

Observing frameworks need to reflect a co-production of knowledge approach to equitably include Indigenous Knowledge systems
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The Arctic has been home to Indigenous Peoples from time immemorial. Distinct world views with complex knowledge systems passed on from generation to generation have evolved over time and are still developing in a living process today. Indigenous Peoples knowledge systems encompass both cultural and ecological systems that interlink and support each other. They hold their own methodologies and evaluation processes.

The Arctic environment is changing at an unprecedented rate due to climate change. Concomitant changes in anthropogenic activity (e.g., industrial, economic, philanthropic and conservation interests) are increasing. These interests largely originate from southerly and distant centers of populations. This increased activity along with accelerated environmental change presents many challenges that don't equitably include Indigenous Knowledge systems: sustainable natural resource management, sound policies, and identification and prioritization of appropriate research.

Given the complex interactions associated with Arctic climate change, it is imperative to bring different knowledge systems together in a holistic view that builds on a food security lens that Indigenous Peoples hold (ICC 2015; Heeringa et al. In Press). A holistic view should be informed by knowledge held by Arctic Indigenous Peoples. Indigenous Peoples knowledge systems hold methodologies and assessment processes that provide a pathway for better understanding the Arctic than using a scientific lens alone. Under a food security lens, there is a strong need to understand multiple drivers and their cumulative impacts using methodologies from both science and Indigenous Peoples knowledge systems (Daniel et al. 2016). Bringing together multiple knowledge systems and scientific disciplines should be advanced through a co-production of knowledge approach.

Knowledge co-production (e.g., Nature special October 03, 2018 issue on Co-production of research) or co-production of knowledge (e.g., National Science Foundation Navigating the New Arctic Program Solicitation NSF 20-514) is increasingly recognized. However, in many instances the concept is incorrectly applied. It is different from a multi-disciplinary approach or multi-evidence-based decision-making. We've developed a conceptual model for a framework for co-production of knowledge (Behe et al. DRAFT). Equity is an overarching goal in a co-production of knowledge framework. There are several key components that lead towards equity. These include Sovereignty, Trust and Respect, Relationships, Empowerment, Capacity, Deliberate and Intentional, Ethical, and Decolonization. Research steps should be thought of as being part of a non-linear process that is continually conscious of the key components.

Co-production of knowledge will provide the holistic view and comprehension needed to inform: effective policies; sustainable resource management; and biodiversity conservation. We underscore the role and value of different knowledge systems with different methodologies and the need for equitable collaborative approaches. These underlying principles will be important for consideration in the development of equitable observing frameworks that include both science and Indigenous Peoples knowledge systems.

Knowledge Sources and Citations:

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