US Arctic Observing Network

Biennial Accomplishments Report 2026

The US Arctic Observing Network (US AON) connects people and builds tools to understand and improve Earth observations in the Arctic.

Why Arctic Observing Matters

Observing systems (e.g., drones, weather stations, satellites, buoys, community-based monitoring) collect data about our planet, people, and communities.

The United States relies on Arctic observations for national security, economic prosperity, navigation, and protecting American interests in a rapidly changing region. As an Arctic nation, the United States is affected by rapidly changing Arctic conditions with national security, community resilience, economic, infrastructure, and transportation implications. In a complex and changing world, people need high-quality, readily available information to support decision-making across sectors from defense to fisheries management.

Photo: Sun sets over Utqiaġvik, Alaska. Credit: Matt Druckenmiller, NSIDC

Project Highlights

Advancing Arctic Observing to Support Disaster Resilience

US AON has made significant strides in understanding how Arctic observations support risk management and hazard mitigation across Alaska–critical capabilities for protecting American interests and ensuring the prosperity of Arctic residents. With rising temperatures leading to cascading impacts such as damaging storms, thawing permafrost, and increased ship traffic, effective preparedness and decision-making depend on comprehensive observation systems.

In response to a deliverable in the US Arctic Research Plan 2022-2026, US AON initiated a thorough assessment to identify gaps in observations that affect risk management and hazard mitigation in Alaska. This effort has engaged 60+ partners from federal and state agencies, academic institutions, and Tribal and community-led organizations. These dialogues, alongside relevant reports, enabled US AON to prioritize areas for detailed assessments of critical gaps in observing systems, beginning with coastal flooding, wildfires, aviation weather, and landslides.

In 2025, US AON collaborated with experts to evaluate the initial focal topics: coastal flooding, aviation weather, wildfires, and landslides. US AON produces technical briefs–Arctic Observations Storylines–that translate complex assessments into accessible recommendations for policymakers and decision-makers. These technical briefs illustrate the connections between observing systems, data products, and societal benefits, making a compelling case for strategic investments to enhance disaster resilience and operational readiness.

The Arctic Observations Storylines series is available now on the US AON website.

The Alaska Air National Guard supports wildfire containment efforts at Bear Creek, AK(2025). Wildfire detection, response, and recovery depend on robust observing systems. Credit: Alaska National Guard

Developing The BENEFIT Tool To Assess Arctic Observing Systems

To support strategic investment decisions in Arctic observing, US AON has developed BENEFIT* – an innovative assessment method and online tool designed to support rigorous, efficient, and democratic assessments of the Arctic observing system. BENEFIT represents a fundamental evolution in how we assess observing networks, delivering cost-effective analysis that supports agency priorities, such as security, disaster preparedness, and infrastructure development.

The publicly available BENEFIT Tool enables users to diagram the current state of Arctic observing systems, identify gaps, and communicate high-priority needs. It supports transparent, collaborative conversations about observing priorities. Since March 2024, over 130 users have engaged with the tool, contributing to 50+ assessments. US AON is applying Artificial Intelligence and Machine Learning technology to improve efficiency and delve deeper into strategic findings.

BENEFIT Assessment emphasizes regional context, flexibility, open data, equity, and crowd-sourcing. Through a Methods Expert Committee comprised of Indigenous and non-Indigenous experts in data management, co-production of knowledge, and communications, US AON designed the tool to serve multiple user groups – from researchers and operational agencies to community members, industry partners, and policymakers. BENEFIT Assessment can lead to immediate progress in transparency, coordination, and data sharing (e.g., working together to procure critical lightning strike data to improve wildfire predictions). This democratic approach enables transparent analysis while reducing the cost of evaluation.

Access US AON's BENEFIT Tool

***** BENEFIT acronym: **B**enefit **E**valuation | **N**etwork **E**xploration | **F**ind gaps | **I**mprove **T**ogether

Partnership Highlights

Convening The Arctic Observing Community

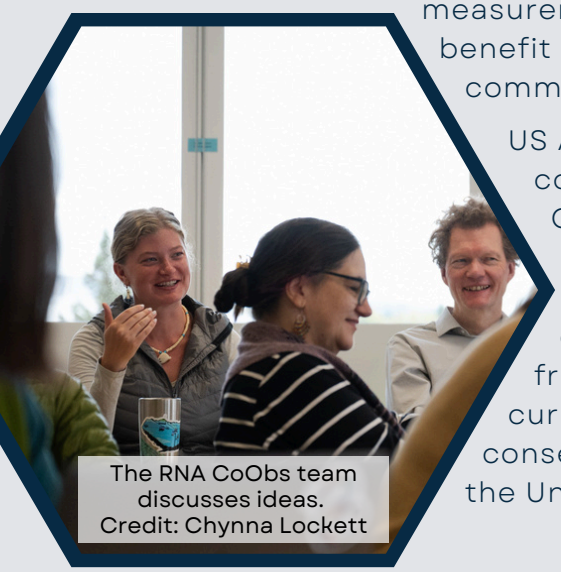
In March 2025, US AON convened approximately 70 participants during Arctic Science Summit Week in Boulder, Colorado. The showcase, titled "The US Arctic Observing Network - A Multiagency Approach to Advancing Arctic Observing," brought together federal agencies, academic researchers, Indigenous community leaders, and international partners. The event emphasized critical themes, including community-based observations as a high-return investment, the power of cross-sector partnerships, the need for boundary spanners who bridge different knowledge systems, and data interoperability that respects Indigenous data sovereignty while maximizing operational value. Elder Marcello Quinto's call to move from brainstorming to action resonated throughout discussions, underscoring the urgency of translating dialogue into tangible benefits that support American prosperity and Arctic community resilience.

"Our communities are the original and most powerful observing network."

– Kaare Erickson at the US AON showcase event

Supporting International Coordination

US AON has provided critical support for expert panels convened through the Sustaining Arctic Observing Networks (SAON) Roadmap for Arctic Observing and Data Systems (ROADS) process. These expert panels bring together specialists to identify Shared Arctic Variables–essential measurements needed across the Arctic to address priority societal benefit areas, including natural resources, food security, hazards, community resilience, and environmental health.



The RNA CoObs team discusses ideas. Credit: Chynna Lockett

US AON helped shape the SAON ROADS process and bolstered US contributions via the Research Networking Activities for Sustained Coordinated Observations of Arctic Change (RNA CoObs) project. These efforts advance international coordination on Arctic observing priorities while ensuring American interests and capabilities are well-represented in global Arctic observing frameworks. The expert panel process has identified critical gaps in current observing systems planning processes and established consensus-based mechanisms to move forward. This work supports the United States' capacity to map and monitor the Arctic region.

Stay Connected

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Photo: Walter Brower (left) and Jimmy Ivanhoff (right) work on radiometric instruments at the ARM North Slope of Alaska's (NSA) observatory in Utqiaġvik, AK. Image courtesy of the U.S. Department of Energy Atmospheric Radiation Measurement (ARM) user facility

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