ADAC Arctic
Addressing Rapid Change Through Technology Innovation and Collaboration

Center News

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Dr. Tweedie and participants in Cohort 2 of the Arctic Summer Internship Porgram outside the permafrost tunnel.

2025 Arctic Summer Internship Program (ASIP):

Students from ten different states traveled to and across Alaska in planes, trains, and snowmobiles (or "snow machines," as they're often called here) to learn about key homeland security issues in the Arctic and Alaska that can have effects on the entire nation. Cole Robinson is pursuing a degree in homeland security at University of New Hampshire, and said the experiences and networking will help him all through his career. Throughout the program, he said he "learned a lot about security, emergency management, critical infrastructure–that's all directly tailored to my Homeland Security degree." He also has his eye on the big picture, noting that the community, state and federal pieces all tie together: "The Arctic is going to be a huge, huge focal point for the next decade, so I hope I can contribute on all levels, depending on where my career ends."

The program ties all of those levels and components together over an action-packed three-week period. This year, for the first time, ADAC-ARCTIC hosted two cohorts of ASIP participants. It was the ninth program year for the Center, as ADAC Emeritus began and ran the program for seven years. This year, students hailed from Washington, New Hampshire, California, New Jersey, Ohio, New York, Alaska, Texas, North Carolina, and Florida. They're enrolled in undergraduate and graduate programs at universities across the country, including the United States Coast Guard Academy, and the United States Naval Academy. The breadth of experiences and studies they bring with them is similarly intrinsic and beneficial to the program.

ASIP Cohort 1 learning about infrastructure on-site at the Don Young Port of Alaska

Cohort One arrived in late May, staying just over three weeks, and overlapping with Cohort Two, for an interactive Arctic Cybersecurity Tabletop Exercise with our partners from University of New Hampshire. Madeline DuBosque, who is working on her environmental engineering degree at University of New Hampshire and wants to work in disaster response and emergency planning, took away valuable insights from the tabletop exercise to apply to both her studies and future career, "It was really valuable to learn how to figure out what to tackle first, and how to go about it, and how to allocate resources in any type of disaster that involves the environment, but also cybersecurity."

Each cohort also spent a week in Utqiaġvik, the northernmost city in the United States. There, students learned about challenges for the homeland security enterprise to both protect from foreign or domestic threats, and react to disasters that may befall the area. They learned about the uniqueness of the Arctic, helped with hands-on field research, and learned about the resources available. Jillian Peslak, a masters student at Rowan University, is working on one of ADAC-ARCTIC's research projects, "A Systematic Framework Model to Assess the Feasibility and Environmental Impact of Wellhead Ignition Blowout." When asked about the experience, she said, "Especially up in Barrow, we had these amazing connections because of ADAC-ARCTIC's longstanding connections with the program that gave us so many opportunities, and it was truly such an immersive experience... I'm a very visual learner, so connecting all of what I may be researching for my master's program to the real field applications was a very, very beneficial experience for me."

Jeff Libby, PI working with master's students

Message from the PI:

Greetings,

It was a whirlwind summer here at ADAC-ARCTIC. We continue to train and educate the next generation of researchers, operators, and policymakers for the Homeland Security Enterprise (HSE). For the first time, we hosted two cohorts of our flagship Arctic Summer Internship Program (ASIP), including undergraduate and graduate students from across the country, as well as cadets from the US Coast Guard Academy and US Naval Academy. As always, it was a rewarding and unforgettable experience, and I am eager to watch these promising young individuals advance in their careers.

Additionally, we've been partnering with the University of Houston's Foresight program to offer a series of invite-only tabletop workshop exercises, sussing out the upcoming needs of the Homeland Security Enterprise through the perceptive futurist work of Andy Hines and his team. The results will produce our next round of RFPs. Stay tuned to see how you can contribute research and develop tools for the Homeland Security Enterprise.

Alaska has been the focus of much attention lately. Amidst all the news, we have stood firm with our partners, and reflect upon the relevancy of our mission as ADAC-ARCTIC: Create tools and technologies, develop mission-driven exercises, and train highly qualified persons to serve the Homeland Security Enterprise to advance Arctic homeland security. Even as we expand our repertoire, we keep this at our core.

With the fall semester now in full swing, I am eager to see progress with our research projects, our fellows, and begin year three as a Center. This will also bring new projects to bear, so look out for more news. A sincere thanks to all of you for your support, and all our staff, researchers, and partners working every day to make this possible.

Warmly,

Jeff Libby, Principal Investigator

Fellow Highlight: Gwendolyn Morgan

Gwendolyn Morgan joined as an ADAC-ARCTIC fellow in 2024 through Rensselaer Polytechnic Institute. She is a doctoral candidate in the cognitive science department, working with Dr. Martha Grabowski, one of ADAC-ARCTIC's Executive Counselors, and Dr. Selmer Bringsjord.

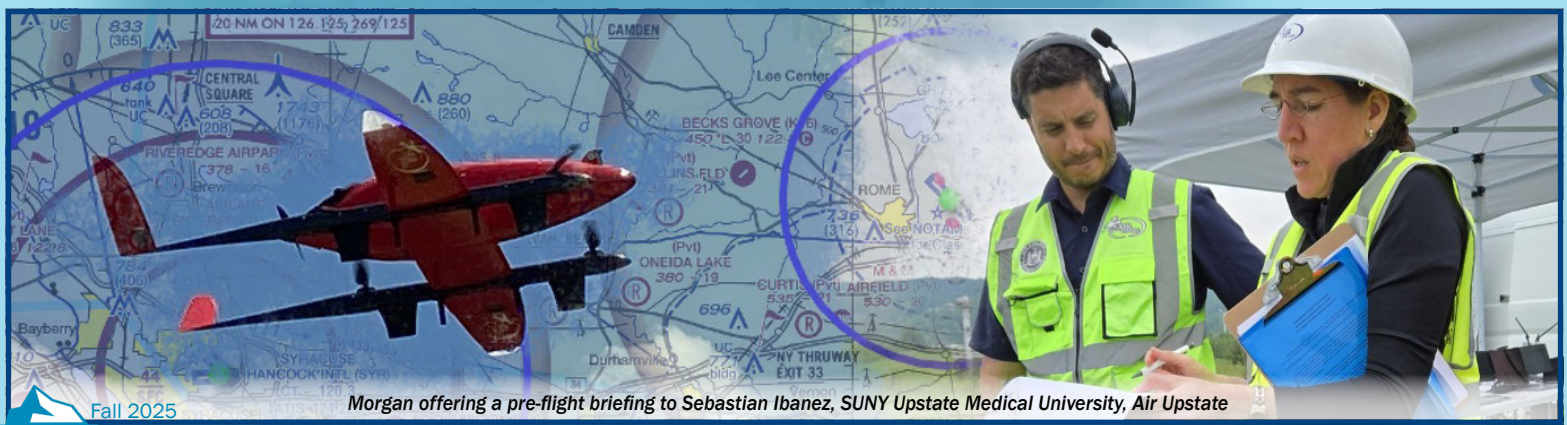
Morgan's work advances homeland security performance and understanding of Department of Homeland Security (DHS) human-technology teaming using autonomous and AI-based systems for oil spill response; vessel and tank inspection; and Arctic search and rescue. This research developed a model and empirical results to improve human and system performance capabilities in a broad spectrum of mission areas.

Morgan next to a multicopter fixed wing drone designed for long-range deliveries.

Specifically, Morgan supported the project, "Impacts of Uncrewed Aerial Systems on Operator and System Performance, Processes, and Perceptions in Arctic Safety-Critical Systems," led by Dr. Grabowski. The pair also published their research framework, "Human Machine Teaming in Mobile Miniaturized Aviation Logistics Systems in Safety-Critical Settings," in the Journal of Safety and Sustainability.

Morgan is grateful for the ADAC-ARCTIC fellowship: the support, resources, and connections helped her further her research and allowed her to gain an understanding of Arctic challenges, enrich her research, contribute to Arctic research, and help a variety of stakeholders. This Fall, Morgan will be preparing for her doctoral candidacy, writing her dissertation, and plans to defend in the spring of 2027. Her career goals are to work as a human factors/ cognitive scientist for a federal agency in the Homeland Security Enterprise or work as a professor continuing her research with UAS and human machine teams.

Congratulations on all your accomplishments, Gwendolyn, and best wishes on your upcoming dissertation work!



Morgan offering a pre-flight briefing to Sebastian Ibanez, SUNY Upstate Medical University, Air Upstate

University of Alaska Anchorage and ADAC-ARCTIC Support US Coast Guard Foundation Dinner

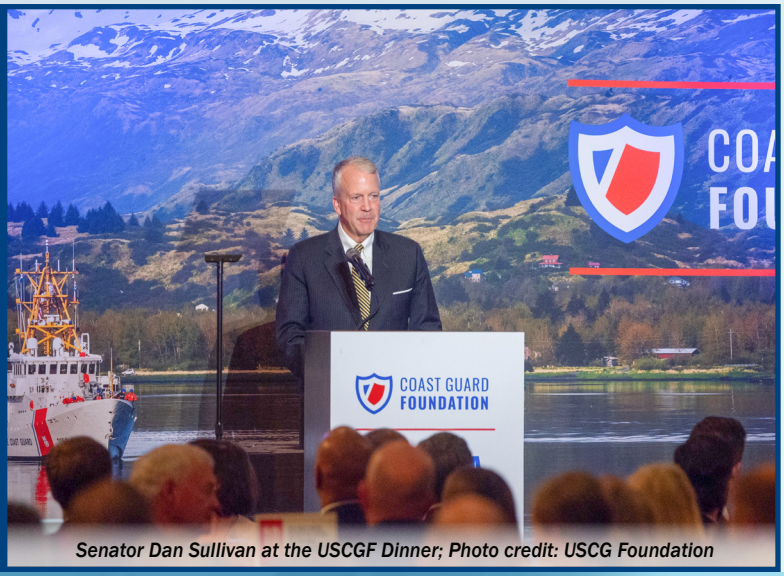
In August, UAA and ADAC-ARCTIC attended the US Coast Guard Foundation Alaska Awards Dinner as Rescue Sponsors. The team was pleased to share the table with USCG MST3 Stevens, as well as Lynn Kenealy, Local Government Specialist at the State of Alaska Department of Commerce, Community, and Economic Development. UAA was represented by Cheryl Siemers, Interim Chancellor and Kenai Peninsula College Campus Director; Aaron Dotson, Vice Chancellor for Research; Jeff Libby, Arctic Professor and ADAC-ARCTIC Principal Investigator; Jennifer Motes, Senior Development Strategist and Director of Development (acting); Heather Paulsen, ADAC-ARCTIC Finance and Operations Director; Jereme Altendorf, Associate Director for Arctic Programs and Strategic Implementation; and Caitlin Kollander, ADAC-ARCTIC Education and Workforce Manager.

The event brought together leaders from Congress and the Coast Guard, plus academia and industry, all in support of Coast Guard members past, present, and future. The event featured an impressive lineup of speakers, including: Troy Edgar, Deputy Secretary of the U.S. Department of Homeland Security (DHS); Admiral Kevin Lunday, Acting Commandant, US Coast Guard; the Honorable Lisa Murkowski, US Senator, Alaska; the Honorable Dan Sullivan, US Senator, Alaska; the Honorable Nicholas Begich III, US Representative, Alaska; and Susan Ludwig, President, US Coast Guard Foundation.

The Center was honored to celebrate our partners in the Coast Guard and to recognize the crew of the US Coast Guard Cutter ALEX HALEY as "Cutter of the Year." The Alaska-based crew won the honor for the second year in a row, saluting their continued contributions to maritime safety, security, and stewardship in Alaska's waters.

We appreciate the continued support of DHS and our Alaska congressional delegation for their commitment to homeland security in the Arctic.

UAA's Vice Chancellor of Research Aaron Dotson and USCG MST3 Stevens



Senator Dan Sullivan at the USCGF Dinner; Photo credit: USCG Foundation

Project Highlight:
RAPIER: Reliable Arctic Power and Intelligent Energy Resilience

Alaska's Arctic is dotted with small communities and government and military facilities, all separated from the state's wider power grid. Many rely on external energy sources like diesel, which must be delivered far in advance and stored safely to minimize environmental dangers. But it's risky to rely on energy imports, especially given the region's environmental changes and geopolitical spotlight. To increase energy security in the North, ADAC-ARCTIC's RAPIER project aims to provide site-specific solutions that address each community's unique energy needs.

RAPIER is organized into two parallel tasks that help create a comprehensive and data-driven energy framework for the Arctic. The first task – Reliable Arctic Power – is enhancing domain awareness and improving energy security for small communities and remote facilities operated by the DHS. Under this task, the project team identifies community energy requirements, assesses alternative energy sources, and will recommend a program pilot site for an alternative energy source. The team has already created 18 GIS layers showing risks and resources at various sites. Specifically, this data and framework will help DHS secure and manage air, land, maritime borders in the North; enforce U.S. immigration laws; counter transnational criminal organizations and other illicit actors; and expedite lawful trade and travel.

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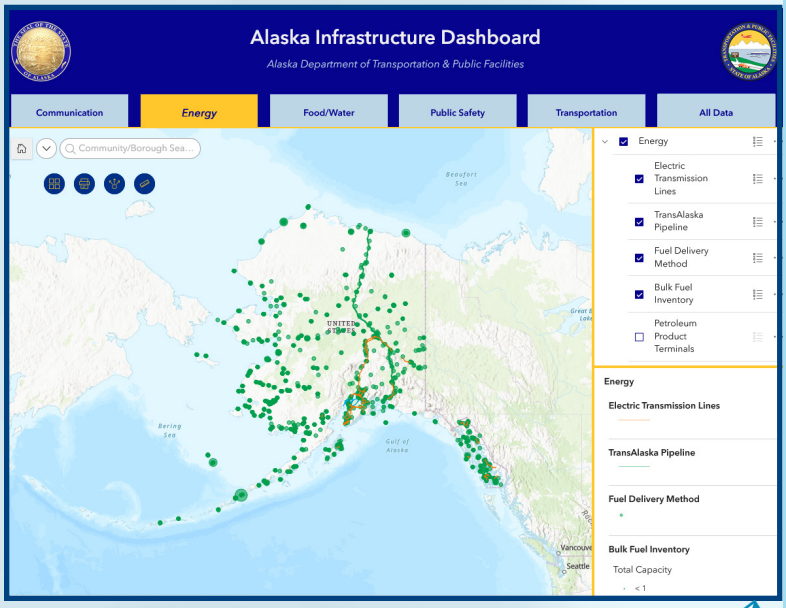
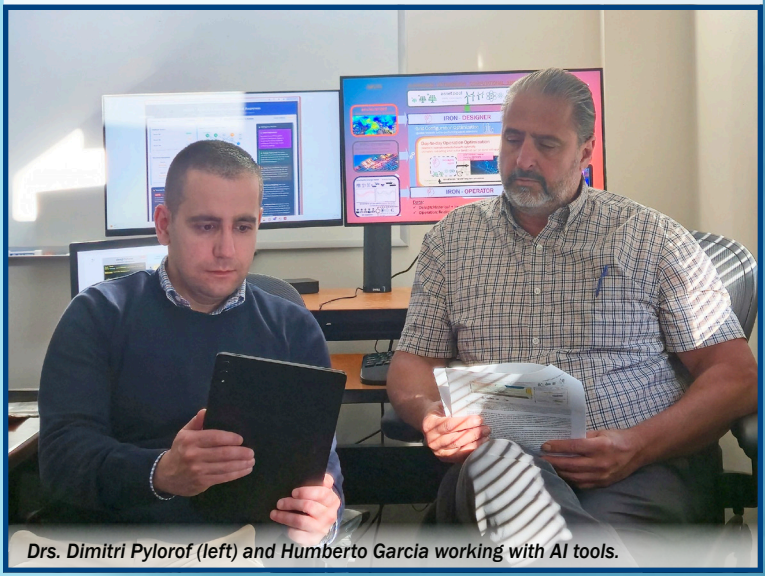


Project Highlight: RAPIER: Reliable Arctic Power and Intelligent Energy Resilience *(cont from pg 3)*

The second task – an Intelligent Resilient Optimized Networks (IRON) – provides a methodological framework and AI-optimization tools to identify which technologies are applicable in a specific environment. The task also determines how energy alternatives can operate favorably within certain objectives and metrics. This task assists DHS stakeholders in identifying and managing the optimal combination of energy sources that can provide power under a multitude of energy needs, mission requirements and constraints, as well as local conditions.

Combined, the project team is devising a practical methodology and providing recommendations to meet the energy requirements of the region. Importantly, the project contributes to sustainable and informed decision-making processes in the face of evolving energy needs in a logistically and environmentally challenging region. Through these initiatives, the team aims to enhance Arctic communities and achieve the DHS mission of energy resilience by specifying optimized, cost-effective, resilient power systems for Far North Alaska DHS facilities.

RAPIER is led by Principal Investigators Dallas Meggitt and Michèle Bullock of Sound & Sea Systems, LLC and Dr. Humberto Garcia of the U.S. Dept. of Energy (DOE) and Idaho National Laboratory (INL). Supporting team members include Dr. Dimitri Pylorof, DOE, INL; Matthew David, Arctic Slope Regional Corporation (ASRC) Federal; Eric Velte, ASRC Federal; Dr. Mohammad Heidari Kapourchali, University of Alaska Anchorage; Alaska Village Electric Cooperative, Nome Joint Utility Systems, and others.



Drs. Dimitri Pylorof (left) and Humberto Garcia working with AI tools.

Employee Spotlight: Joe Cook

Joe Cook

Joe Cook joined ADAC-ARCTIC in August of 2022 as a Project Manager for UAA's Office of Research, and has expanded into a dual role, also serving as Assistant Executive Director of ADAC-ARCTIC. Looking to the future of the Center and moving into year three, Cook believes the Center's expanding portfolio of innovative projects will unlock new opportunities in Arctic security and border operations: "ADAC-ARCTIC's network has grown exponentially in its first two years, and the potential for continued impact is immense."

Cook comes from a military background, enlisting in the United States Air Force in 2000, and serving various roles within Security and Law Enforcement. Assignments took him to 28 countries, including various extended deployments to Afghanistan and Iraq. He served as the Commandant of the James M. McCoy Airman Leadership School, Chief Master Sergeant, and finally Senior Enlisted Leader at Peterson Space Force Base and the Ali Al Salem Air Base in Kuwait prior to retiring in 2023 and joining the UAA and ADAC-ARCTIC team.

Cook also wanted to express his appreciation for the work done by the team, often behind the scenes, noting that "their dedication has been instrumental in driving ADAC-ARCTIC's success and positioning us as the Department of Homeland Security's premier Center for Arctic Excellence."

Center Highlights:

July 25, 2025: ADAC-ARCTIC Foresight Tabletop Workshop in Anchorage

July 28-29, 2025: Cooperative Remote-Sensing in Decision-Making for the Alaska Homeland Security Enterprise" Workshop

August 6, 2025: ADAC-ARCTIC briefed Senator Lisa Murkowski's team on the Center and Arctic affairs

August 12, 2025: UAA and ADAC-ARCTIC attended and offered support for the US Coast Guard Foundation Alaska Awards Dinner

August 13, 2025: American Waterways Operators meeting hosted at the Center

September 9, 2025: Center hosted US Border Patrol and international counterparts and briefed attendees on ADAC-ARCTIC's partnership and collaboration efforts across agencies

September 10-11, 2025: Alaska Regional Response Team meetings held on UAA campus and supported by ADAC-ARCTIC

Center Connections

ADAC-ARCTIC

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ADAC-ARCTIC Mission:

Create tools and technologies, develop mission-driven exercises, and train highly qualified persons to serve the Homeland Security Enterprise to advance Arctic homeland security.

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