Evaluating Equity in Arctic Observing In Practice

AOS 2024 Short Statement

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Introduction

Going from equity as an intention to a practice requires evaluation and metrics, whether we consider programs, projects, merit review for funding, or assessments of the current state of Arctic observing. The concepts covered in this statement aim toward evaluation of three project/program phases: outcomes, impacts, and process. Although the goal is to focus on solutions by presenting actionable steps, we emphasize the importance of critical analysis in deepening our understanding of equity. This short statement represents work from the Research Networking Activity for Sustained Coordinated Observation of Arctic Change (RNA CoObs) and lead author Margaret Rudolf's doctoral dissertation (2023) work on co-production of knowledge, and builds upon the past work of the Arctic Observing Summit (AOS) Food Security Working Group. This short statement is part of a collection of three focusing on the common theme of "equity" in Arctic observing by the RNA CoObs team, with the statement "Equity in Arctic Observing" presenting an overview and "Substantive training in Indigenous history and engagement is a necessary step towards equity in Arctic Observing" covering a dialogue on training. As the authors are U.S.-based, we acknowledge this statement is U.S.-centric but relatable to the broader Arctic observing community. We hope to continue to build upon a body of literature on equity in Arctic observing with collaboration with other scientific and Indigenous groups working towards equity, especially with those practicing Indigenous evaluation. We are collectively learning what is equity in Arctic observing and where evaluation can push the field forward.

Evaluating Outcomes

The outcomes are the accomplishment of project/program goals, as well as usage of products/outputs or individual actions directly attributed to the project (Mertens & Wilson 2019; Wall, Meadow, and Horganic 2017). For example, a project outcome could be a community partner using a tool developed by the project. To achieve use or action, projects typically need accessible non-academic products including tools, data-derived information products, policy briefs, and activities that lead to the empowerment of partners or users of such products (Djenontin and Meadow 2018; Wall, Meadow, and Horganic 2017; Norström et al. 2020; David-Chavez and Gavin 2018; Sarkki et al. 2015; Turnhout et al. 2020). These are examples of tangible benefits for partners and communities, which may also include capacity building at the local level. Assuming the project is collaborative or utilizes the co-production of knowledge methodological approach, the project should be pluralistic with inclusion of multiple knowledge systems (Norström et al. 2020). Indigenous Knowledge requires additional ethical considerations in relation to inclusion.

Equity within outcomes includes successful participation by marginalized groups within the team, students, and/or through community engagement. Special consideration is needed for Arctic Indigenous

communities, including participation of Indigenous Knowledge-holders. Depending on the goals of the project, it could include wide participation with the project or sustained participation throughout the life of the project. Beyond measures of such different forms of participation and engagement, network analysis (Posner and Cvitanovic 2019) may help assess knowledge transfer and action through analysis of frequency of communication and expansion of networks to marginalized groups or Indigenous Peoples. Evaluation can identify evidence of different knowledge systems within project outputs, while surveys provide measures of perceived inclusivity (David-Chavez and Gavin 2018; Wall, Meadow, and Horganic 2017).

Evaluating Impacts

Impacts are societal changes and/or institutional changes that are directly or indirectly a result of the project/program (Meadow and Owens 2021; Djenontin and Meadow 2018; Wall, Meadow, and Horganic 2017). Impacts are different from outcomes in that they are sustained changes that will exist beyond the life of the project. Certain outcomes could become impacts if they are sustained, such as increased capacity and diversified networks in the long-term. A change in policy happening in the short-term is typically a sustained change. As examples, a direct impact would be changes in policy and/or practice, while an indirect societal impact could be the emergence of more resilient communities and ecosystems as a result of project outputs of a project. At a broader level, an indirect institutional change can manifest through a positive change in behavior (Djenontin and Meadow 2018). An indirect impact of a single project/program, however, can be challenging to measure, especially when there are multiple efforts occuring at the same time in the same area.

To evaluate equity in impacts in a project/program, sustained changes can be measured (Mertens and Wilson 2018; Meadow and Owens 2021), often using the culturally-responsive societal benefit/impact frameworks (see short statement "Guiding Observing Network and Data System Development with Societal Impact Approaches: A Short Statement Calling for an Arctic Community of Practice"). These frameworks list societal benefit areas or concepts, e.g. food and water security, ecosystem resilience, sustainable communities, well-being, etc. To evaluate indirect impacts, measurable indicators are developed, ideally co-developed, from the societal benefit areas (Mertens and Wilson 2018; Meadow and Owens 2021). For example, to evaluate an increase in Indigenous food security, suitable indicators might assess the quantity of wild food harvest and reach of sharing networks (Social Research and Demonstration Corporation 2021). If the goal is to assess increased equity as a result of AOS facilitation and topics, an example indirect indicator could be the number of research projects that engage Arctic Indigenous Peoples (which would also capture other equity initiatives). An example of a successful institutional change is funding agencies now requiring diversity, equity, and inclusion plans in the proposal submitting process. Sustained diversified networks related to continued participation (employment, education, or within events) by marginalized groups within institutions after a project/program ends is another indicator of equity in impacts. For sustained increased capacity, an example would be communities continuing to do research on their own and/or with other researchers after a project ends, or establishment of a sustained science position within a Tribe.

Evaluating Processes

Establishing equity within project/program outcomes and impacts does not just happen on its own, but is cultivated through intentional planning and attention to equity throughout implementation. Developing principles and frameworks for evaluating the process is crucial for assessing equity in

projects that hinge on grant-based funding support. Key in this context are the proposal evaluation stage, typically through peer-review, as well as the funder's metrics of project (and hence proposal) success. Throughout the funded duration of the project, documenting the process through formative evaluations with surveys or structured dialogue annually or at key stages will allow for course correction. In addition to rigorously assessing the project's implementation of the aforementioned diversity, equity, and inclusion plans (for an NSF-funded project), following through and holding accountability of the project's broader impacts or, if funded by the U.S. Department of Energy, the Promoting Inclusion and Equity in Research Plans (put in place by the DOE's Office of Science in 2023) contribute additional steps toward process evaluation. In the grand scheme of things, evaluating the process pushes the field of equity and co-production of knowledge forward through experimentation of methods.

Zooming in on the details of the evaluating process, analyzing the team composition, levels of support, and the implementation of inclusive methods and practices are essential. Prioritizing that marginalized groups are represented within the research team yields a more equitable project than one where marginalized groups are only the intended beneficiaries. To ensure accurate representation of cultural worldviews and knowledge systems, Indigenous or other cultural groups need to be represented as researchers or within an advisory board. For those partners outside of academia, in particular those within Arctic Indigenous communities, there needs to be adequate support for resources and capacity to participate in the project. For co-production of knowledge, community-driven projects must ensure relevancy and support Indigenous self-determination. Processes should be intentionally built from ethical frameworks, either Indigenous frameworks or co-developed with partners. Examples include but are not limited to the CARE Principles (Carroll et al. 2020), Circumpolar Inuit Protocols for Ethical and Equitable Engagement (Inuit Circumpolar Council 2022), and David-Chavez and Gavin 2018's assessment of Indigenous community engagement in climate research.

Evaluation Metrics

An evaluation of equity needs measurable evidence with each phase: outcome, impact, and process. A summary table listing evaluation metrics for each phase is presented in Table 1. These lists are just a starting point for discussion and from a western scientific standpoint that is not necessarily applicable to Indigenous-led initiatives. An example of an Indigenous evaluation framework can be seen in the Hunters/Harvesters/Guardians Evaluation Toolkit (Social Research and Demonstration Corporation 2021). Fundamental to equity is prioritizing marginalized groups and communities, especially Arctic Indigenous communities.

Future Work

As equity is a key theme within the Arctic Observing Summit 2024, it marks a start of the building a community of practice and fosters deeper understanding of equity concepts, their implementation and evaluation. The authors being US-based can only present our US perspective, but we hope to partner with other groups working towards equity within Arctic observing to develop further initiatives and activities. Further work should include an assessment of the current state of equity within Arctic observing, focusing on methods aligning with those described above. Open questions can explore what changes in research practice are necessary for Arctic Observing to be more equitable, understanding where research funds are going, and whether funding supports diversity. Well-developed metrics of equity are necessary in order to evaluate equity on even footing with scientific merit.

Table 1. Summary of Evaluation Metrics towards Equity in Arctic Observing Networks/Projects/Programs/Activities

Outcome	Impact	Process
Diverse participation throughout project Continued Indigenous community engagement throughout project Team member at Tribe or Indigenous governing organization Indigenous leadership Individual use of output/tool/product for community benefit and decision-making Empowerment, self-advocacy Change in individual behavior - practicing co-production of knowledge Network analysis showing increased diversity Network analysis showing increased communication Indigenous Knowledge evident in outputs Indigenous community managing and archiving data	Sustained diversity in program/network after project Sustained Indigenous community participation in activity/network after project Community-based research after project ends Meeting indicators related to societal benefit (resilience, security, etc.) for Indigenous community Change in policy impacting Indigenous Peoples - i.e. resource management	Diversity of research team members Indigenous representation on project plus adequate resources to participate Community capacity building Equitable distribution of funding and resources to Indigenous & marginalized groups and communities Co-production of knowledge approach - shared decision-making processes Data sovereignty Challenging the status quo in processes and methods Communication plan - supporting transparency Following ethical frameworks - Indigenous frameworks Supporting community-driven initiatives Expertise in co-production of knowledge and Indigenous engagement - trainings for continued learning Indigenous advisory board Satisfied inclusive practices in annual survey

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