

Arctic Observing Network: Assembling Building Blocks & Developing Products

Purpose

To discuss and develop recommendations on assembling initial building blocks of a post-IPY Arctic Observing Network, and developing products from the observations.

Background

Arctic observing activities cover a broad range, from individual measurement sites, systems and networks on the Earth's surface, and space-based observation of the Earth's surface. As the US National Academy Report, *Toward an Integrated Arctic Observing Network*, makes clear, there are myriad Arctic observing activities. These observing activities are the building blocks of a coordinated and integrated, multi-nation, pan-Arctic Observing Network that has been the subject of the '*IPY Sustaining Arctic Observing Networks Workshops*' organized by the *Sustaining Arctic Observing Networks Initiating Group* (SAON IG). There is broad agreement that this network should realise value-added services, e.g., products, and societal benefits. It will require a sustained effort over many years to assemble existing and new building blocks into a fully functioning Arctic Observing Network, and develop a range of products from the observations. At this stage, late in IPY 2007-2009, an essential first step is to identify an initial set of building blocks and products that will form a firm foundation for a broader, longer-term effort.

Intellectual Framework for a Discussion of Building Blocks and Products

Not only are there myriad current Arctic observing activities, there are also myriad reasons for developing an Arctic Observing Network out of those and new observing activities. In view of the limited workshop time available for the discussion and development of recommendations on building blocks and products, we propose a focus on one of the most pressing issues facing the Arctic, i.e., the changing Arctic environmental and socio-economic systems, and their regional and global connections and consequences. This is in keeping with the SAON IG premise that increased coordination and integration of Arctic observing activities is essential for improving understanding of Arctic Change. Observations are essential for the scientific assessment, synthesis and modelling that will lead to a better understanding of Arctic Change. Among numerous benefits, understanding Arctic Change will enable improved decision- and policy-making.

Assembling Building Blocks & Developing Products

If it is agreed that understanding the changing Arctic environmental and socio-economic systems is a compelling reason for developing an Arctic Observing Network, then we can begin to develop a practical framework to guide the discussion and development of recommendations on assembling the building blocks and developing products. First, let's define the components of the Arctic environmental and socio-economic systems: Atmosphere; Ocean (physical) and Sea Ice; Marine Ecosystem; Terrestrial and Freshwater Ecosystems; Terrestrial Cryosphere and Hydrology; Human Dimension (socio-economic system, including human health).

Each of those system components has numerous observing sites, systems and networks in each of the Arctic states. Each observing site, system and network is producing a basic product, data, and then, in some cases, deriving higher-level products. A multi-nation, pan-Arctic Observing Network would create added value by assembling individual activities, the building blocks, into more coherent and effective supra-national consortia that will generate data, higher-level products and information that would not otherwise be possible.

We now propose the following questions as a framework for the discussion and development of recommendations on building blocks and product development are:

1. In each component of the Arctic System, what existing building blocks could be assembled into consortia that will generate the data and higher-level products to be used by researchers?
2. Which existing observational building blocks are sufficiently simple, tractable and inexpensive to be operationally sustained through multilateral national support?
3. In what form are the results of the research, i.e., understanding of Arctic Change, to be presented to a broader audience that includes the general public, decision-makers and policy-makers? That is, what information products are needed?
4. For each component of the Arctic System, what data sets and higher-level products are essential for research (assessment, synthesis, modelling) that will improve understanding of Arctic Change?
5. Are there essential data and higher-level products, and information that require amalgamation from more than one component of the Arctic System?
6. For each component of the Arctic System, are there higher-level products and information that would be of direct and practical use to a broad audience? Weather forecasts are an example of a current product that fits this description?