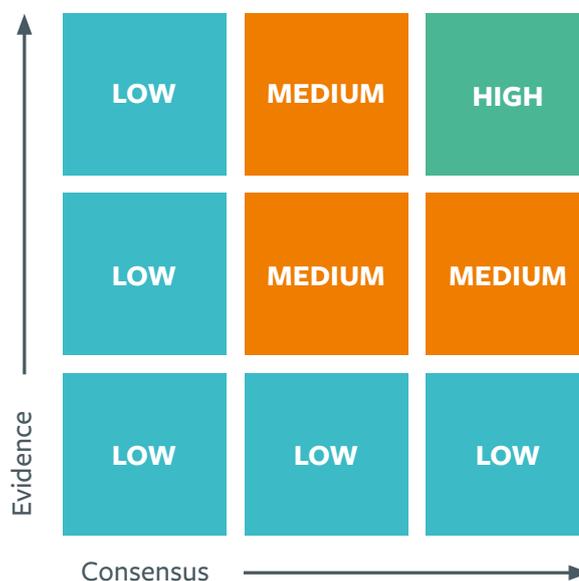
United Kingdom Government. Beyond the Ice - UK policy towards the Arctic (2018) <https://www.gov.uk/government/publications/beyond-the-ice-uk-policy-towards-the-arctic>

RUSSIA AND THE UK IN THE ARCTIC: ANALYSIS OF RESEARCH AND POLICY OUTPUTS

This report provides a snapshot of scientific interests of both Russia and the UK based on a quantitative and qualitative review of individual and collaborative activity in climate, ecology and marine research in the Arctic at national and international level.

We assign a confidence measure against each of our science and research statements, categorised as **LOW**, **MEDIUM** or **HIGH** confidence. We have employed the same method as the Marine Climate Change Impact Partnership to assess confidence.²

The confidence levels of low, medium or high are based upon the amount of evidence available and the level of scientific consensus. A high rating indicates a large evidence base from differing sources (literature, studies, experiments) with a high level of consensus.



HIGH Russian and UK science have undergone a **sustained growth** in peer-reviewed scientific publications, accelerating after the International Polar Year (2007) and the first Russian chairing of the Arctic Council (2004) [Fig.1]

MEDIUM Overall scientific productivity is not associated with growth in Russia-UK collaboration [Fig.1]. The number of collaborations has been increasing in recent years [Fig.2].

HIGH Russia has issued regular updates to Arctic policies^{1,2} that emphasise international cooperation, development, protection and utilisation of resources as outlined in its Arctic Council declaration and chair programme with a focus on development [Fig.3].

MEDIUM The UK commits to cooperate and collaborate with Arctic states, as stated within policy frameworks.^{2,3} This is facilitated by intergovernmental networks such as SIN, within the Polar Regions thematic programme. The Polar Regions Department of the FCDO, and the National Environmental Research Council (NERC) Arctic Office provide the necessary supporting infrastructure within government.

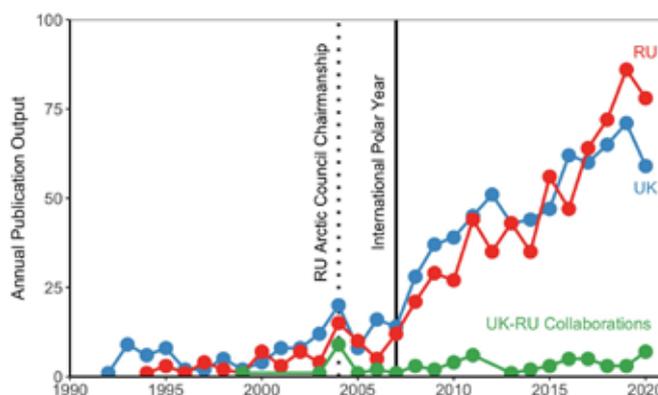


Fig.1 Publication growth in Arctic marine, ecology and climate change research. The number of scientific publications affiliated to Russian (red circle) or UK (blue circle) institutions, and those a product of Russian-UK collaborations (green circle)

¹ www.mccip.org.uk/impacts-report-cards/full-report-cards/2013/confidence-assessments/

² President of the Russian Federation. Basic Principles of Russian Federation State Policy in the Arctic to 2035. (2020). <http://publication.pravo.gov.ru/Document/View/0001202003050019> [In Russian]

³ United Kingdom Government. Beyond the Ice - UK policy towards the Arctic (2018) <https://www.gov.uk/government/publications/beyond-the-ice-uk-policy-towards-the-arctic>

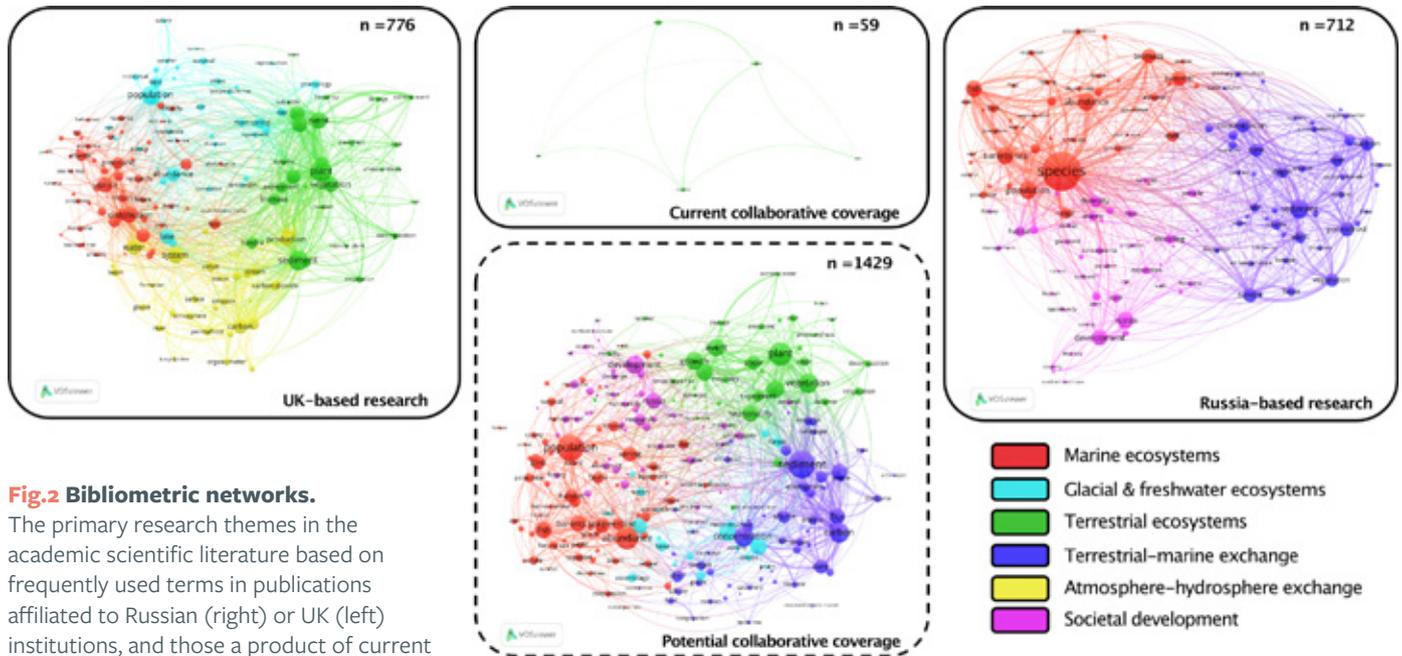


Fig.2 Bibliometric networks.

The primary research themes in the academic scientific literature based on frequently used terms in publications affiliated to Russian (right) or UK (left) institutions, and those a product of current Russian-UK collaborations (top) and combined potential (bottom). Node size indicates the frequency of term occurrence and link thickness indicates frequency of co-occurrence between terms.

MEDIUM Societal, political and scientific alignment exists within Arctic policy between Russia and the UK [Fig.3].

MEDIUM Russia’s research into marine and coastal ecosystems and societal development [Fig.2] encompasses an area stretching from Svalbard (10°E) to the Chukchi Sea (177°E, or 93% of the Eastern Hemisphere).

- Extensive archives and data repositories provide geo-referenced time-series data from pre-industrial to present day.
- Eighteen active research stations still operate within the high-, low- and sub-Arctic regions, half of which were originally established pre-1960.

MEDIUM UK has a track record in marine, glacial, freshwater and terrestrial Arctic ecosystems and atmosphere-hydrosphere exchange in regions such as the North Atlantic, Greenland & Spitsbergen [Fig.2]

- The UK Polar Data centre (BODC) database holds marine data repositories in these locations.
- Arctic research stations in Svalbard and North Greenland, and two polar research vessels, have secured long-term data in addition to real-time monitoring of ocean and atmospheric processes.



Fig.3 Arctic policy terminology.

The most frequent terms used in Arctic public policy published by the UK (top) and Russia (bottom). Size indicates the frequency of occurrence. Use of colour to facilitate readability.

OPPORTUNITIES



Scenario 1:
Increased visibility of existing scientific resources

Sharing previous, current and future funding opportunities

has potential to strengthen financial transparency and accountability, improve targeting of research investments and widen the pool of competitors. One approach is the cooperative usage of international grant platforms, which can provide a hub for up-to-date advertisements of funding rounds and bursaries. This recommendation would have an *indirect impact* on scientific engagement but will only be achievable in the medium-term, after the archiving of historical projects and streamlining of current and future funding rounds to an accessible platform, which occur at various points in the year.

Grants on the Web (GOW) is a family of online platforms that holds historical and current research, training and public engagement grants funded by each research council in the UK. Each research council has an exclusive web address and were created to promote interaction between researchers, industry, other users and the public. The websites allow real-time searches to be refined by research areas, research topic, industrial sector, scheme, socio-economic theme, region, organisation or project partners. In the topic of the Arctic, 474 grant, fellowship and training grant records have been awarded by NERC so far, with a total value over £127 million.

Executing proposals effectively requires identifying collaborative funding resources and early preparation to overcome challenges in financing during bilateral project proposals (e.g. due diligence on behalf of UK institutions dispersing funds, and financial approval for RU institutions receiving foreign government resources that arise). Longer lead-in times for project submissions would help facilitate resolving these matters. Due to the challenges of funds moving across borders, smaller funding pots may be less desirable.

Research Professional (researchprofessional.com) is an online interface to make browsing for international funding more accessible for subscribing research institutions. It provides access to a regularly updated database of research funding opportunities, international research policy and practice news. Researchers can create, save and share refined searches and folders of bookmarked opportunities.

UK-RUSSIAN COLLABORATIVE GRANTS

The Royal Society-Russian Foundation for Basic Research: Bilateral research connecting funded researchers from UK Royal Society with equivalent from the Russian foundation: <https://royalsociety.org/grants-schemes-awards/grants/international-exchanges/>

Equivalent of £12,000 for both UK and Russian applicant for fixed term of 2 years

UK-Russia Arctic research bursary programme (NERC Arctic Office/SIN Russia): For new collaborations, this bursary offers up to £7,000 for UK researchers to support new active engagement with Russia-based researchers in the Russian Arctic and High North. Funded by BEIS.

INTERACT: A network of Arctic Terrestrial Research Stations for transnational access. Both UK and Russian researchers may apply for grants to access research stations for fieldwork and projects. The UK hosts at Ny-Alesund (Svalbard), and Russia hosts 7 Arctic research stations within the network: <https://eu-interact.org>

The Russian Science Foundation and Russian Foundation for Basic Research: Several calls for funding applications/year for Russian researchers for projects with foreign partners. Currently there is no established UK partner organisation to fund bilateral projects between the UK and Russia.

Integrating subscriptions to common platforms such as Research Professional into funding applications will directly improve accessibility to common knowledge and resources across collaborative projects.

Regular interdisciplinary events such as annual conferences and outreach programmes will promote the mixing of established specialists with early-career researchers, facilitate the sharing of techniques and ideas for future research investigation. Smaller webinar activities, training sessions and workshops can be created for the purpose of specialised discussions between interested parties on the leading edge of their fields in order to target key issues in Arctic science and policy. The hybridisation of face-to-face and virtual events will maximise outreach, accessibility and facilitate the archiving of meetings that can be revisited online. This recommendation will have a direct impact on scientific engagement



but will take months of planning (medium-term) to properly establish, as large-scale, successful events require a lot of logistical planning and promotional advertising to generate interest.

Arctic Change 2020 (AC2020; arcticnetmeetings.ca/ac2020) was the first virtual event of ArcticNet's International Arctic science conference series. As a result, it was globally accessible to attend live and ran over 70 topical sessions, including dedicated policy, governance and diplomacy, within the space of 4 days. It later became an archive of scientific content, which is authorized to be revisited up to a year after the events.

Utilisation of resource network infrastructure will support a greater capacity for field-based research and increase the potential temporal and geographical coverage of data collection and observation. Interested parties can browse catalogued information detailing relevant contacts, research capabilities, operational periods and other important information regarding field stations, networks and marine vessels. This recommendation will have a *direct impact* on scientific engagement, and with existing infrastructure already in place, it can be achievable in the short-term. However, limitations in accessing transnational resources include the seasonal accessibility of Arctic field-research, facility capability and capacity for external users. Furthermore, practitioners will require funding for fieldwork.

The INTERACT (eu-interact.org) circumarctic network facilitates physical, remote and virtual access to research stations, providing information for scientists outside of the host country to apply for research time. Interested parties can find relevant field stations, research capabilities and operational periods across the Arctic and sub-Arctic. Within Russia, there are 7 Arctic, 5 sub-Arctic and 6 boreal research stations available for transnational use through the INTERACT programme. The UK-hosted Ny-Ålesund research station (Svalbard) is also part of the programme.

ARICE (Arctic Research Icebreaker consortium; arice.eu) offers a similar opportunity for transnational access to polar research vessels. *RSS Sir David Attenborough*, co-owned by the British Antarctic Survey (BAS) and NERC, will be included in the ARICE programme when fully operational providing berth for up to 60 scientists.



Scenario 2: Increased accessibility of knowledge and research

Increasing the accessibility of data platforms and publication routes can promote project visibility and provide scope for new directions. Making databases open-access can raise the visibility of new frontiers, encouraging adaptability for leading-edge research. Clear and simple platform interfaces with translation capabilities for non-native speakers can facilitate international data-sharing and *indirectly impact* scientific engagement. Existing open-access platforms with successful outputs for marine science include the Ocean Biodiversity Information System (OBIS; obis.org) and the partnered Global Biodiversity Information Facility (GBIF; gbif.org).

Currently, development of a transnational benthic marine ecology database platform with open-access data and translation capabilities is in progress (*OneBenthic*; sway.office.com/HM5VkvWvBoZ86atYP). The *OneBenthic* marine benthic ecology database can provide a centralised point for existing and future data, raising the potential impact of research progress through combined efforts for

mutual benefit. A central database also facilitates standardising nomenclature, methodologies and data compilation, which makes data processing efficient and cost-effective.

Such projects require funding and organisation capability, time to construct (medium-term) and obtain enough data to build up a significant database.

Target accessible international scientific journals and online libraries for collaborative publications. Online libraries such as *Web of Science* (international) or *e.library* (Russia) provide access to science publications for subscribing researchers and practitioners. However, publication access may not be universal, and can be frustrated by differences in subscription terms and language difficulties. Targeting open-access journals will increase the availability and access to primary scientific findings and *indirectly impact* scientific engagement. This requires a knowledge of existing libraries, and the time required to produce publications (medium to long-term).

Researchers can target journals with policy-relevant themes, tailored for international visibility and collaboration. *AMBIO* is a high-impact journal with regular publications, and submissions are encouraged to consider policy recommendations. *AMBIO* is currently the most frequent venue for Russia-UK collaborative research.



Scenario 3: Engagement with existing infrastructure that facilitates scientific diplomacy

Engagement with existing active groups and networks is critical for effective international collaboration. The main UK-international facilitator for science and policy is the Science and Innovation Network (SIN). SIN Russia has considerable experience in guiding UK researchers in *direct engagement* with international partners. Practical support is offered to facilitate academic exchanges, event organisations and capacity-building for future collaborations. As the infrastructure is already in place, initial engagement can be achievable in the short-term.

In 2017-2018, the SIN team in Russia scaled-up support for UK-based Arctic science to identify opportunities for increased collaboration. There are five Arctic-related projects, with additional funding from UK governmental bodies such as the FCDO and NERC Arctic Office. SIN Russia works alongside the UK government and the UK Polar Network (UKPN) to implement these projects and increase links between practitioners. This has increased visibility and the impact of collaborative projects.

SIN Russia, the UK Polar Network and Association of Polar Early Career Scientists (APECS) Russia are involved in several annual workshops and conferences designed for increased collaboration between Russia and the UK within Arctic science. UKPN and APECS Russia led workshops and fieldwork for early-career researchers interested in Arctic science, establishing links between institutions.

Strengthen outreach and connectivity through virtual networking

An established engagement and outreach network is critical for fostering transnational relationships between institutions and ensuring maximum impact for policy-related projects. Involving existing active groups such as SIN Russia, UK Polar Network and APECS Russia in collaborative projects and project outputs is a simple and effective method of *directly impacting* scientific

engagement and increasing visibility of projects and outputs. As these networks are already established, initial engagement can be achievable in the short-term.

Organisation websites feature project updates and outputs. Email lists and newsletters also distribute information on relevant event announcements and project proposal information. Recent advancements in virtual conferences and workshops facilitate better networking between geographically-distant collaborators and offer a low-cost and low-carbon answer to increasing communication.



Scenario 4: Facilitate effective communication through translation services

Translation services offer support for bilateral collaborations between countries with different official languages. Collaborative projects can enhance the diversity of researchers involved by using a more inclusive format that provides translation services throughout project execution; from networking, workshops and training, through to written communication and output. Neural machine translation systems such as Deep-L (deepl.com) provide rapid text translation services, assisting researchers with written outputs and deliverables. Deep-L also facilitates access to alternative literature databases with respect to English-centric databases such as Web of Science, increasing visibility of a wider range of publications. International translation companies such as Omnica (omnica.ru) offer professional multi-lingual interpreters for real-time verbal translation. Hosting interpreters during bilingual events such as workshops and roundtables can assist understanding and facilitate greater flow of conversation. Financing for translation services such as Omnica during proposal preparation are time and money-efficient and will ensure a strong foundation for effective communication from the start of a project.

FURTHER READING AND SOURCES:

Scientific articles

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About the study

This policy brief is based on the project “Building, enabling and valuing UK-Russian research capacity to address climate change effects on Arctic marine ecosystems”, led by Prof. Martin Solan at the University of Southampton (School of Ocean and Earth Science, Faculty of Environmental Life Sciences). The project has been supported by Public Policy | Southampton (UK), the Southampton Marine and Maritime Institute (UK), the Centre for Environment, Fisheries and Aquaculture Science (UK), Saint-Petersburg State University (RU) and the Zoological Institute of Russian Academy of Sciences (RU) as Project Partners. The study employed a mixed method design including bibliometric quantitative, qualitative and visual analyses.

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