Short Statement

Design, Optimization and Implementation of Community-Based Monitoring Programs in the Arctic

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This statement offers a synopsis of seven "good practices" relevant to the AOS theme of design, optimization, and implementation of observing programs. They are drawn from a review of community-based environmental monitoring programs in the Arctic conducted as part of the Integrated Arctic Observing (INTAROS) program (Danielsen et al. 2020 [forthcoming], Danielsen et al. 2018). The review was based on surveys of 30 CBM programs and reports from a series of workshops with practitioners and community members engaged in monitoring programs across the Arctic (Enghoff et al. 2019; Fidel et al. 2017; Johnson et al. 2018).

Designing and establishing CBM programs:

Well-designed CBM programs involve community members centrally in planning, and focus on monitoring activities that reflect priorities of local communities, with attention to diversity within communities (including men's and women's priorities). Management and support structures should be carefully considered during the design of CBM programs, and activities should be kept as simple and locally appropriate as possible. It is important (but not easy) to set up procedures to ensure that observations and management proposals from CBM reach and can be used by management authorities. Attention should be paid to providing guidance in field techniques to community members; community members and decision-makers would benefit from guidance in how to interpret and make use of the data.

Implementing CBM programs:

Addressing the rights of Indigenous and local communities: Data ownership use rights in CBM programs must be clear and follow principles of "Free, Prior and Informed Consent." Arctic CBM programs provide many examples in which the rights of Indigenous and local communities to land/resources and to protect their knowledge are being successfully addressed. Such experiences should be further disseminated and existing protocols for respectful ways to

engage with Indigenous and local knowledge/knowledge holders should be made more broadly available.

Tools and technologies for data management: CBM programs should consider an appropriate long-term repository of data during the design phase. The discussions must involve community members and should consider implications for community access and control of data and information beyond the period of available program funding. Increasingly, programs use online platforms that allow observations to be shared across sites and scales of decision-making. These platforms have some disadvantages, however, in terms of associated costs and access for rural communities. Maintaining community data repositories can help address these challenges. When appropriate, CBM programs could make their datasets publicly available and connect with global repositories founded for the purpose such as ELOKA.

Optimizing CBM programs:

Obtaining impacts through CBM: Arctic CBM programs can inform many kinds of decisions by providing information to management authorities and community members. Some CBM practitioners have found it useful to track management interventions that result from CBM programs. Greater impacts may be obtained by further developing protocols and procedures to enable management agencies to incorporate CBM-derived information into decision-making, and by bringing communities together, sharing information, and promoting advocacy on the importance of using information from CBM programs. Greater impacts may also be achieved by further developing national policies in support of CBM programs, and requirements to incorporate information from CBM into decision-making processes.

Connecting and cross-weaving with other approaches: There is limited knowledge on good practice in connecting CBM programs with scientist-executed monitoring programs. Some programs are intertwined into scientist programs at the interpretation level, others run independently and in parallel with scientist programs where these are available. Further work is required to identify the gaps in existing Arctic data delivery chains that CBM programs might plug into. Examples of the successful incorporation of both CBM and scientists' program data into decision-making should be highlighted to encourage further cooperation.

Ensuring the quality of knowledge products: Ensuring the quality of knowledge products generated by CBM programs involves a variety of measures, including careful planning, explicit consideration of likely bias, and storing the data in its most disaggregated form and with details of exactly how it was collected. Other measures include carrying out checks to keep errors in recording and data storage at an acceptable level, and incorporating triangulation of the recorded data, or identifying and recruiting individuals with particular knowledge and expertise needed for the project. Finally, as in any initiative, thorough guidance and supervision of the participants is important.

Sustaining CBM programs: Actions that CBM programs can take to encourage continued interest among community members include ensuring that the participants' observations are used for

decision-making and that they are informed of how the information is being used. Other actions that can be taken are the use of tools and approaches for data collection that can easily be incorporated into the day-to-day activities of the participants, and setting up a relevant reward system. The effects of frequent management authority staff turnover can sometimes be minimized by involving multiple staff members in the CBM program.

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