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Opportunity to Plan and Develop a Comprehensive US High Arctic Research Center in Alaska

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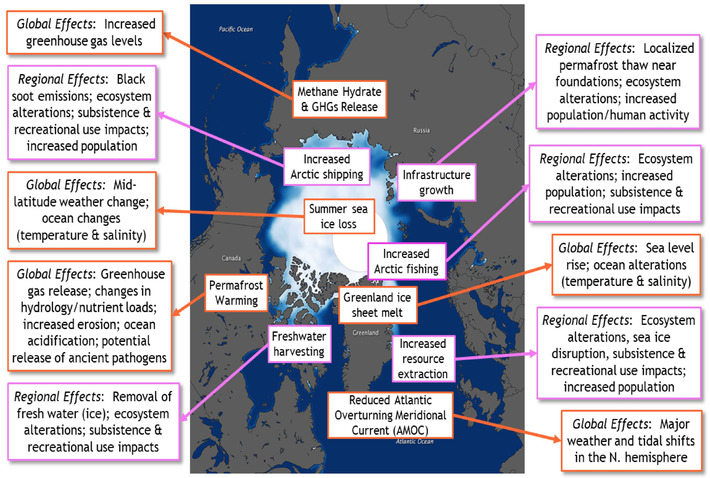
Pending Workshops and Conference Sessions:

- Wilson Center Ice-Diminished Arctic Symposium (July 2019, Washington, DC)
- NSF HARC Workshop for science need (Fall 2019, Fairbanks, AK)
- ASM2019 NorthAm Arctic research coordination (Dec. 2019, Halifax, Canada)
- NAS-PRB HARC Workshop for agencies coordination (TBD, Wash., DC)

Introduction: Arctic Change → Response → Opportunity

Need and Opportunity: A rapidly changing Arctic will change the world… physically, economically, politically, and in many ways. U.S. interests are increasingly vulnerable due to these changes. To respond as a resilient nation, a proper research infrastructure for the US Arctic is needed.



*Examples of **Global** and **Regional** Effects resulting from Arctic Change*

Concept: Develop a comprehensive US High Arctic research Center (USHARC) as a national asset.

Vision: USHARC shall support comprehensive Arctic science and security. This infrastructure will enable research of Arctic environmental change, infrastructure, emergency response, search and rescue, domain awareness, and technologies – leading to economic development, environmental protection, and enhanced national security.

USHARC → Leveraging Resources for Arctic Research

Large region + high costs → Leverage resources to realize greatest benefits

‡ ***"It's all about sharing at the end of the day and having the ability to maneuver. It's expensive to work in the Arctic and sharing resources makes sense."***

‡Mike Kristjansen; Logistics Manager, Canada Polar Continental Shelf Program (shared with Armed Forces Canada Arctic Training Center)

R&D partnerships between stakeholders in the Arctic are compatible from an operational, economic, and research perspective.

- Support field and lab work, testing and logistics.
- Maintain supply chains for Arctic activities.
- Share best practices, advice and contacts for services.
- Expand training and routine operations.
- Pre-position equipment; aid civilian emergency operations.
- Contingency location to support responses when needed across the Arctic.

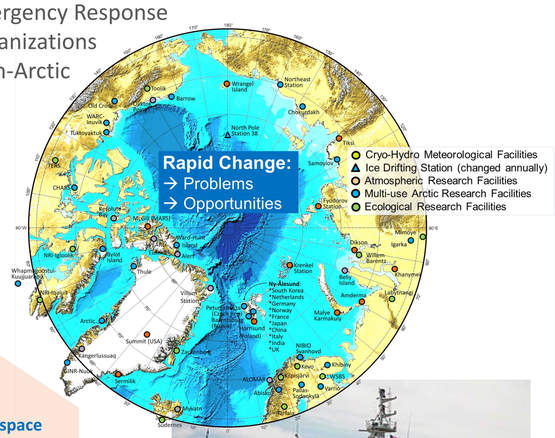
USHARC + Arctic Network → Opportunities

Fill gaps in research and operating capability in the U.S. Arctic

Data Sparsity: Research stations perform an important function to enable research in the observation-sparse Arctic.

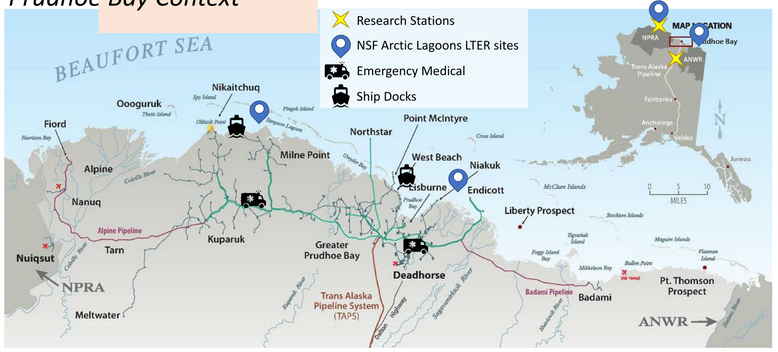
Partnering: Public and Private stakeholders for comprehensive and responsible solutions to address mutual needs and interests, including:

- Military/Defense/Emergency Response
- Non-Government Organizations
- Pan-American and Pan-Arctic
- Government agencies
- Research Institutions
- Local Communities
- Law/Constabulary
- Industry



Controlled airspace
46 x 775 miles north
(40 x 673 nm)

Prudhoe Bay Context



USHARC → Increase U.S. Presence in the High Arctic

A concept of HARC is to increase U.S. Arctic presence, support Arctic research, and expand operational capabilities. HARC can support these by providing:

- A Permanent, year-round facility in the High Arctic;
- Facilities for Arctic research, technology testing, training;
- Shore location for campaigns across land, sea, air, and ice;
- Domain awareness support (deployment, sensor testing, data systems, unmanned/autonomous platform facilities);
- Forward deploy equipment for emergency response aid.
- Support for field operations, training, and exercises;
- Forecasting and real-time updates on conditions.
- Expanded communications (and research for same);

Arctic Shield 2015: Oliktok Point site and controlled airspaces were used to conduct the public-private USCG search and rescue exercise. An unmanned aerial vehicle (UAV) was launched from Oliktok Point, "handed off" to USCG cutter Healy to locate "survivors" in ice-covered waters. Manned aircraft were then dispatched for the rescue.

Prudhoe Bay Area → Location, Assets and Experience

Location: U.S. High Arctic coastal, marine and terrestrial domains. Between Bering Strait and NW Passage

Access: Dalton Highway connects to sub-Arctic Alaska and the contiguous U.S, with airports for global services.

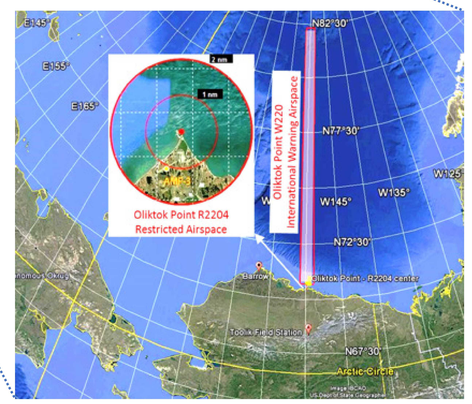
Controlled Airspace: At Oliktok and toward the North Pole (40 x 673 nm). Enables terrestrial + marine + aerial research and operations.

Unmanned Aircraft Systems (UAS): UAS operational assets support research, testing, and development.

Communications and Data: Broadband fiber-optic cable is fully operational. SCIF at the USAF Long Range Radar Station is present.

Infrastructure and Services: North Slope Alaska partners (oil companies, native corporations) offer equipment, skills and services; medical facilities and emergency response teams.

Arctic Development: At intersection of natural Arctic and commercial activity nurtures public-private partnership.



USHARC Facility

Source: Polar Continental Shelf Program Arctic Operations Manual, Natural Resources Canada, 2016

USHARC is to adapt through phased development:

- **Master Plan**: Long-term adaptive plan to align investments with priorities
- **Phase 1**: Master Plan; construct roads, pads, infrastructure
- **Phase 2**: Core facility for basic year-round capability of small operations: Commons core, Lodging, Lab, UAS Center, Maintenance & Support Center: ~50,500 sq.ft. total
- **Phase 3**: Expand facility, systems, and capabilities: Marine dock, marine vessels, portable lab and shelters: ~14,000 sq.ft. new building area
- **Phase 4+**: Future phases from evaluations and Master Plans