INCLUSIVE COLLABORATIONS IN ANTARCTIC RESEARCH

Renuka Badhe
Morgan Seag, Alex Thornton, Iqra Choudhry

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INCLUSIVE COLLABORATIONS IN ANTARCTIC RESEARCH

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Toward inclusive collaborations in Antarctic research: understanding intersectionality

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Scholars and practitioners working on diversity, inclusion, and equity are increasingly recognizing the importance of intersecting issues affecting individuals as a sum of more than their parts. Intersectionality in this context refers to the ways in which multiple forms of disadvantage and discrimination (including and beyond sexism and racism) can be compounded, creating unique obstacles (or opportunities) for certain groups and individuals.

This talk applies the concept of intersectionality to ongoing efforts worldwide to create more inclusive and equitable Antarctic research communities. These challenges may be related to sex, gender identity, sexuality, socioeconomic status, language, nationality, religion, disability, ethnicity, race, age, familial and caregiving responsibilities, and/or other factors. Understanding the ways in which barriers associated with these categories intersect, and the implications of that process, is an important and powerful tool in making communities more inclusive - including Antarctic research communities. Both Antarctic collaborations and research are broadly poised to benefit from a tremendous diversity of ideas and approaches if we as a community can fully commit to understanding and addressing overlapping, interconnected barriers to equality and progress in our fields.

In this light, this talk:
1. Introduces the concept of intersectionality;
2. Explores central tenets of the concept within Antarctic research, considering the international, interdisciplinary, collaborative context in which Antarctic research is often undertaken;
3. Discusses the value of intersectionality as a methodology for Antarctic Humanities and Social Sciences research;
4. Discusses the value of intersectionality as a tool for Diversity, Equality and Inclusivity within the broad context of Antarctic Institutions.
Taking responsibility for the assumptions and shortcomings of our specialized disciplines within interdisciplinary efforts.

Larelle Bossi

University Of Tasmania, Hobart, Australia

Inclusivity is an ethical position. Inclusivity as an ethical position is saying yes to the other. Yes in the acknowledgment of the Other. In this presentation I address the necessity in acknowledging, sharing and overcoming the assumptions and limitations we each present as representatives of diverse and specialised disciplines within interdisciplinary discourse. Prior to even delivering research for policy-making, the conceptualization and formation of explicitly crafted interdisciplinary research requires the synthesis of multiple fields of expertise. Seeking out communications concerning the governance of Antarctic socio-ecological systems ought not be a mere afterthought or puzzle post-data collaborations. Rather, the ‘human dimensions’ precede the scientific hypothesis and necessitate/postulate the ‘coming together’ of all disciplines involved prior to any field work and analysis at all. The socio-ecological systems within the Antarctic environments are themselves the human enterprise. The governance and human dimension of these Antarctic socio-ecological systems therefore are not separate from science, but an integral dimension of it. This presentation considers a conceptual framework of interdisciplinary discourse which never abandons the human dimension in Antarctic research and governance. Inspired by philosophical forms of critical thinking, it hints at methodological approaches toward effective ways in which to engage with each other.
Opportunities for Early Career Researchers in Antarctic Science, the perspectives and priorities from the Association of Polar Early Career Scientists and the Marine Ecosystem Assessment for the Southern Ocean

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¹Institute for Marine and Antarctic Studies, University of Tasmania, Hobart, Australia, ²Alfred Wegener Institute, Bremerhaven, Germany, ³Associação Caruaruense de Ensino Superior, Brazil

Involvement of Early Career Researchers (ECRs) in international scientific collaborations provides invaluable experience and training for individuals aspiring to become future researchers and leaders in science. In Antarctic research, various organisations and initiatives create these opportunities through supporting and promoting contributions from ECRs. Here we focus on ECR opportunities arising from the linkage between the Association of Polar Early Career Scientists (APECS) and the first Marine Ecosystem Assessment for the Southern Ocean (MEASO). We review the benefits to ECRs from their involvement in the MEASO process, from the organisation of the MEASO international conference held in 2018, participation in developing and reviewing information pages on Southern Ocean biota on the Southern Ocean Knowledge and Information (SOKI) wiki, to lead and co-authorship of manuscripts to be published as part of the special issue reporting on the outcomes of the assessment. We discuss the motivations of ECRs participating in initiatives such as MEASO in conjunction with PhDs and other research commitments and the various obstacles currently facing ECRs that limit their capacity to pursue such opportunities and future career pathways. We incorporate the outcomes of the APECS ECR workshop held prior to the SCAR 2020 conference held in Hobart, suggesting strategic actions that could potentially be implemented by ECRs within challenging research environments and perspectives on emerging future priorities for Antarctic research.
The Association of Polar Early Career Scientists (APECS) is an international and interdisciplinary network for undergraduate and graduate students, postdoctoral researchers, early career professionals, educators, and others interested in polar and alpine regions and the wider cryosphere. The existence of APECS as a stakeholder in the last decade has been fundamental towards developing a diverse future leadership in the polar research community. APECS has grown from a small group established during the 2007/08 International Polar Year (IPY) to a global community of more than 3,200 actively-engaged early career researchers (ECRs) interested in all natural and social science disciplines focusing on the polar and alpine regions and greater cryosphere, from over 70 countries. APECS aims to continue growing and providing opportunities for polar ECRs around the globe through capacity building, being on the cutting edge of information assessment, and education and outreach. I will discuss recent initiatives and activities by APECS in cooperation with SCAR while I have been a member of the Executive Committee, as well as how we can we further integrate diversity, equity, and inclusion (DEI) principles into our agreements and meetings.
University of Concepción Antarctic and Subantarctic Science Program (PCAS), Chile.

Marely Cuba-díaz

Director “Programa de Ciencia Antártica y Subantártica”, Universidad de Concepción, Concepción, Chile

Antarctica is a continent rich in natural resources that contribute to knowledge and biotechnological development and an important regulator of the planet's climate. Recently it has shown its fragility and vulnerability to global climate change. The registration of plastics and hazardous chemical residues in the Antarctic Ocean and non-native species in their terrestrial and aquatic ecosystem, reflect human activity. Meanwhile, the Sub-Antarctic region represents a crucial element in understanding the trajectory of polar ecosystems in the face of growing anthropic pressure. Chilean Patagonia, one of the largest fjord ecosystems in the world, has a rich biodiversity and influences the hydrography and biogeochemistry of the Eastern South Pacific Ocean. Chile, due to its geographical proximity to Antarctica and for having scientific bases in Antarctica and Sub-Antarctica, has a strategic position to conduct global research. The Universidad de Concepción has a long history of research in both regions, reflected in the significant number of researchers, projects and publications with national and international appreciation. The Antarctic and Sub-Antarctic studies integration with a multidisciplinary approach could improve the understanding of the changes trajectory of these ecosystems that are strategic for Chile and of global relevance. The creation of this Program represents a great opportunity to generate multidisciplinary research that is reference in Antarctic-Sub-Antarctic science at national and international level. The main goal of the Program is to grouped a multidisciplinary researchers team, and enhance active participation in research, diffusion and technology transfer projects in Antarctic and sub-Antarctic science and increase national and international collaboration.
CCAMLR Scientific Scholarship Scheme: an important tool to involve early career researchers in CCAMLR processes and to build capacity

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The word ‘inclusion’ is widely used to refer to the overcoming of practical and conceptual boundaries that can occur in various areas. One significant boundary in the scientific community today that requires concerted efforts to be surmounted is the difficulty that early career researchers (ECRs) confront in order to get involved in high-level research and management systems. To overcome these obstacles, the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) established the CCAMLR Scientific Scholarship Scheme in 2010 in order to promote the participation of ECRs in the work of the Scientific Committee and its working groups. The CCAMLR scholarship represents a way to engage enthusiastic ECRs in CCAMLR meetings and processes, with the objective to contribute to capacity building within the CCAMLR scientific community.

The CCAMLR scholarship program pairs recipients with a mentor from a different Member country who is available to guide the recipient through the processes and procedures of CCAMLR. In the last two years seven ECRs from Brazil, Italy, Germany, Argentina, Ukraine, Uruguay and China received the scholarship. Recipients represent diverse skills and interests: krill and whale distributions, non-extractive monitoring systems, fish and penguin population monitoring, krill ecology and krill larvae abundance and distribution. Such a comprehensive suite of competences serves to improve the exchange of capacity within the ECR community. Connections forged at the ECR level nourished by intra- and inter-generational dialogue among researchers strengthens the relationships between Member countries involved in the conservation of the Antarctic marine living resources.
Diversity (humans) in Polar Science...

Donna Frater¹
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Scientists study every element of the natural world we can reach, from the smallest animals in the depths of the oceans to particles in the Stratosphere. Some of the fields of science that the STEM students who are studying now will investigate, do not even exist yet. There is not a typical STEM job but there is a ‘STEM stereotype’ that society learns, and for Polar Science in particular, there is a gender and racial stereotype of a Polar Scientist, which resonates as an older, bearded, white male. This stereotype severely impacts who looks at polar science and who connects with the vital research done there.

If the collectors of these finding are all a narrow segment of the world’s population how can you expect the polar science voice to influence change across a diverse planet?

The competition for the brightest, most innovative minds in the global STEM landscape is very strong. If Polar Science is going to attract the bright minds it needs, it needs to change its image and make a commitment to be more welcoming and embracing of diversity and innovation.

Lack of diversity limits innovation and limits the relevance to a broader group of people. If you do not have diverse scientists you do not have the point of view of particular life and cultural experiences of that person being represented. You are constrained by a select view of the world from people with a limited to exposure to a great deal of the planet.
UK Polar Horizons project- Bringing diversity into Polar Science

**Donna Frater**

1 UK Foreign and Commonwealth office / British Antarctic Survey, United Kingdom

In recognition of the lack of diversity in UK polar science, inclusion initiatives and a research project were sponsored by the Foreign and Commonwealth office in 2020. The UK Polar Horizons project, completed in March 2020, provided early career STEM students, an opportunity to experience research science in a polar context. The poster will detail how British Antarctic Survey opened its doors to postgraduate STEM applicants from underrepresented groups (LGBTQ+, BAME and people with disabilities) to experience what it’s like to work in polar science. The STEM applicants were paired according to a science/engineering match and spent several days working side by side with their host and gathering an in depth look at polar research and operations.

The graphs of UK polar science diversity statistics compared to UK higher education statistics show the considerable gap in attraction. Polar science has failed to connect with and attract students from across the UK society and reflects that lack of diversity in its scientists. References to global polar organisations reflects the same lack of diversity and connection with a global audience.

We will have discussion and feedback graphics that evolved over the project week discussing outcomes and opportunities. Word cloud exercises show the development of the students understanding of polar science and its place in global policy making. Social media extracts will be used to show the early career researchers views of the project and polar science. Images on the poster, very clearly show more diversity than generally found in polar science gatherings.
Your way to research at Neumayer Station III, Dronning Maud Land

Tanja Fromm\textsuperscript{1}, Christine Wesche\textsuperscript{1}
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The German research station Neumayer Station III is located at 70°38’S, 8°15’W on the Ekstroem Ice Shelf. The location offers unique opportunities to study coastal Antarctic processes, ice shelf dynamics and marine life. A small group of seals and a penguin colony settle on the sea ice in easy reach approx. 10km distance to the station. The geomagnetic position of the station (L=4.2) is ideal to study ionospheric and geomagnetic phenomena. Long term observations of the air chemistry, meteorological and geophysical observatories can provide long time series of data and aid in answering project related research questions. Additionally, Neumayer is a logistical hub for deep field campaigns in the hinterland and for the summer station Kohnen 800km south on the Antarctic plateau. The station is open for other researchers in a transparent user application processes with external project reviews. Here we display the application process, the logistical and technical facilities of the station.
Inclusivity, equity, and diversity benefit all of Polar research, helping the community to realise its full potential. Pride in Polar Research (PiPR) was established when an early career researcher reached out to the community ahead of the POLAR2018 conference in Davos, seeking solutions to the isolation and discrimination issues they faced as a queer and intersex scientist. What began as plea to other members of the community to be more visible by wearing rainbow badges quickly developed into a group actively working to combat biases through community development and education. PiPR is inclusive, welcoming all Sexual Orientations, Gender Identities, Gender Expressions and Sex Characteristics identities (LGBTQIA+ and others). Since the first meeting in Davos, attended by >30 conference participants, PiPR has received support from SCAR, IASC, and other organisations, established Twitter (1400+ followers) and Facebook (200+ followers) accounts, and a moderated mailing list (100+ members), becoming an internationally recognised network.

PiPR is working to establish a more formal structure and is cooperating with Women in Polar Science, Minorities in Polar Research, other intersectional groups and allies across academia to build on its initial successes. Beyond supporting, connecting, and raising the visibility of members of our community, PiPR will produce resources intended to improve equity, diversity, and inclusion within Polar research. One priority is to provide practical advice to individuals and groups organising workshops, conferences, fieldwork, etc., on how best to be as inclusive and welcoming as possible, given the many different barriers that members of the PiPR community face worldwide.
How the Association for Polar Early Career Scientists (APECS) Encourages Diversity and Inclusion Within and Beyond our Organization

Carolynn Harris1, Emily Choy2, Sasha Leidman3, Morgan Seag4, Lauren Thompson5
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The Association for Polar Early Career Scientists (APECS) works towards a future where one’s identity is not a barrier to success in polar science. In 2018, APECS introduced a project group on Diversity, Equity, and Inclusion (DEI). Their goals were to: (1) encourage and facilitate international, interdisciplinary dialogue about DEI topics in polar research, (2) provide resources for APECS members facing identity-related challenges, as well as for allies and leaders in our community, and (3) promote DEI principles within the structure of APECS and related communities, now and in the future. In practice, they facilitate discussion and action related to DEI issues to ensure APECS supports all members in their professional endeavors regardless of nationality, ethnicity, religion, race, sex, gender identity, sexual orientation, economic class, disability, physical appearance, age, or career status. This project group is structured as an umbrella group that provides guidance for APECS International Council members to lead activities related to the issues that are most important to them. Activities may focus on a single, narrowly defined issue (e.g. organizing a webinar to address misconduct in the field) or on a broad issue (e.g. generating a network of mentors). In their first two years, their achievements include (1) launching a curated online DEI resource repository on the APECS website; (2) hosting three webinars, permanently archived, on promoting inclusive policies, improving field conduct, and addressing bias in professional relationships; and (3) creating a network of mid to late-career researchers with DEI experience available as mentors to APECS members.
The Diversification of Antarctic Science: A Historical Case Study from the McMurdo Dry Valleys

Adrian Howkins

University Of Bristol, Bristol, United Kingdom

The McMurdo Dry Valleys offer a useful case study for thinking about the diversification of Antarctic science over time. Since the late 1950s, this predominantly ice-free region has been an important centre for scientific research in Antarctica. Scientists from the United States, New Zealand, Japan and a number of other countries have conducted research here giving the region a strongly international history. At the same time, the distinctiveness of the Dry Valley environment helps to make it a discreet, bounded region which is helpful for historical analysis. This paper combines archival research and oral history interviews with a social network analysis of the scientific papers published on the McMurdo Dry Valleys since the early twentieth century to look at histories of race, gender, and class in Antarctic science. It considers ways that diversification in Antarctic science can be measured and looks at some of the obstacles to increasing diversity. While significant progress has been made in terms of gender diversity among the scientists working in the region, by some measures ethnic and racial diversity has decreased over time, suggesting that we need to be careful about narratives of linear progress. The paper concludes by thinking about how a historical approach might inform current efforts to diversify Antarctic science and considers how the McMurdo Dry Valleys case study might fit with the broader picture of Antarctic science as a whole.
Looking ahead to the next U.S. Antarctic program multidisciplinary deep field camp

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1Indiana University Purdue University Indianapolis, Indianapolis, United States, 2Brigham Young University, Provo, United States, 3Tulane University, New Orleans, United States, 4University of Wisconsin - Milwaukee, Milwaukee, United States, 5Bowling Green State University, Bowling Green, United States, 6University of Kansas, Lawrence, United States, 7Lamont Doherty Earth Observatory, Palisades, United States

The U.S. National Science Foundation has a history of deploying Earth Science focused deep field logistics hubs in the Transantarctic Mountains. To begin the process of planning for the next camp, a meeting of U.S. Antarctic researchers was held in October 2019 to identify geographic regions that are best suited to address top scientific priorities for the geological, biological and cryospheric sciences. Five regions were discussed and northern Victoria Land and the southern Transantarctic (Scott Glacier region) were ranked highest for their multidisciplinary research potential. Northern Victoria Land, adjacent to the Wilkes Subglacial Basin, is well situated to evaluate terrestrial records of Neogene-Quaternary fluctuations of the East Antarctic ice sheet, with regional and with global significance. The region would also provide opportunities to further explore such topics as geodynamic processes controlling volcanism and landscape evolution, latitudinal gradients in biodiversity (Paleozoic to Modern), Antarctica’s role as a keystone continent in Gondwana, etc. Many similar objectives would be achievable from Scott Glacier. We welcome dialogue about potential collaboration and cooperation with other international programs.
Polar research and exploration has been historically male dominated, and the pathway of women in polar research over the past 70 or so years has entailed many women breaking one “ice ceiling” after another. The Women in Polar Science (WiPS) network started in December 2013 with the aim of connecting and supporting women working in Antarctic and Arctic research. WiPS has grown from a small grassroots network, to bring together 4000+ individuals across several social media platforms from all continents of the world. Across the network, women researchers are sharing their own experiences, struggles and stories, and highlighting their contributions to global science. WiPS have organised several major events since 2014, including networking events, a Women in Antarctic science Wikibomb to increase wikipedia profiles of female Antarctic scientists, and panel discussions on life experiences of women in polar research and leadership. To maintain a network as successful as WiPS, organising both events and communication on social media, relies on volunteer time and very little sponsorship. WiPS hopes to continue for many years to come, with a shared aspiration for a bright and inclusive future for polar research, supporting a diverse global community of researchers, and helping them thrive and achieve to the best of their potential.
The power of networks to support diversity in polar research

Renuka Badhe¹, Emily Choy², Premdeep Gill³, Huw Griffiths⁴, Charlotte Havermans⁵, Mary-Anne Lea⁶, Jess Melbourne-Thomas¹, Joseph E Nolan², Stephen Roberts⁴, Justine Shaw⁷

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Polar research is intrinsically global, intersecting with a range of societally relevant issues. Yet, Polar research has historically been dominated by generations of ethnically white men from European backgrounds. In the past, minorities that worked in these subjects were isolated by circumstance, geography and limited opportunity. As diversity within Polar research fields has increased, various networks including Women in Polar Science, Minorities in Polar Research and Pride in Polar Research have emerged from a growing understanding that the Polar research community should reflect society as a whole. It is widely understood that having a diversity of ideas and approaches, by supporting an increase in diversity of researchers, benefits research teams and outcomes, as well as research progress more generally. These growing networks, which include thousands of followers, voices and contributors, represent those who may not have been heard before, and can thus provide a platform for positive change. These networks rely on individuals, or teams of volunteers to enhance the visibility of underrepresented and marginalised groups in STEM, while highlighting the barriers and challenges they still face. Digital endeavours such as the women in Antarctic science Wikibomb event at the SCAR OSC 2016 demonstrate the power of people and technology to make a positive difference. In this digital age, underrepresented and minority groups have truly harnessed the power of the internet and social media to come together in support of diversity, equity, and inclusion in Polar research.
Drawing Lessons for Including Women and Africans in Polar Research from a study on Women in Science in Africa

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The challenges that women in science struggle with are systemic institutional difficulties that contribute to them opting out of pursuing careers in science. We use science to collectively include science, innovation, technology, engineering and mathematics. These hurdles include inequality in remuneration, slower career progression, fewer leadership opportunities, sexual harassment, slower uptake of funding opportunities, amongst others. Despite progress in narrowing the gender gap in science in Africa, the scarcity of women in science research and careers remains stark. Equally stark is the under representation of women and African scientists in polar research. An African Academy of Sciences study on women in sciences that looks at the barriers women face, and the policy options that can support women in science in Africa. This paper will look at this study on women in science and the barriers it identifies, and the policy options it proposes, to draw lessons for building a more inclusive and representative polar research community, that is inclusive of women and Africans. The study proposes that policy options should begin by addressing the root causes, then move to develop strategies that will influence cultural orientations and stereotypes at all levels and finally develop interventions to ensure comprehensive support structures are in place to build a conducive environment for women and Africans (and other grouping) to undertake polar research.
Gendered Power Relations and Sexual Harassment in Antarctic Science and Remote Fieldwork in the Age of #MeToo

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Antarctica is a remote, historically masculine place. It is also a workplace, and the human interactions there are connected to power structures and gendered expectations. Today, nearly 60% of early career polar researchers are women (Strugnell et al. 2016). However, women in Science, Technology, Engineering, Mathematics, and Medicine (STEMM) are 3.5 times more likely than men to experience sexual harassment during fieldwork (Clancy et al. 2014) making questions of safety, power, and harassment pertinent. Gender equity initiatives coupled with #MeToo have provided new platforms for reporting sexual harassment and challenging problematic research cultures which position science as meritocratic and gender-neutral. Yet, the impact of #MeToo in Antarctic science is uneven. The termination of Prof. David Marchant is widely cited as evidence that #MeToo is positively affecting Antarctic science. We argue it is problematic to focus on individual cases at the expense of the wider culture. We examine the complex historical (e.g. gendered interactions with the Antarctic landscape), cultural (e.g. identity politics), and relational (e.g. gendered power dynamics) tensions underpinning recent #MeToo revelations in Antarctic science with a view to providing more nuanced approaches to structural change.
An APECS initiative to foster multidisciplinary collaborations between Polar Science and Art

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The Association of Polar Early Career Scientists (APECS) is the largest international network of early career researchers (ECRs) working in the high latitudes and the cryosphere. For over ten years, APECS has provided a platform for sharing ideas and providing training and skills development for ECRs with the aim of shaping the future generation of polar leaders. Polar education, communication and outreach have driven APECS activities since its inception in 2007 (Hindshaw et al., 2019).

ECRs value the importance of communicating science beyond academia. However, there is little formal preparation on science communication during ECRs’ formative academic years, resulting in poor understanding of the skills needed, the tools available and the opportunities for collaboration with other disciplines. Art, in its many different expressions, can be an effective ally to science communication. The APECS Art Group aims to inspire ECRs to engage in art-science interaction by creating an online platform containing training tools and useful information to establish initial contacts with artists. Webinars by artists inspired by the Polar Regions, a Polar Art blog that highlights the collaboration between artists and scientists, and a comprehensive dataset of artists who are willing to or have worked with scientists in the Polar Regions will be made available to ECRs. This poster demonstrates examples of creative art-science collaborations within APECS and invites feedback and contributions from others with expertise in these fields.
Gender in Polar Research – Reflections of the ASSW 2020 Workshop

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Gender in Polar Research – Gendered field work conditions, epistemologies and legacies has been the theme of the IASC funded workshop organized by the IASSA Working Group Gender in the Arctic, IASC’s Cryosphere, Marine, Terrestrial and Social Sciences and Humanities WGs during the Arctic Science Summit Week (ASSW) in Akureyri, Iceland, 29–30 March 2020. This poster reflects the key discussions, statements and outcomes from presentations and interactive as well as artistic formats. The workshop combines three strands of debates: (1) Doing science in the 21st century in a way that departs from but also pays careful attention to the history of exploration and colonial endeavors as “heroic” and masculine activities – while a masculine image still seems to dominate the methodologies and practices of Arctic and Polar research. (2) The still existing gender gap when it comes to female researchers in hard sciences, their career prospects, and their sometimes difficult working conditions. Critiques of the gender gap has far neglected the diversity aspects of queer and gender minority (LGBTQI) researchers. They face particular challenges while working in a still largely heteronormative research environment as it is described for research stations, vessels or tundra/taiga camps. (3) The gendered composition of researchers as actors and the gendered spaces of conducting research, including the field sites, have an important impact on research interests, research design, research ethics and epistemology.
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