



Rhian A. Salmon^{1,2}  and Rebecca K. Priestley^{1,2} ¹Centre for Science in Society, Victoria University of Wellington, PO Box 600, Wellington 6140, New Zealand and²Te Pūnaha Matatini, University of Auckland, Private Bag 92019, Auckland 1011, New Zealand

Introduction

Cite this article: Salmon RA and Priestley RK (2019). Celebrating IPY Education, Outreach and Engagement – 10 years on. *Polar Record* **55**: 199–202. <https://doi.org/10.1017/S0032247419000494>

Received: 31 July 2019

Revised: 25 August 2019

Accepted: 2 September 2019

Author for correspondence:

Rhian A. Salmon,

Email: Rhian.Salmon@vuw.ac.nz

[†]The original version of this article was published with some references incorrectly given. An erratum has been issued.

Ten years ago, the International Polar Year 2007–2008 (IPY) led to an upwelling of Education, Outreach and Communication initiatives across the polar research community that have had a long-lasting effect. This Special Issue of *Polar Record* is dedicated to research into Education, Outreach and Engagement related to the polar regions, with the hope that it will help to draw scholarly attention to this important, but neglected, aspect of polar research. We explicitly chose the word “engagement” rather than communication to reflect our theoretical grounding in the field of public engagement with science (PES), and to encourage submissions that investigate community engagement, dialogue and participatory processes.

IPY involved a huge, two-year, collaborative focus on Arctic and Antarctic research that was highly interdisciplinary, primarily led by the science community, and involved tens of thousands of people from over 60 nations. In addition to being international, interdisciplinary and focused on building connections and sharing data, the Joint Committee (which was tasked with scoping and overseeing the IPY) specified that all endorsed projects would “attract, engage, and develop a new generation of polar researchers, engineers and logistics experts” and “must engage the awareness, interest, and understanding of schoolchildren, the general public and decision-makers worldwide in the purpose and value of polar research and monitoring” (Rapley et al., 2004, p. 11). While IPY endorsement did not directly provide funding, it was often a lever or prerequisite for securing national funding. Dave Carlson was director of the International Programme Office for the IPY. In his commentary (2019, this issue), he explores the degree to which the ambitious engagement goals set by the IPY Joint Committee were achieved or can even be assessed.

Regardless of how well we can evaluate the high-level ambitions of the IPY, it is uncontested that it stimulated a fresh wave of excitement, energy, commitment and interest in what was coined Education, Outreach and Communication, or EOC. Salmon et al. (2011) attempted to capture and document this enthusiasm at the time, with further detail provided in Zicus et al. (2011); Provencher et al. (2011); Kaiser, Zicus, and Allen (2010) and Carlson (2010). The heightened public and political awareness of the IPY managed to leverage substantial new funding for polar research, much of which came with the caveat that it had to have a serious EOC component. This was primarily carried out in three ways: (1) scientists themselves increasing their outreach activities, for example through blogging, videos, Google Earth simulations, live connections from the polar regions to schoolchildren, greater collaboration with their institutional media professionals and participation in Polar Days; (2) development of an associated EOC initiative such as taking teachers, artists, writers or photographers to the ice and (3) collaborations with major EOC institutions such as museums, networks of teachers and educational programmes.

This international celebration of polar research and EOC catalysed an astonishing number of new ideas and initiatives. Most noticeably, however, it also identified a great thirst by people all around the world to be part of the IPY. From this, enthusiasm and desire grew several impressive international networks, at least three of which persist to this day: the Association of Polar Early Career Scientists (APECS), Permafrost Young Researchers Network (PYRN) and Polar Educators International (PEI).

In instigating this Special Issue, we hoped to capture and explore some of the initiatives that were triggered by this injection of enthusiasm, capability-building, funding and attention to EOC from the science community, a decade after the IPY. While we are delighted with the thoughtful collection of insights and perspectives contained in this collection – which includes five full research articles, eight shorter research notes¹ and three commentaries – the final collection is less fulsome than we might have hoped. For a start, reaching those communities who were so connected and engaged 10 years ago was harder than we had anticipated. Unlike the polar science community, which retains connection through established research institutions, disciplinary and polar conferences, and list-servs, many of the EOC professionals who were very active during the IPY may have moved elsewhere when the funding and focus changed. Secondly, the majority of IPY EOC activities were not set up in a research framework and so were not an obvious fit for a peer-reviewed research article or research note required for a journal such as this. Finally, some IPY participants with EOC data worthy of a research article

© Cambridge University Press 2019. This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted re-use, distribution, and reproduction in any medium, provided the original work is properly cited.

have no personal or professional incentives – or time – to write such an article, for example because they are not employed in research positions or because, as physical scientists, they are reluctant to publish outside of their core discipline. We state these issues first to acknowledge that the papers within this Special Issue in no way present a full picture of all the IPY EOC activities and, secondly, because we believe that it's important to name such barriers in order to address them.

In this collection, the ongoing legacy of IPY EOC is most clearly evidenced by four papers about networks or initiatives established during IPY. The activities and process of maturation of the APECS, PYRN and PEI, 10 years on, are documented by Hindshaw et al. (2018), Tanski et al. (2019, this issue) and Roop, Wesche, Azhinhaga, Trummel, and Xavier (2019, this issue), respectively, while Xavier, Azinhaga, Seco, and Fugmann (2018) provide an analysis of International Polar Weeks from a Portuguese perspective. International Polar Days and Weeks were an initiative started during the IPY as a mechanism for ongoing engagement with a broad community of educators and communicators around the world. It is impressive that the initiative continues, 10 years on, even without the incentive of IPY to keep driving it. It is now fostered, instead, by ongoing enthusiasm and commitments of individual polar researchers and members of APECS and PEI.

The Special Issue also includes two papers that indicate the significant value and attention that IPY EOC invested in teachers, as critical conduits to the next generation(s). Pound et al. (2019, this issue) and Warburton, Hademenos, Eilers-Guttensohn, Garay, and Worssam (2019, this issue) present two of IPY's flagship teacher immersion programmes, ANDRILL and PolarTrec, respectively. While ANDRILL was connected to a specific IPY science project focused on geological drilling, and PolarTrec matched teachers with a range of researchers across the Arctic and Antarctic, both of these programmes placed value on training teachers as researchers, and two-way transfer of expertise between scientists and teachers. Both papers document how these experiences not only inspired the teachers and their students but also stimulated lasting relationships between teachers and researchers that remain strong a decade later. The value that these relationships play in informing how scientists, and their research communities, engage with and value collaboration with teachers may have not been formally evaluated but is none-the-less significant.

This collection also includes three submissions that explore the purpose, process and impact of engagement. Focusing on the Arctic, Boyd, Furgal, Mayeda, Jardine, and Driedger (2019, this issue) explore the role of trust in health risk communication in Nunavik, Canada, and Baer, Latola, and Scheepstra (2019, this issue) explore the challenges of engagement with a range of stakeholders and community members. Focusing on the Antarctic, where there are no permanent residents or indigenous communities, Xavier, Mateev, Capper, Wilmotte, and Walton (2019, this issue) explore the role of EOC under the framework of the Antarctic Treaty Consultative Meetings. While these papers may seem very different in terms of content, as a collective all three explore the role and impact of engagement in the context of the people who populate or govern these regions, rather than the transient researchers carrying out science in these remote places.

Four papers in this Special Issue present new EOC initiatives, indicating that the spirit of IPY EOC remains, even in cases where

some of the authors may not even remember or know about IPY. Priestley, Dohaney, Atkins, Salmon, and Robinson (2019, this issue) share insights about the first Antarctic Massive Open Online Course, which reached more than 6000 students from around the world. Surely, had such technology existed 10 years ago, this is exactly the type of initiative that the IPY would have celebrated and championed? Stevens, O'Connor, and Robinson (2019, this issue) report on their collaborative project exploring the connections between art and science research in Antarctica, building on a long legacy of art–science collaborations fostered by a number of national Antarctic research programmes and continuing the IPY's desire to foster greater interdisciplinary collaboration. Bouchard et al. (2018, this issue) explore the use of comics as an innovative tool for educating audiences about permafrost, and Sansoulet et al. (2019) report on the Green Edge project: a large-scale public outreach and educational initiative about Arctic phytoplankton. While we cannot necessarily draw a direct connection between any of these projects and the IPY, we suggest that the IPY prepared the way for polar EOC activities like these to continue to flourish and be supported and celebrated by the polar research and science funding communities internationally.

While we were delighted to receive these submissions, some key voices are missing, which we discuss in more detail below. As we have documented previously (Salmon, Priestley, & Goven, 2017), the lack of opportunity for peer-reviewed publication and interrogation of public engagement initiatives, by practitioners, means that many EOC activities are repeated time and time again (or not) with little examination of how to improve them, sharing of best practice or evidence to support future funding and support for engagement positions and projects. In this collection, these issues are unpacked in more detail by Salmon and Roop (2019, this issue) who interrogate systemic issues associated with four large polar outreach initiatives with which they were personally involved in 2012. They conclude by proposing a framework for the design and delivery of more strategic and theoretically-informed engagement initiatives.

Finally, we wanted to acknowledge the many, many, individuals who worked within the IPY, reported from the IPY, visited schools, created books, took incredible photographs, wrote articles, gave presentations, championed for funding or provided much needed logistical or administrative support. It would never be possible to present in one place the diversity of these individual voices, in their many different languages and cultures, each with a valid and important experience of the IPY. As an acknowledgement of the individual experience, and the critical role of journalists and media around the world, we invited Veronika Meduna (2019, this issue) to share her experience visiting Antarctica as a journalist before, during and after the IPY.

While IPY involved more than 60 countries, the first authors of the published papers come from only six countries: New Zealand, United States, Canada, UK, Portugal and Germany. By adding in co-authors, we expand this network to include Australia, Austria, Belgium, Bulgaria, Finland, France, Iceland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland and Russia. But this is not a diverse group. As shown in Figure 1, the authors of these papers form two distinct networks. The first network, which connects papers 05, 06, 07, 08, 09, 13a and 13b, includes Rhian Salmon, one of the editors of this Special Issue and the EOC coordinator at the IPY International Programme Office. This network is dominated by people involved in IPY networks, such as APECS, Polar Weeks and PEI, and includes members who either subscribe to polar list-servs to which we posted our call for papers or received

¹Three of the papers considered part of this Special Issue were published in an earlier volume of *Polar Record*: the papers by Bouchard et al. (2018), Hindshaw et al. (2018) and Xavier et al. (2018) were published in Volume 54, Issue 5–6.

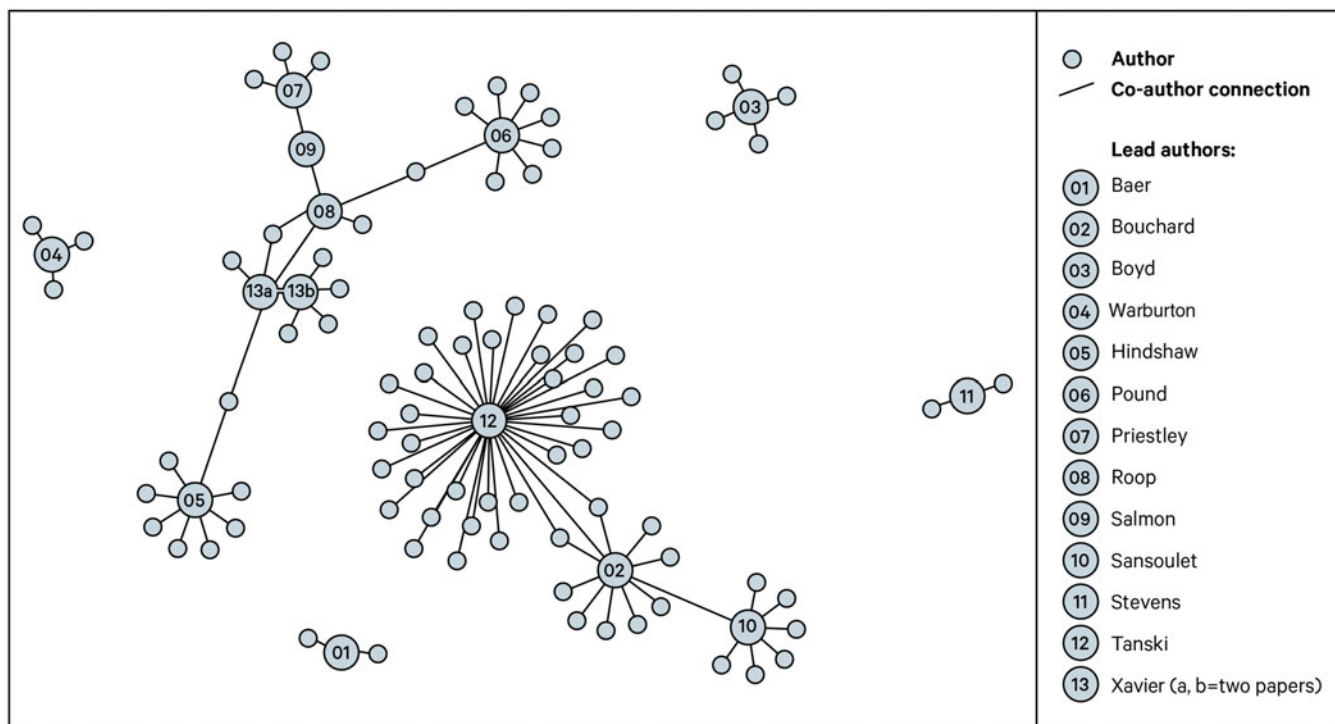


Fig. 1. Special Issue author network diagram. Nodes show first authors of the 14 papers submitted to the Special Issue (invited commentaries by Carlson and Meduna are excluded), with bars connecting first authors to other authors. Thanks to Max Soar for data analysis and Jo Bailey for graphic design.

direct emails about the Special Issue. The second network, connecting papers 02, 10 and 12, are all Arctic projects focused on permafrost or plankton. Some papers fall outside of these networks: paper 04 is a commentary, paper 01 discusses an Arctic stakeholder engagement survey associated with EU-PolarNet and paper 11 is by a team of New Zealand artists and scientists known to the guest editors. It is important, therefore, to also note those major IPY EOC projects that are not represented here, including DAMOCLES, Tara Arctic, Cape Farewell, Students on Ice, Schools on Board and Ice Cube. Key organisations that championed IPY EOC are also not made much mention of: national IPY offices and research institutes, SCAR, IASC, ICSU, WMO, International Polar Foundation, European Polar Board and the US National Academy to name a few. As such, this Special Issue is therefore less a comprehensive retrospective, and more a celebration of the sub-field of polar EOC that the IPY stimulated, and which appears to continue to thrive. A more diverse and representative issue would have also included more Arctic focused papers, especially from health research and indigenous perspectives, more contributions from non-English speaking countries and more papers from people without a personal connection to the editors.

Science communication is often categorised in the literature according to the scientific discipline being communicated or the intended audience. Salmon and Roop (2019) argue that the IPY succeeded in stimulating a community by different grounds: that of geography. In that context, we feel that this collection captures, documents and starts to explore “polar EOC”, and that it can be considered as a legitimate sub-field of science communication or PES. This concept has been further reinforced by the SCAR Standing Committee on the Humanities and Social Sciences endorsing an Action Group on Public Engagement with Antarctic Science in 2019, having identified this area as a research

priority several years before. Hopefully, these efforts of the research communities and public engagement practitioners to work together will continue to strengthen and build bridges between theory and practice in this emerging sub-field.

We hope that this collection provides some examples of what research into polar public engagement can look like and stimulates ideas for new, research-grounded, initiatives that can both deliver thoughtful engagement with specific communities and build on and contribute to a greater body of knowledge and expertise in this area.

About the authors

Drs Rebecca Priestley and Rhian Salmon are co-editors of this *Polar Record* Special Issue on Education, Outreach and Engagement 10 years after the International Polar Year (IPY) 2007–2008. They are co-founders of the Centre for Science in Society at Victoria University of Wellington, New Zealand. Priestley has a PhD in history of science, and visited Ross Island and the McMurdo Dry Valleys – in 2011, 2014 and 2018 – on media, education and outreach events. She has written or edited six books, including an anthology of Antarctic science writing (Priestley, 2016) and an Antarctic memoir (Priestley, 2019). Salmon has a PhD in atmospheric chemistry and worked as a research scientist for the British Antarctic Survey from 2002 to 2006, including an overwinter at Halley Research Station. She is now both a practitioner and researcher in public engagement with science. Her work as the Education, Outreach and Communication Coordinator at the International Programme Office for the IPY 2007–2008 inspired this Special Issue.

Acknowledgements. The authors would like to thank Max Soar for his Research Assistance related to this commentary.

References

- Baer, K. C., Latola, K., & Scheepstra, A. J. M. (2019). Tell us how to engage you! Asking polar stakeholders about their engagement preferences. *Polar Record*, 55(4), 245–250. doi: [10.1017/S0032247419000354](https://doi.org/10.1017/S0032247419000354)
- Bouchard, F., Sansoulet, J., Fritz, M., Malenfant-Lepage, J., Nieuwendam, A., Paquette, M., . . . Harbor, J. (2018). “Frozen-Ground Cartoons”: Permafrost comics as an innovative tool for polar outreach, education, and engagement. *Polar Record*, 54(5–6), 366–372. doi: [10.1017/S0032247418000633](https://doi.org/10.1017/S0032247418000633)
- Boyd, A. D., Furgal, C. M., Mayeda, A. M., Jardine, C. G., & Driedger, S. M. (2019). Exploring the role of trust in health risk communication in Nunavik, Canada. *Polar Record*, 55(4), 235–240. doi: [10.1017/S003224741900010X](https://doi.org/10.1017/S003224741900010X)
- Carlson, D. (2010). Why do we have a 4th IPY? In S. Barr & C. Luedcke (Eds.), *The history of the International Polar Years (IPYs)* (pp. 299–312). Berlin, Heidelberg: Springer.
- Carlson, D. (2019). Commentary: Polar science with global impact? *Polar Record*, 55(4), 203–206. doi: [10.1017/S0032247419000500](https://doi.org/10.1017/S0032247419000500)
- Hindshaw, R. S., Mariash, H., Vick-Majors, T. J., Thornton, A. E., Pope, A., Zaika, Y., . . . Fugmann, G. (2018). A decade of shaping the futures of polar early career researchers: A legacy of the International Polar Year. *Polar Record*, 54(5–6), 312–323. doi: [10.1017/S0032247418000591](https://doi.org/10.1017/S0032247418000591)
- Kaiser, B., Zicus, S., & Allen, B. (2010). *Polar science and global climate: An international resource for education and outreach*. Essex, UK: Pearson Custom Publishing.
- Meduna, V. (2019). Commentary: The changing views of Antarctica. *Polar Record*, 55(4), 213–215. doi: [10.1017/S0032247419000342](https://doi.org/10.1017/S0032247419000342)
- Pound, K., Huffman, L., Hubbard, J., Cattadori, M., Dahlman, L., Dooley, J., . . . Trummel, B. (2019). ANDRILL ARISE: A model for team-based field research immersion for educators. *Polar Record*, 55(4), 251–273. doi: [10.1017/S0032247419000056](https://doi.org/10.1017/S0032247419000056)
- Priestley, R. (2016). *Dispatches from continent seven: An anthology of Antarctic science*. Wellington, NZ: Awa Press.
- Priestley R. (2019). *Fifteen million years in Antarctica*. Wellington, NZ: Victoria University Press.
- Priestley, R., Dohaney, J., Atkins, C., Salmon, R., & Robinson, K. (2019). Engaging new Antarctic learners and ambassadors through flexible learning, open education and immersive video lectures. *Polar Record*, 55(4), 274–288. doi: [10.1017/S0032247418000384](https://doi.org/10.1017/S0032247418000384)
- Provencher, J., Baeseman, J., Carlson, D., Badhe, R., Bellman, J., Hik, D., . . . Zicus, S. (2011). *Polar Research Education, Outreach and Communication during the fourth IPY: How the 2007–2008 International Polar Year has contributed to the future of education, outreach and communication*. Paris: International Council for Science (ICSU).
- Rapley, C., Bell, R. E., Allison, I., Bindschadler, R., Casassa, G., Chown, S., . . . Zhang, Z. (2004). A Framework for the International Polar Year, 2007–2008. Retrieved from ICSU website: <https://academiccommons.columbia.edu/catalog/ac:144786>
- Roop, H. A., Wesche, D., Azhinhaga, P. F., Trummel, B., & Xavier, J. (2019). Building collaborative networks across disciplines: A review of Polar Educators International’s first five years. *Polar Record*, 55(4), 220–226. doi: [10.1017/S003224741800061X](https://doi.org/10.1017/S003224741800061X)
- Salmon, R. A., Carlson, D. J., Zicus, S., Pauls, M., Baeseman, J., Sparrow, E. B., . . . Kolset, T. (2011). Education, outreach and communication during the International Polar Year 2007–2008: Stimulating a global polar community. *The Polar Journal*, 1(2), 265–285.
- Salmon, R. A., Priestley, R., & Goven, J. (2017). The reflexive scientist: An approach to transforming public engagement. *Journal of Environmental Studies and Sciences*, 7(1), 53–68. doi: [10.1007/s13412-015-0274-4](https://doi.org/10.1007/s13412-015-0274-4)
- Salmon, R. A. & Roop, H. A. (2019). Bridging the gap between science communication practice and theory: Reflecting on a decade of practitioner experience using polar outreach case studies to develop a new framework for public engagement design. *Polar Record*, 55(4), 297–310. doi: [10.1017/S0032247418000608](https://doi.org/10.1017/S0032247418000608)
- Sansoulet, J., Pangrazi, J.-J., Sardet, N., Mirshak, S., Fayad, G., Bourgain, P., & Babin, M. (2019). Green Edge Outreach Project: A large-scale public and educational initiative. *Polar Record*, 54(4), 227–234. doi: [10.1017/S0032247419000123](https://doi.org/10.1017/S0032247419000123)
- Stevens, C., O’Connor, G., & Robinson, N. (2019). The connections between art and science in Antarctica: Activating Science*Art. *Polar Record*, 55(4), 289–296. doi: [10.1017/S0032247419000093](https://doi.org/10.1017/S0032247419000093)
- Tanski, G., Bergstedt, H., Bevington, A., Bonnaventure, P., Bouchard, F., Coch, C., . . . Lantuit, H. (2019). The Permafrost Young Researchers Network (PYRN) is getting older: The past, present, and future of our evolving community. *Polar Record*, 55(4), 216–219. doi: [10.1017/S0032247418000645](https://doi.org/10.1017/S0032247418000645)
- Warburton, J., Hademenos, G., Eilers-Guttensohn, A., Garay, L., & Worssam, J. B. (2019). Commentary Inspiring the next generation of polar scientists: Classroom extensions from teachers with research experiences. *Polar Record*, 55(4), 207–212. doi: [10.1017/S0032247419000317](https://doi.org/10.1017/S0032247419000317)
- Xavier, J. C., Azinhaga, P. F., Seco, J., & Fugmann, G. (2018). International polar week as an educational activity to boost science–educational links: Portugal as a case study. *Polar Record*, 54(5–6), 360–365. doi: [10.1017/S0032247418000621](https://doi.org/10.1017/S0032247418000621)
- Xavier, J. C., Mateev, D., Capper, L., Wilmotte, A., & Walton, D. W. H. (2019). Education and outreach by the Antarctic Treaty Parties, Observers and Experts under the framework of the Antarctic Treaty Consultative Meetings. *Polar Record*, 55(4), 241–244. doi: [10.1017/S003224741800044X](https://doi.org/10.1017/S003224741800044X)
- Zicus, S., Almeida, M., Edwards, K., Hik, D., Huffman, L., Kaiser, B., . . . Xavier, J. (2011). IPY education activities. In I. Krupnik, I. Allison, R. Bell, P. Cutler, D. Hik, J. López-Martínez, . . . C. Summerhayes (Eds.), *Understanding earth’s polar challenges: International polar year 2007–2008*. Summary by the IPY Joint Committee. Rovaniemi, Finland: University of the Arctic and ICSU/WMO Joint Committee for International Polar Year 2007–2008.