

## US AON Tasks

### Background on US AON

Observations of the Arctic environment have revealed broad, system-wide, and cumulative changes, with potentially catastrophic consequences to Arctic and global society. Yet, relative to other regions, structural gaps in sustained observing systems have hampered our understanding of the drivers and implications of these changes. Arctic observing poses many challenges, including:

- Extreme physical conditions that drive up the cost of conventional technology systems;
- A lack of regional infrastructure, including telecommunications, also increases costs and constrains deployments and real-time transmissions;
- A patchwork of approaches across Federal agencies, [eight Arctic states](#) and other observing partners increases complexity.

These challenges and imperatives gave rise to the vision of an internationally coordinated Arctic Observing Network (AON; NRC, 2006) of sustained observations targeting and linking the most critical aspects of a rapidly changing Arctic, in support of research, products, and public services. US AON serves as the national, interagency coordinating body for this work.

### What are US AON Tasks?

US AON Tasks engage teams of subject-matter experts (SMEs) in order to identify specific actions to improve the underlying observing system and its value delivery through products and services. Tasks center on thematically-driven, mission-critical efforts linked to key products (e.g. Arctic Report Card) or services (e.g. Daily Sea Ice Forecast) that bring together one or more federal agencies, relevant partners and network users to identify issues and solutions.

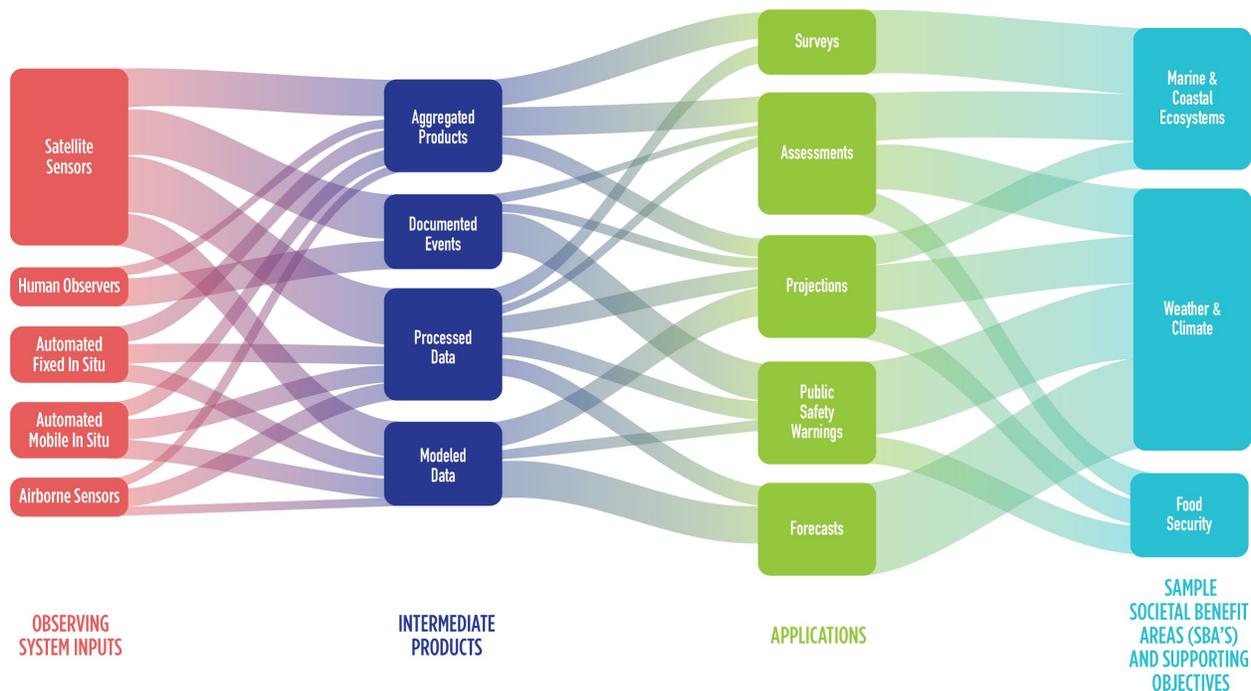
The US AON Board, IARPC Principals, White House Office of Management and Budgets, agency-specific observing coordination offices (e.g. NOAA-NOSC), international collaborators, and the broader research and decision-making community are all considered relevant audiences for the findings of US AON Tasks.

### US AON Task Methodology

In order to make strategic improvement to the complex of Arctic observations in support of broadly-shared benefit, decision-makers require a comprehensive evidence base that systematically identifies gaps and opportunities for optimized investment. These analyses must recognize the interconnected nature of Arctic observations and their connection to delivering public value across a diverse range of decision makers. Value Tree Analysis (VTA) is a multi-criteria decision support methodology that supports the objectives (OSTP, 2018; IDA, 2017) of US AON Tasks. Through expert elicitation, VTA systematically links observational inputs (i.e. raw satellite data or in situ measurements) to the value-added data product and application outputs that they support, weighting the relative impact of each input (Fig. 1). The desired outcomes in the value tree are specified by a benefit framework. The International Arctic Observing Assessment Framework (IAOAF) was developed by international partners to support VTA specifically for AON (IDA, 2017), but other frameworks that link diverse and related societal

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outcomes (e.g. UN Sustainable Development Goals or ICC-AK Food Security Framework) also provide comprehensive means to measure outcomes.



**Figure 1.** Value Tree Analysis (VTA) provides a systematic framework for linking observing system inputs, through intermediate products and applications to the societal benefit areas they are meant to support.

Through VTA, benefit frameworks serve to weigh the relative impact of individual observing systems, while revealing up and downstream dependencies across the system. They also reveal areas where societal benefit is underserved by AON, where the value of some observations terminates due to technical hurdles, like prolonged latencies in the delivery of a parameter. By generating a cohesive view of these issues, VTA provides funders and policymakers with an evidence base to strategically fill observing gaps and remove impediments to value delivery.

### How do US AON Tasks Proceed?

US AON Tasks can be initiated by a Federal agency or non-Federal US AON partner, provided they have the authorities and/or resources to guide the needed effort. US AON Tasks take facilitation (provided by US AON Executive Director and Program Analyst), scoping and advising (Task Champions recruited from Fed agencies and non-Federal partners) and Subject Matter Experts (SME's, also recruited from Fed agencies and non-Federal partners). Non-federal champions and SME's may be eligible for compensation for their efforts.

Tasks proceed in 3 phases:

1. Mission Analysis (WHO: Task Champion(s), US AON ED/Coord in collaboration with US AON Board)

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- Assess mission-alignment/support across partners and engage with key Champions;
  - Identify Task objectives and SMEs;
  - Assess Task audience;
  - Scope the value tree analysis;
2. Expert Elicitation
    - Complete VTA and gaps assessment.
  3. Findings Consolidation & Reporting (WHO: Task Champion(s), US AON ED/Coord in collaboration with US AON Board)
    - Consolidate findings;
    - Report findings to key audiences.

### Examples of US AON Tasks/Status

#### Improving Sea Ice Forecasts/Consolidation & Reporting

NOAA initiated this task in collaboration with other agencies and non-Federal partners to focus initially on daily sea ice forecasts. Future work will look at weekly to monthly to seasonal products. [More information.](#)

#### Arctic Report Card 2020/Consolidation & Reporting

ARC Editors invited this analysis with support from ARC authors to understand the quality of AON support for the 7 Vital Signs of the ARC. Future work will look at a broader array of Arctic indicators. [Released in Dec 2020. \(link\)](#)

#### Wildfire Smoke Detection and Forecasts/Mission Analysis

EPA initiated this task in collaboration with other agencies and non-Federal partners. The task was completed through Mission Analysis but did not move further due to personnel issues. [More information.](#)

#### Safety of Navigation/Bathymetry/Initiating

NGA/DOD initiated this task. We are currently engaging with an initiating team. Contact [sandy.starkweather@noaa.gov](mailto:sandy.starkweather@noaa.gov) for more information.