DBO
&
Sustaining Arctic Observing Networks (SAON)
&
Arctic Observing Summit (AOS):
Opportunities for collaboration & joint action

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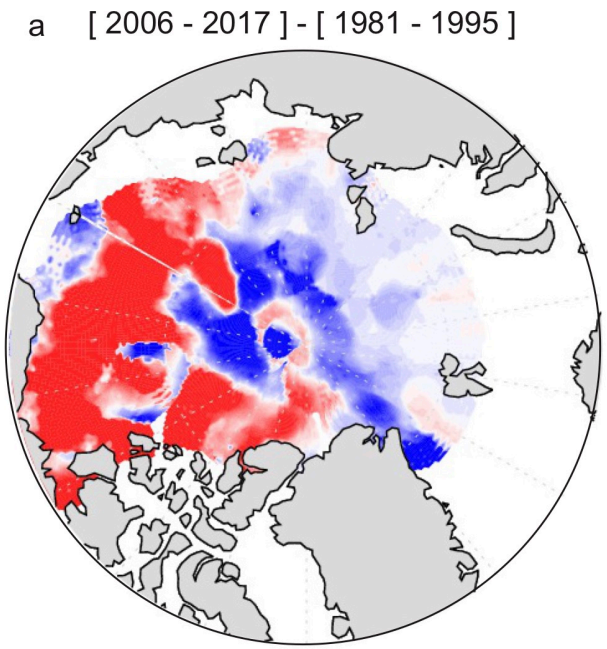
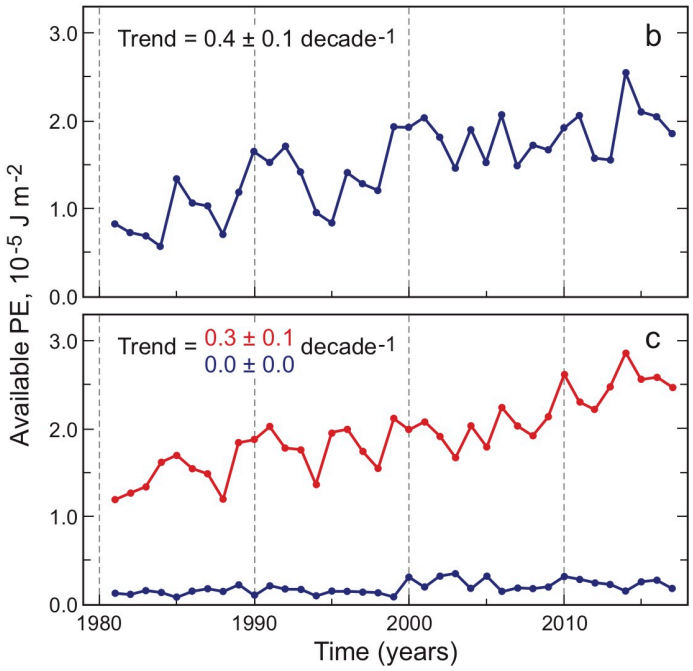
Understanding & responding to change

- Long-term observations

  → Understanding & predicting Arctic system change





$$\mathrm{APE} = \int_{z_2}^{z_1} g(\rho - \rho_{\mathrm{ref}})\, z\, dz$$

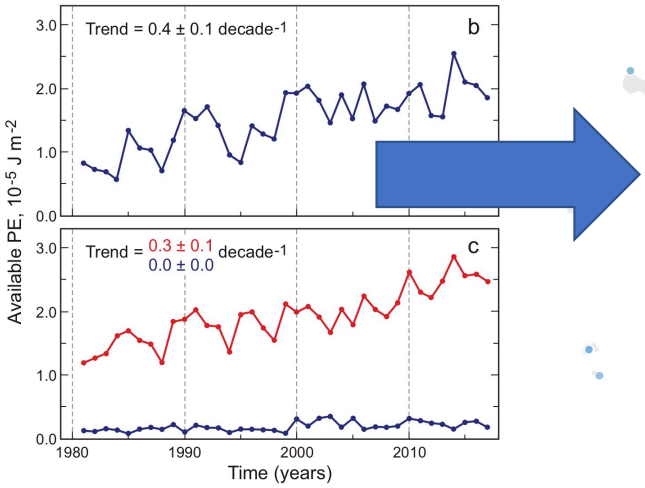
Polyakov et al., 2018, ERL

Understanding & responding to change

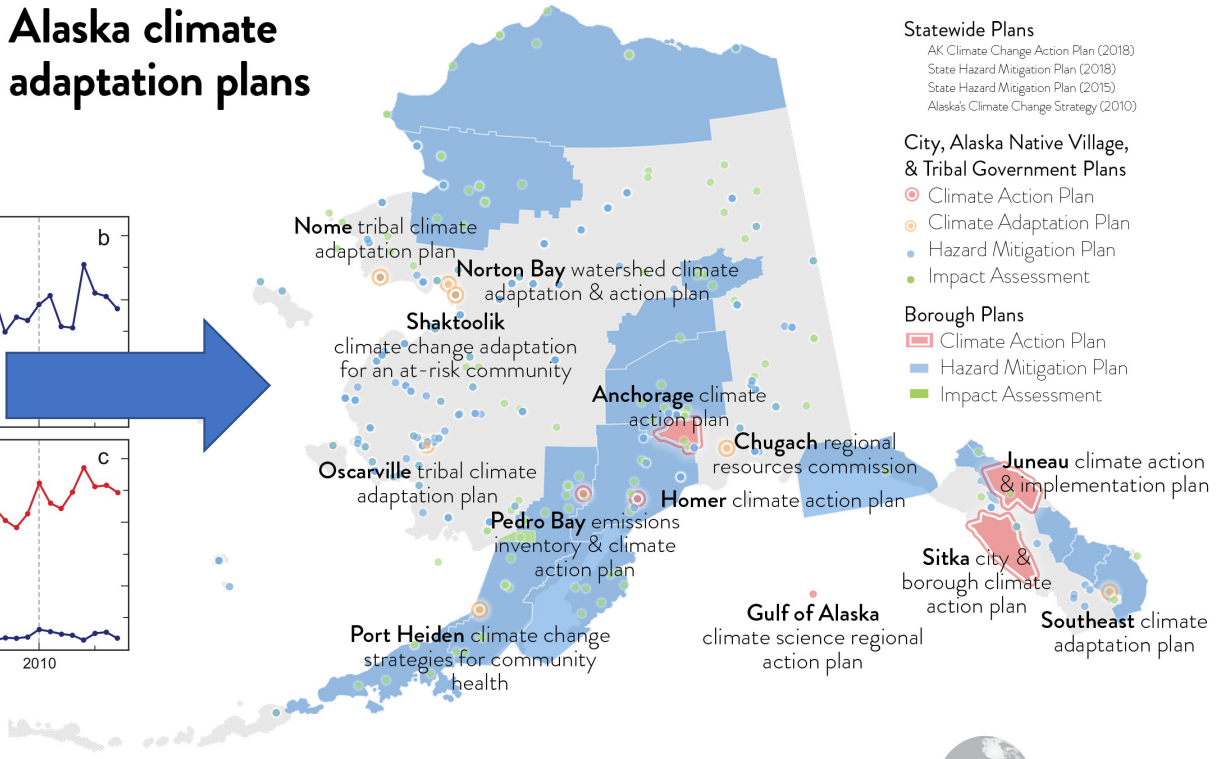
- Long-term observations

→ Understanding & predicting Arctic system change

→ Informing responses to rapid change



Alaska climate adaptation plans



Credit: Kelsey Aho, Center for Alaska Policy Studies.

Data source:s DEECD; Meeker and Kettle, 2017

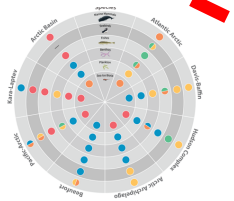
IARC International Arctic Research Center University of Alaska Fairbanks

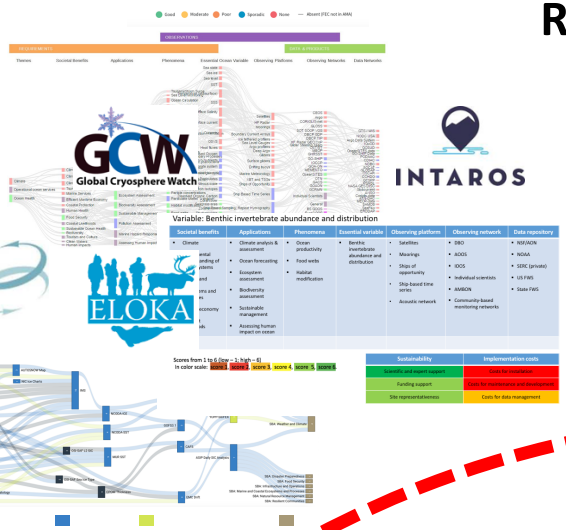
Understanding & responding to change

- How do we ensure shared benefits of sustained observations
  - both for research community & other information product users?
- How do we observe what is relevant, in a manner that meets requirements of data users?
- How do we share data and information products to reach relevant data users?

Integrating sustained observations

Broad range of themes, interests, mandates, concepts, champions





SAON SUSTAINING ARCTIC OBSERVING NETWORKS

2nd ARCTIC SCIENCE MINISTERIAL

ARCTIC OBSERVING SUMMIT AOS

Roadmap for Arctic Observing and Data Systems (ROADS)

- Priorities
- Essential Arctic Variables (EAV)

- Well-defined requirements for EAVs
- Societal benefits (shared)

- Co-design/implementation/integration of observing system components

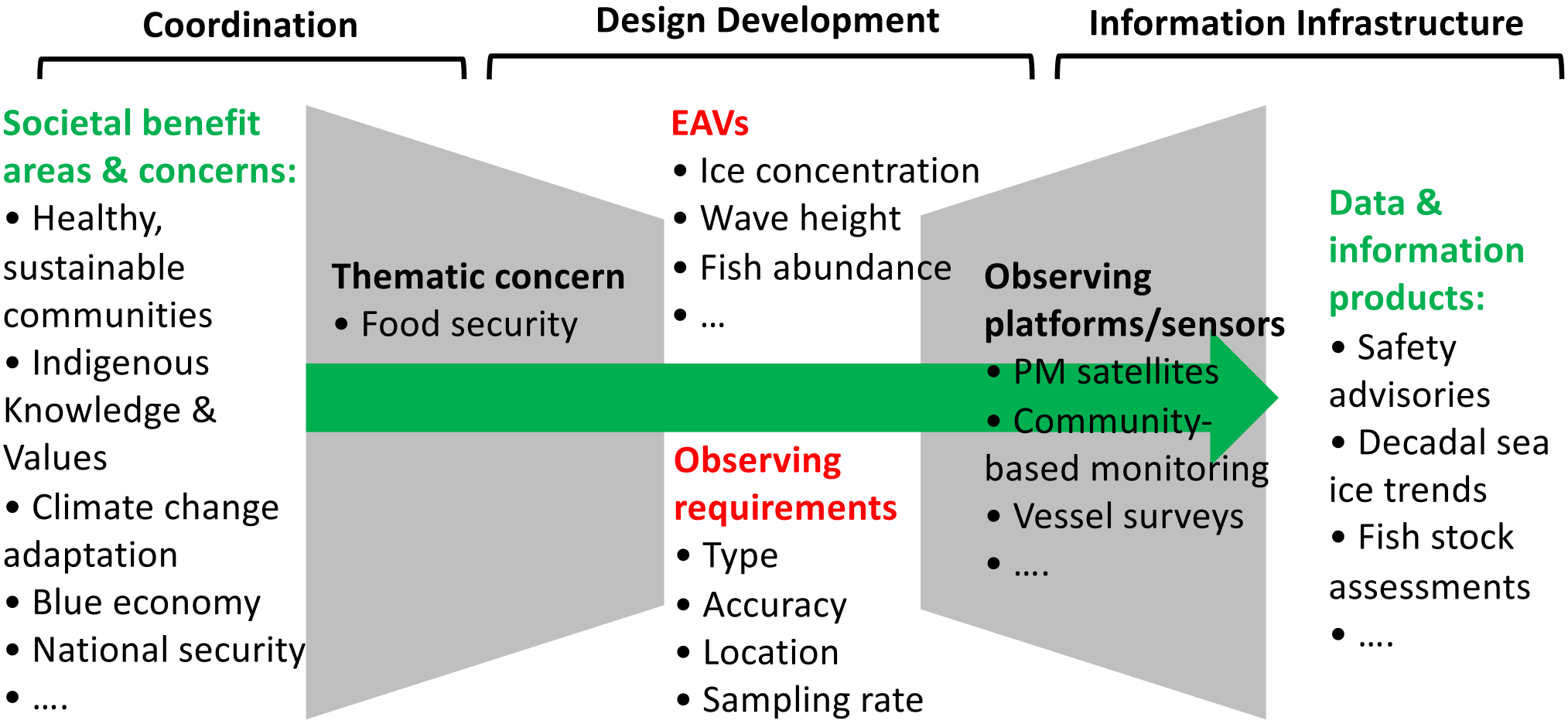
- Bundling of efforts insufficient → Development of coherent set of observations drawing on requirements guided by shared benefits
- Identify commonalities, link requirements & implementation across narrow efforts that fit into common thematic framework

SIOS

IASOA

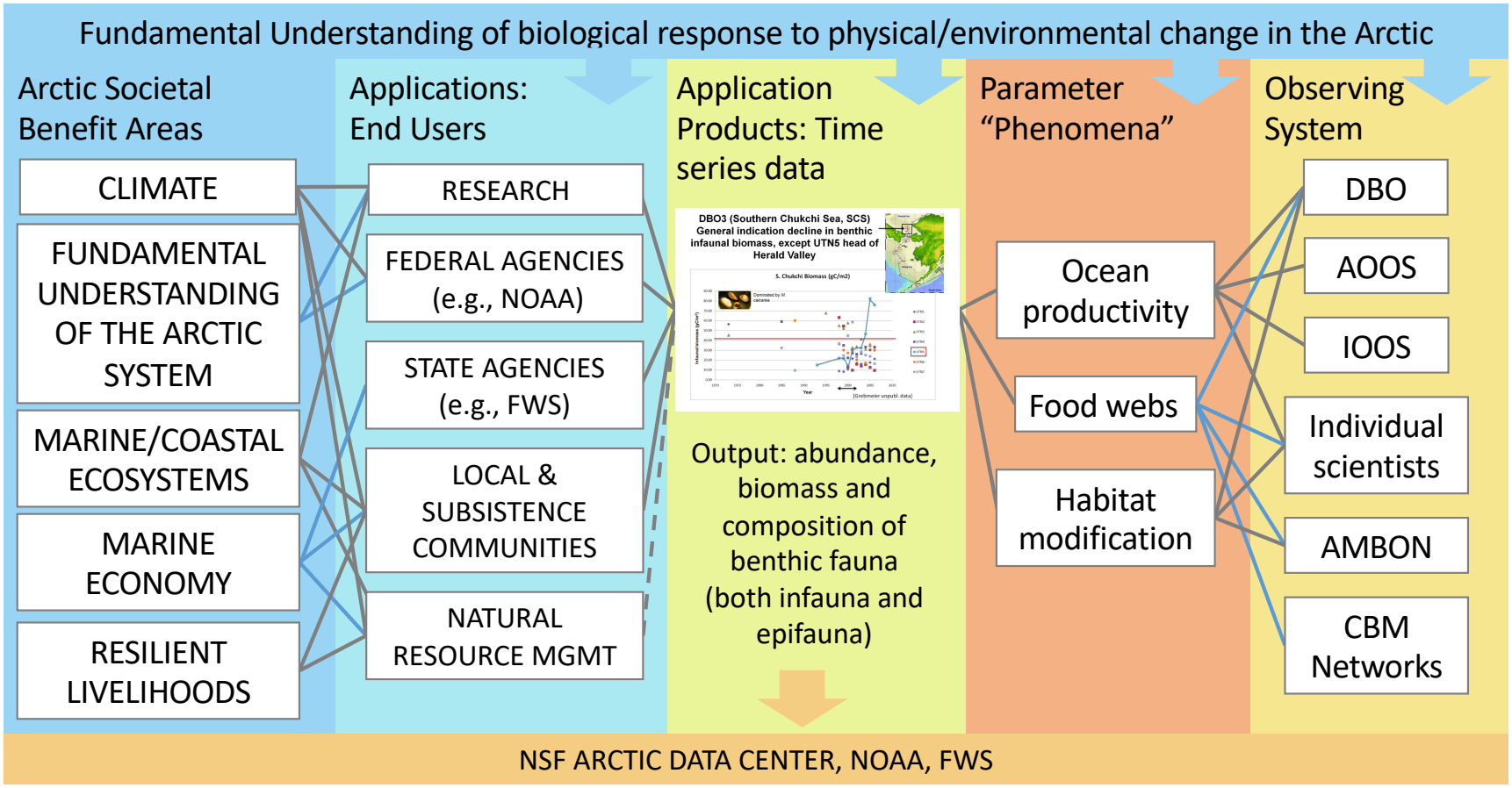
Shared benefits – Relevance – Data use

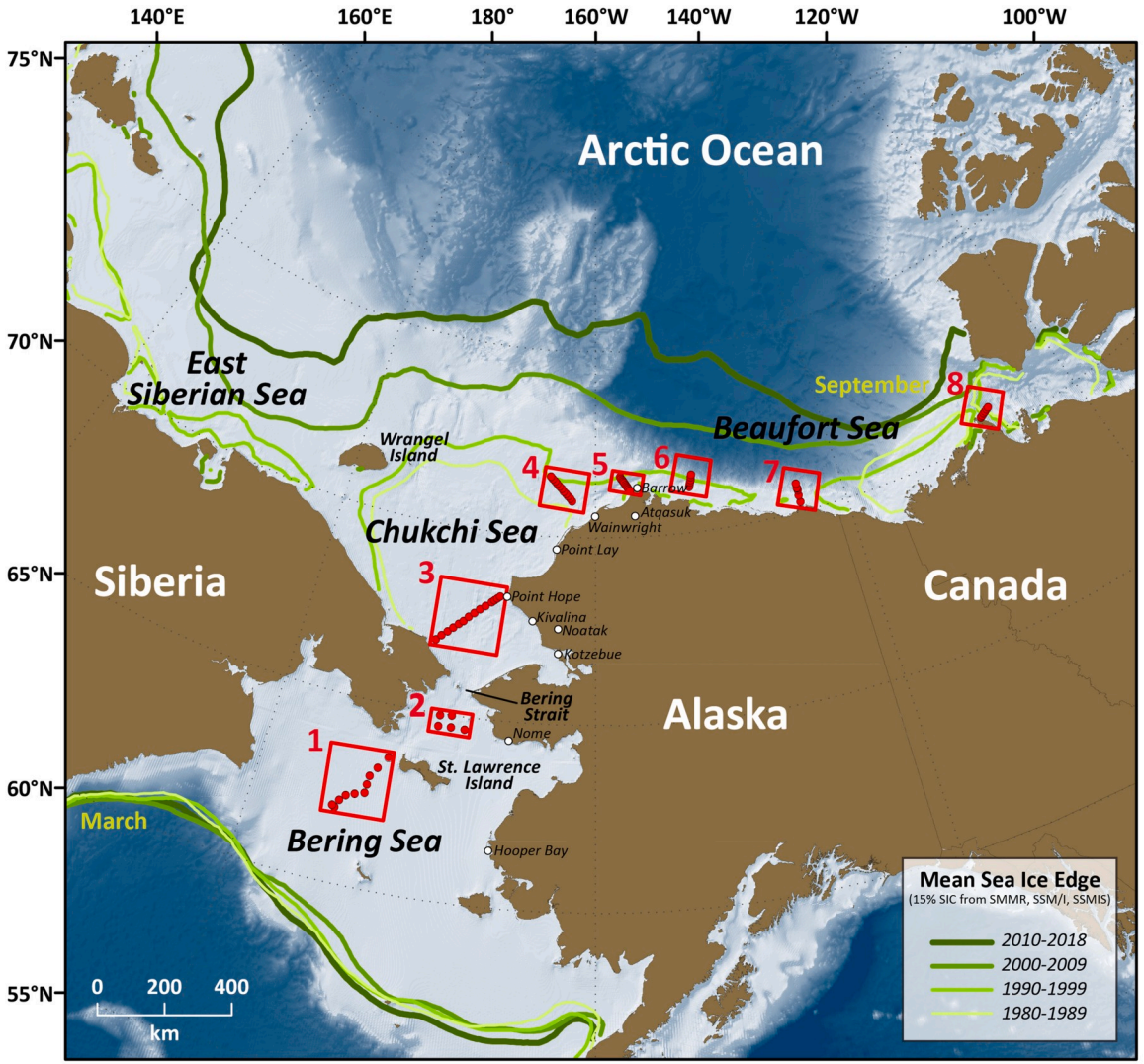
Supporting the ROADS process



Example (C. Eaton, UConn): User base for observing system & end-to-end network

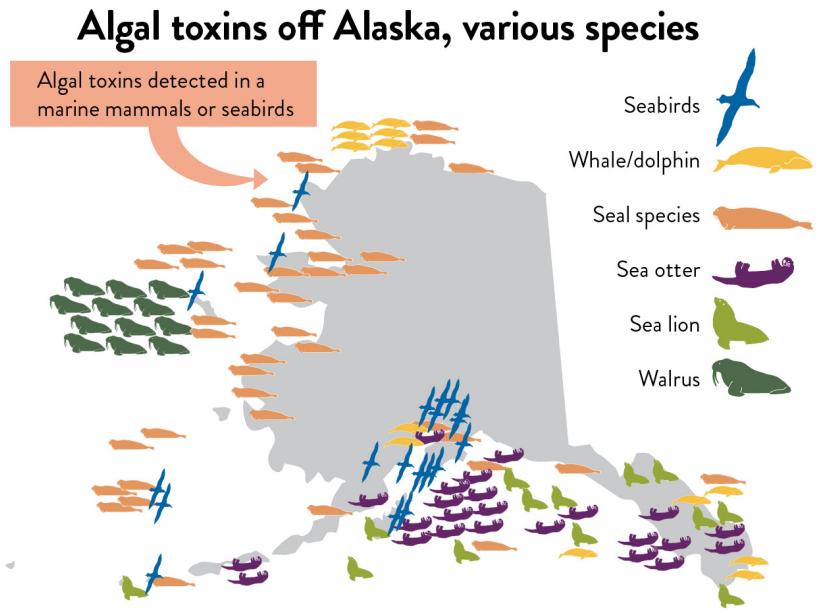
Variable: Benthic invertebrate abundance and distribution



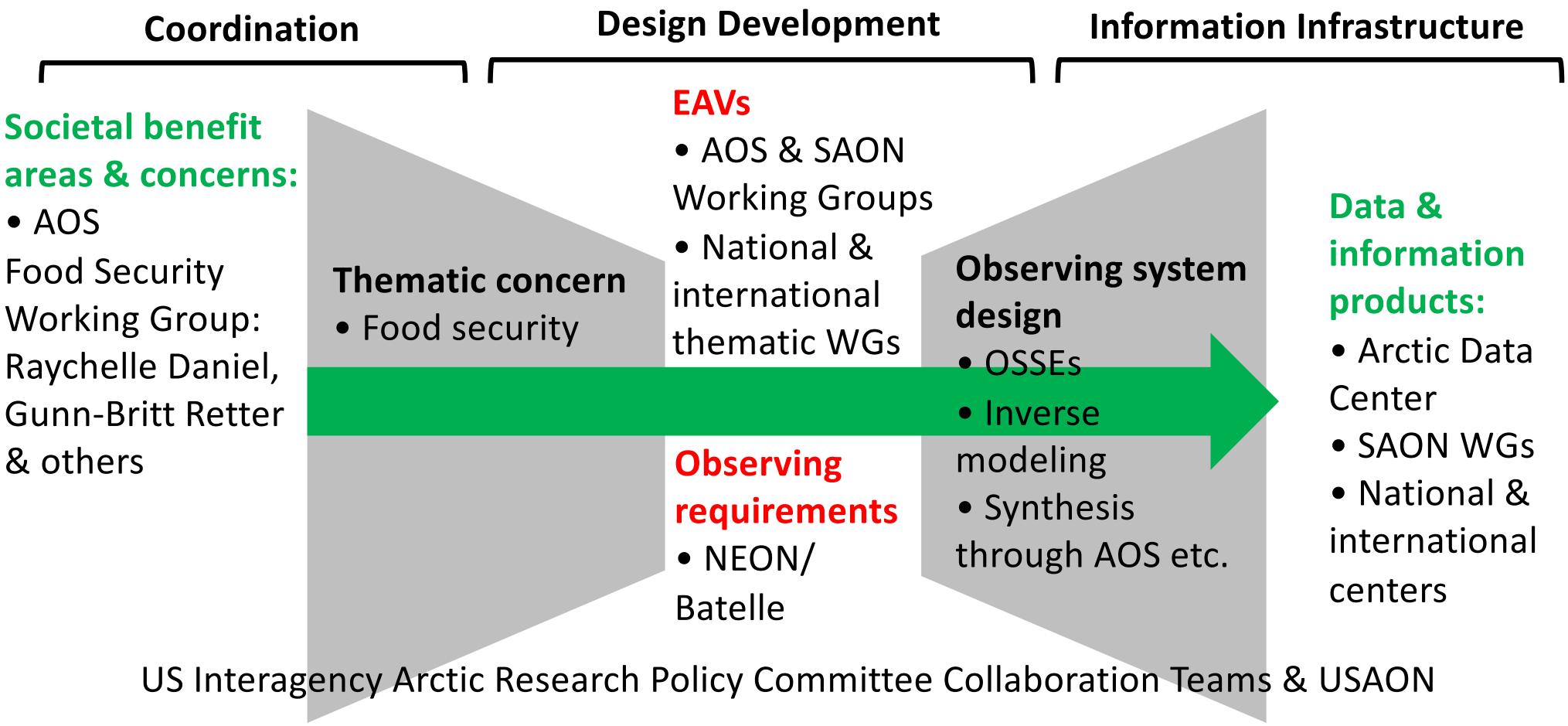


DBO & SAON ROADS

→ Potential for new data & information products



Shared benefits – Relevance – Data use: Entry points for DBO involvement



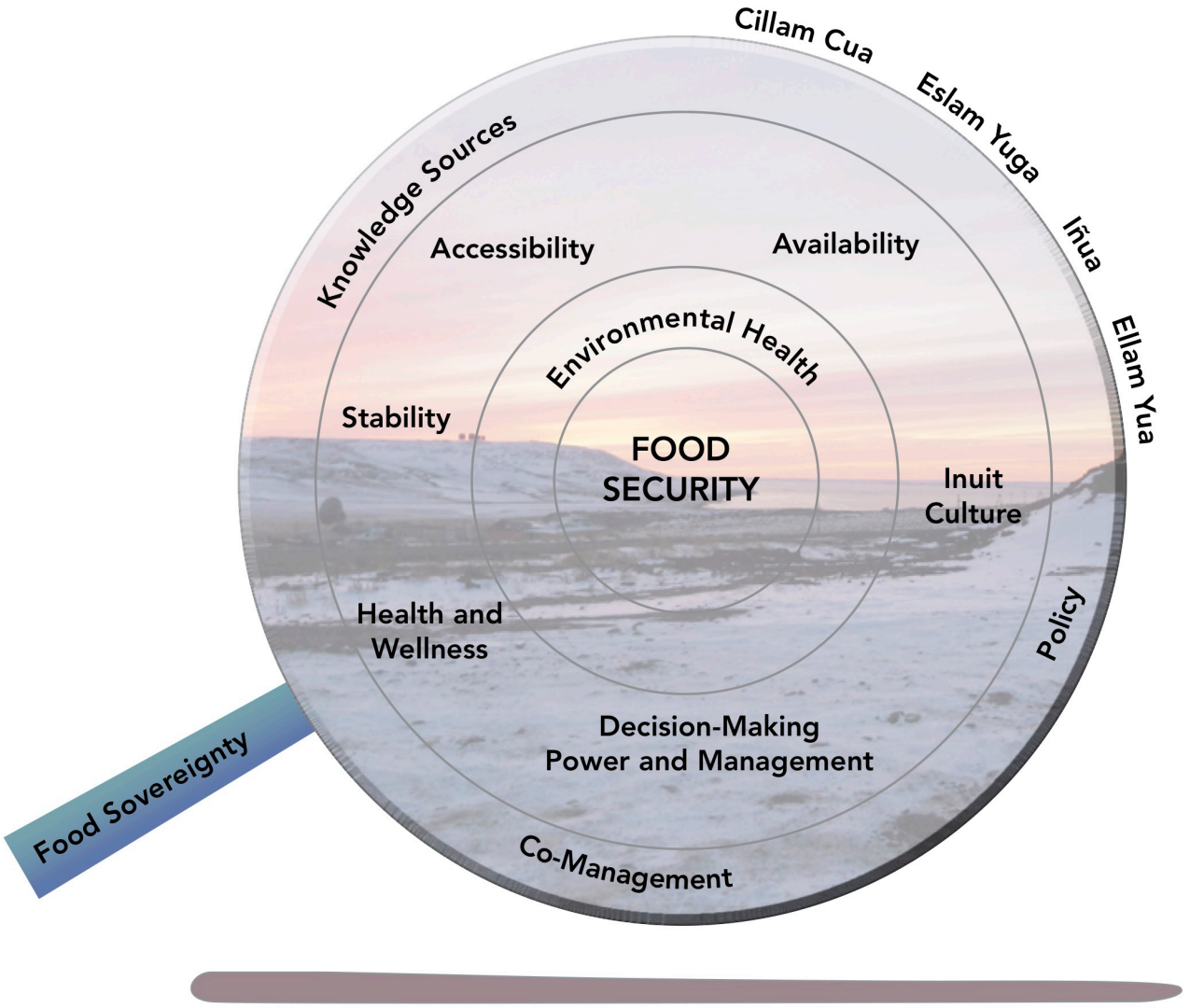
Alaskan Inuit Food Security Framework (ICC-AK, 2015)

Behe and Castillo, 2015

Alaskan Inuit Food Security Framework

- Dimensions
- Knowledge
- Management
- Sovereignty

(ICC-AK, 2015)



The Arctic Observing Summit

- Provide **community-driven, science-based** guidance for the **design, implementation, coordination** and **sustained** long-term (decades) **operation** of an international network of Arctic observing systems that serves a wide spectrum of needs
- Create a **forum** for coordination and exchange between **academia, government agencies, Indigenous & local communities, industry, non-governmental organizations and other Arctic stakeholders** involved in or in need of long-term observations

2020 Arctic Observing Summit:
Observing for Action

Akureyri, Iceland 31 Mar – 2 Apr 2020

arcticobservingsummit.org

Summit themes

1. Design, Optimization and Implementation
2. **Food Security and Indigenous Needs**
3. Observing in Support of Adaptation and Mitigation
4. Data Interoperability and Federated Search
5. Observing in Support of Global Action

2020 Arctic Observing Summit: *Observing for Action*

Food Security and Indigenous Needs WG – Vision, Mandate and Rationale

- Food security observing roadmap emerging from team effort will guide observing activities in Pacific Arctic region and inform broader SAON Roadmap for Arctic Observing at pan-Arctic scale
- International team of Indigenous experts, community representatives, agency personnel, research scientists (both observationalists and modelers)
- Food security WG essential as the only SAON/AOS group focusing on observations for a specific societal and Indigenous benefit area and concern
- Indigenous Food Security Working Group -
  - Helps identify impactful Essential Arctic Variables (EAVs)
  - Provides guidance on EAV assessment process, societal benefit areas & observational requirements

2020 Arctic Observing Summit:
Observing for Action

Food Security and Indigenous Needs WG – Vision, Mandate and Rationale

Essential Arctic Variables (EAVs):

- Conceptually broad, phenomenological observing categories (e.g. “sea ice”) that provide a structured interface for coordination and collaboration in support of societal benefit
- Identified as being critical to achieving Arctic societal benefit
- Defined by their observing system requirements (e.g. spatial resolution, frequency, coverage, accuracy), which are technology-neutral and should transcend specific observing strategies, programs or regions.
- Implemented through specific recommendations based on best available technology and practices

SAON
SUSTAINING ARCTIC OBSERVING NETWORKS

Goal: Arctic data & information product suite that addresses key food security concerns through integration of EAV data (in situ, community-based monitoring, remote sensing) & model output