

Development of an International Arctic Observations Assessment Framework

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International Partners

- Sustaining Arctic Observing Networks
- Workshop Organizing Committee (WOC)
- Arctic Observing Framework Workshop Attendees
 - Representatives from: Canada, Denmark, Finland, Germany, Italy, Japan, Norway, Russia, and USA

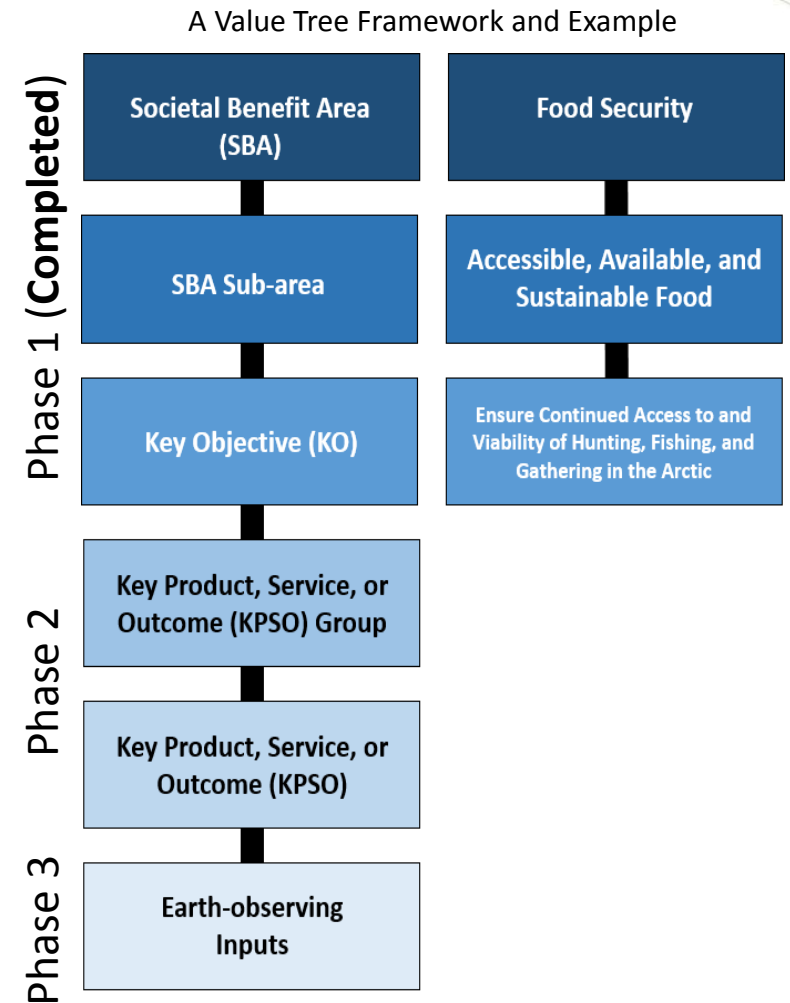


Development of an International Arctic Observations Assessment Framework

- The Arctic Observing Summit (AOS) 2016 called to *“coordinate the implementation of a pan-Arctic observing system with regional and global observing initiatives, and organize efforts in securing resources for its sustained operation through the leadership of the SAON initiative.”*
- Proposed Action: Assess contributions that current Arctic observations make toward delivering societal benefit within the Arctic
 - STPI and SAON held a workshop in January 2017 to develop a framework for an international Arctic Observations Assessment
- The framework development is only the first phase of an international Arctic Observations Assessment
 - Phase 1: Framework Development (**COMPLETED**)
 - Phase 2: Key Product, Service, and Outcome Identification
 - Phase 3: Expert Elicitation

Assessment Phase 1: Framework Development

- The assessment framework is based on a Value Tree Framework (VTF) approach
 - Relies on expert domain knowledge to develop a hierarchical framework of thematic areas of societal benefit and underlying objectives
 - Establishes the connection between societal benefit and Earth-observing inputs through the key products, services, and outcomes they support
- Framework Development Timeline
 - August 2016: A draft framework derived from review of 25 international Arctic strategy documents from 16 countries and the European Union
 - January 2017: Framework revised at workshop by 48 subject matter experts representing 9 countries
 - TBD: Development of framework below KOs and elicitation of Earth observation contributions to KPSOs are to be done under Phases 2&3 of an assessment



Pan-Arctic Assessment Value Tree SBAs

(mapped to GEO SBAs)

1. **Disaster Preparedness** (*Disaster Resilience*)
2. **Environmental Quality**
3. **Food Security** (*Food Security and Sustainable Agriculture*)
4. **Fundamental Understanding of Arctic Systems**
5. **Human Health** (*Public Health Surveillance*)
6. **Infrastructure and Operations** (*Infrastructure and Transport Management*)
7. **Marine and Coastal Ecosystems and Processes** (*Biodiversity and Ecosystem Sustainability*)
8. **Natural Resources** (*Energy and Mineral Resources Management*)
9. **Resilient Communities**
10. **Sociocultural Services**
11. **Terrestrial and Freshwater Ecosystems and Processes** (*Biodiversity and Ecosystem Sustainability*)
12. **Weather and Climate**

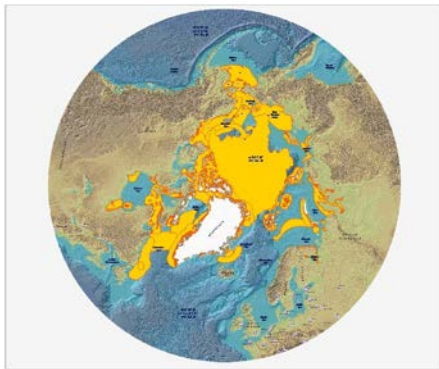
Consensus Framework consists of:

12 SBAs, 41 total Sub-areas, 167 total KOs 60 research KOs (36%) 107 operational KOs (64%)

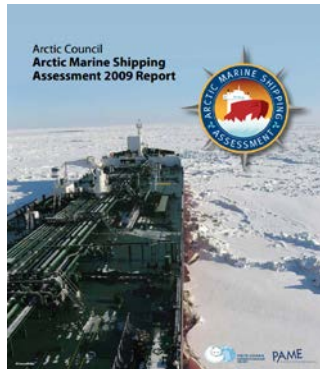
Assessment Phases 2 and 3: Key Product Identification and Expert Elicitation

Phase 2: identification of a representative set of key products, services, or research outcomes that are used to achieve key objectives

KPSO Group: Marine Protected Area
Marine Protected Area KPSOs:



Ecological and Biological Significance Areas (EBSAs) in the Arctic Marine Environment

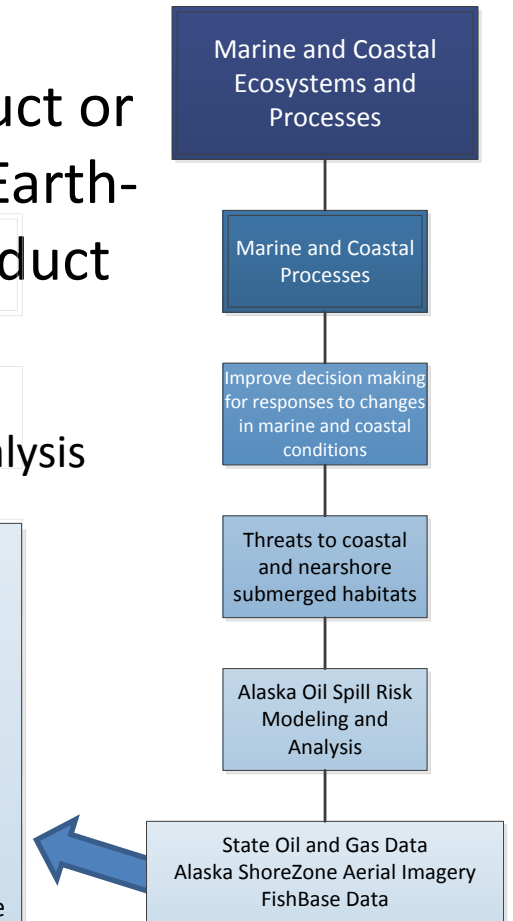
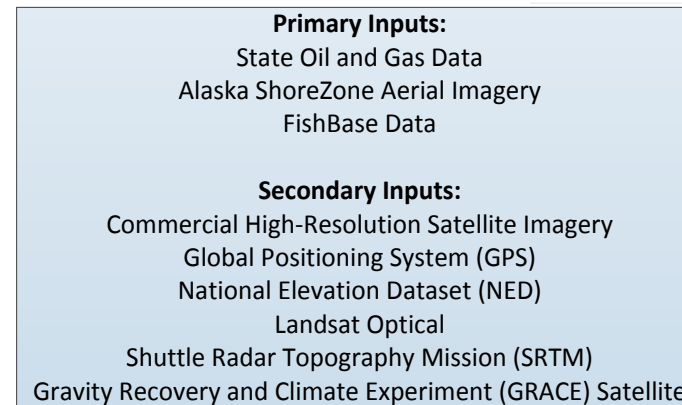


Arctic Council's 2009 Arctic Marine Shipping Assessment

Sources:
Conservation of Arctic Flora and Fauna, 2010, <http://geo.abds.is/geonetwork/srv/eng/catalog.search#/metadata/346ddf2-0a39-46df-879e-12b50a598a17>
Canadian Science Advisory Secretariat, 2011, <http://geo.abds.is/geonetwork/srv/eng/catalog.search#/metadata/2aaa3fa0-f5e4-4125-b6c8-12609ad154ee>

Phase 3: elicitation of subject matter experts for each product or service to identify individual Earth-observing inputs for each product

Example Assessment Output -
Alaska Oil Spill Risk Modeling and Analysis



Application of Complete Assessment Results

- Phase 1 (**Completed**) framework provides a common, crosscutting set of international service, operational, and research objectives in the Arctic
- Phase 2 provides an initial mapping of information products to key objectives
- Phase 2 provides the first level of output that can be used to identify heavily-relied-upon information products and information gaps associated with the Pan-Arctic Observations Assessment Framework
- Phase 3, Step 1, identifies an unranked list of inputs required for a Pan-Arctic observing network that is capable of delivering benefit through the KOs in the assessment framework

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