

Flying North to the Future – Drone activities at the University of Alaska Fairbanks (2022 update)



ACUASI

- ACUASI is the University of Alaska's drone Center of Excellence
- Our missions include:
 - Assisting the FAA in the safe integration of drones into the National Airspace System
 - Supporting Alaskan drone users and industry
 - Conducting scientific research

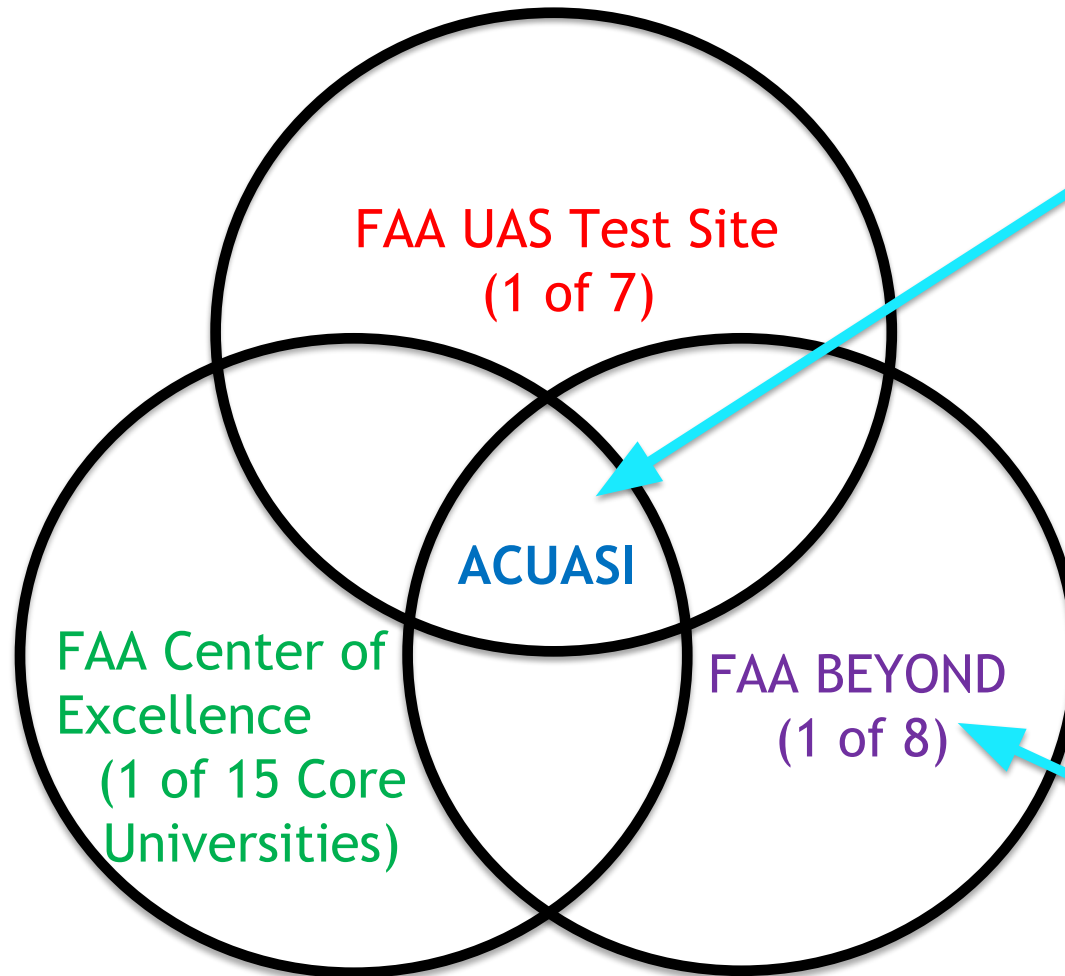


Goal - Complete Integration of Drones Systems with Traditional Aircraft in the National Airspace System



SeaHunter in Inuvik, Canada

FAA Recognition of ACUASI's Expertise



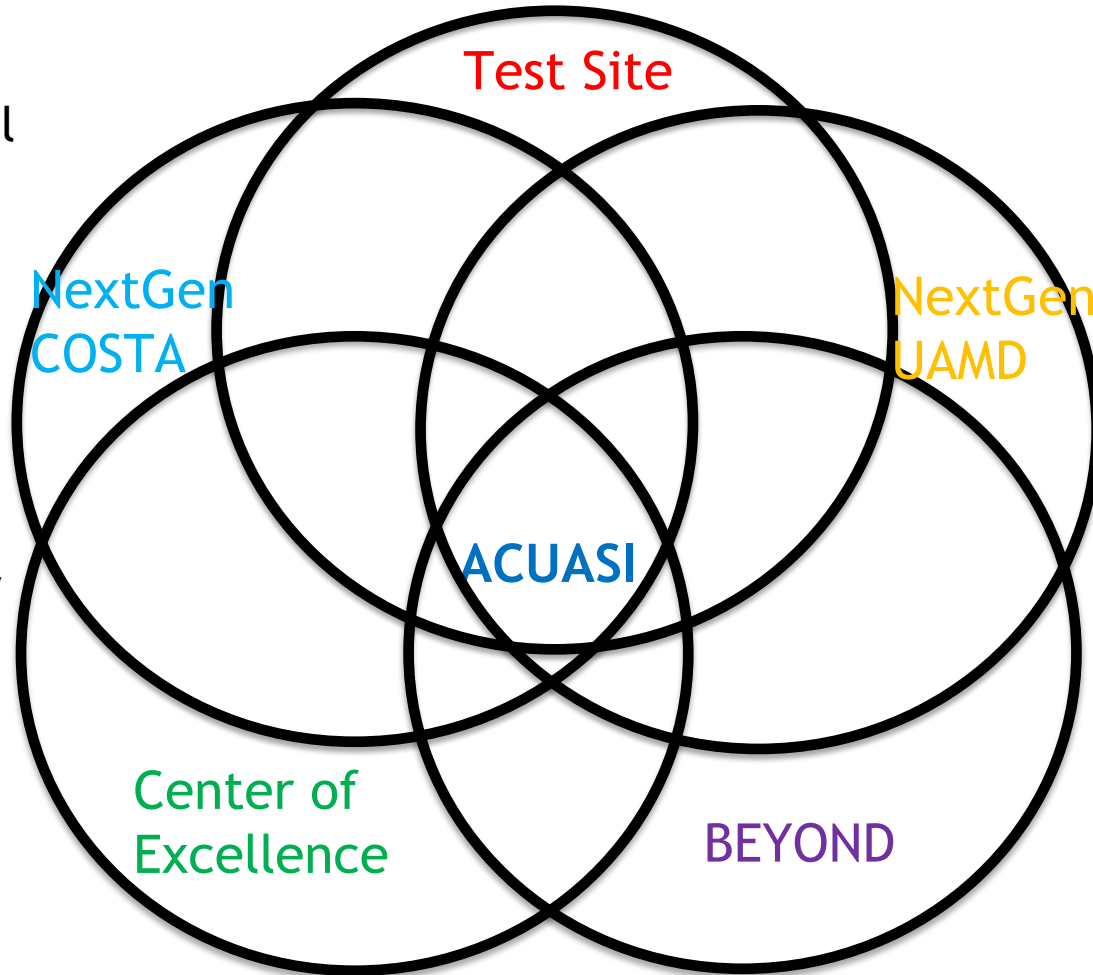
ACUASI is the only organization in the country with all three programs

Designed to enable Beyond Visual Line of Sight (BVLOS) operations

FAA Recognition of ACUASI's Expertise

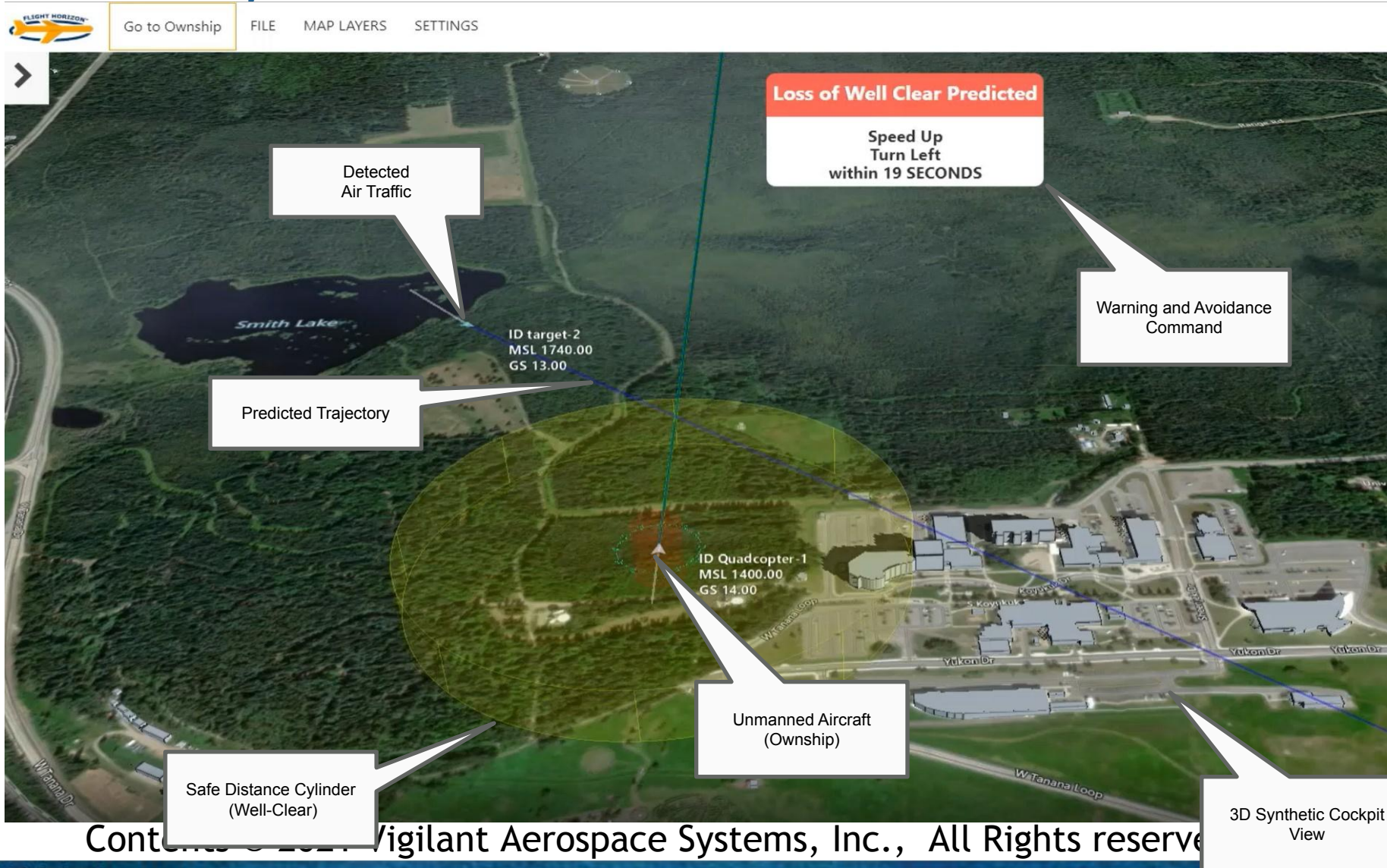
ACUASI participated in the Beyond Visual Line Of Sight (BVLOS) Aviation Rulemaking Committee

Cahill is on the Advanced Aviation Advisory Committee



COSTA and UAMD will be flown in the Monterey Bay Area

Test Site: Detect and Avoid (DAA) System Research - User Interface



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Pipeline Monitoring

- FAA granted ACUASI a Part 107 waiver for operations along a 20-mile stretch of TAPS for conducting Beyond Visual Line of Sight (BVLOS) pipeline monitoring testing
- During 2021 the team flew two small UAS BVLOS simultaneously (two separate crews) in the waived area with planned manned intruders to test DAA systems



Cargo Delivery

- Goal - To deliver cargo, including medical supplies, more frequently to remote communities via large drone
- Alaska's last 'hundreds of miles' problem
- Partnership with local air carriers
- Our team facilitated a paid medical supply delivery between two Alaskan communities (Allakaket and Alatna) for Merck



Unmanned Cessna 208 Grand Caravan
<https://evertsair.com/about/our-fleet/cessna-208-grand-caravan>

Fairbanks International Airport

- ACUASI now has a hangar at Fairbanks International Airport (FAI) and will be conducting frequent flights from FAI General Aviation runways



Large Drone (DRS Sentry) at Fairbanks International Airport

- May 22, 2022, 08:21-08:53



Next Step: Fairbanks to Nenana (Oct-Nov?)



Experience Flying Large Drones

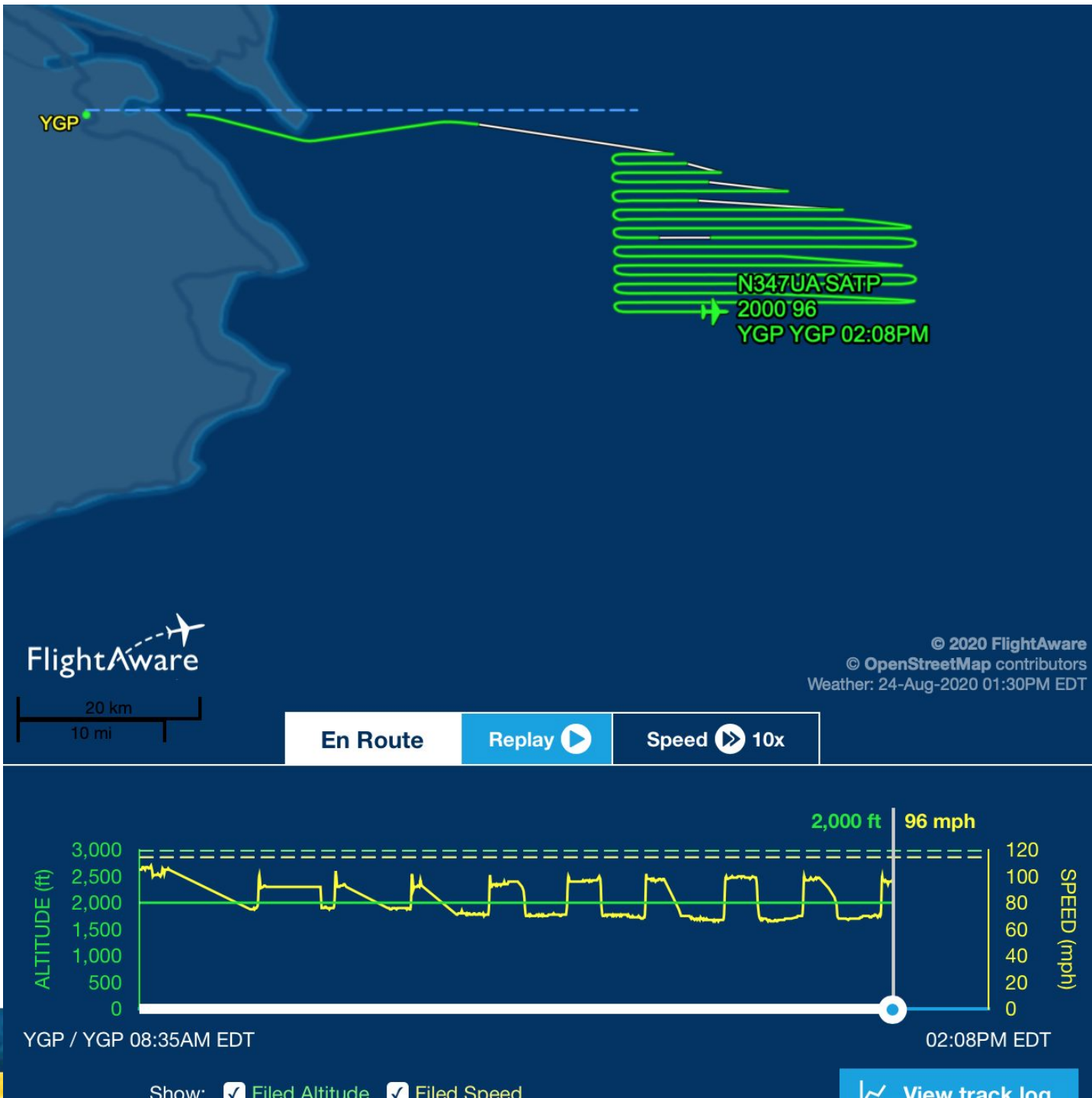
BVLOS - Transport Canada Operations

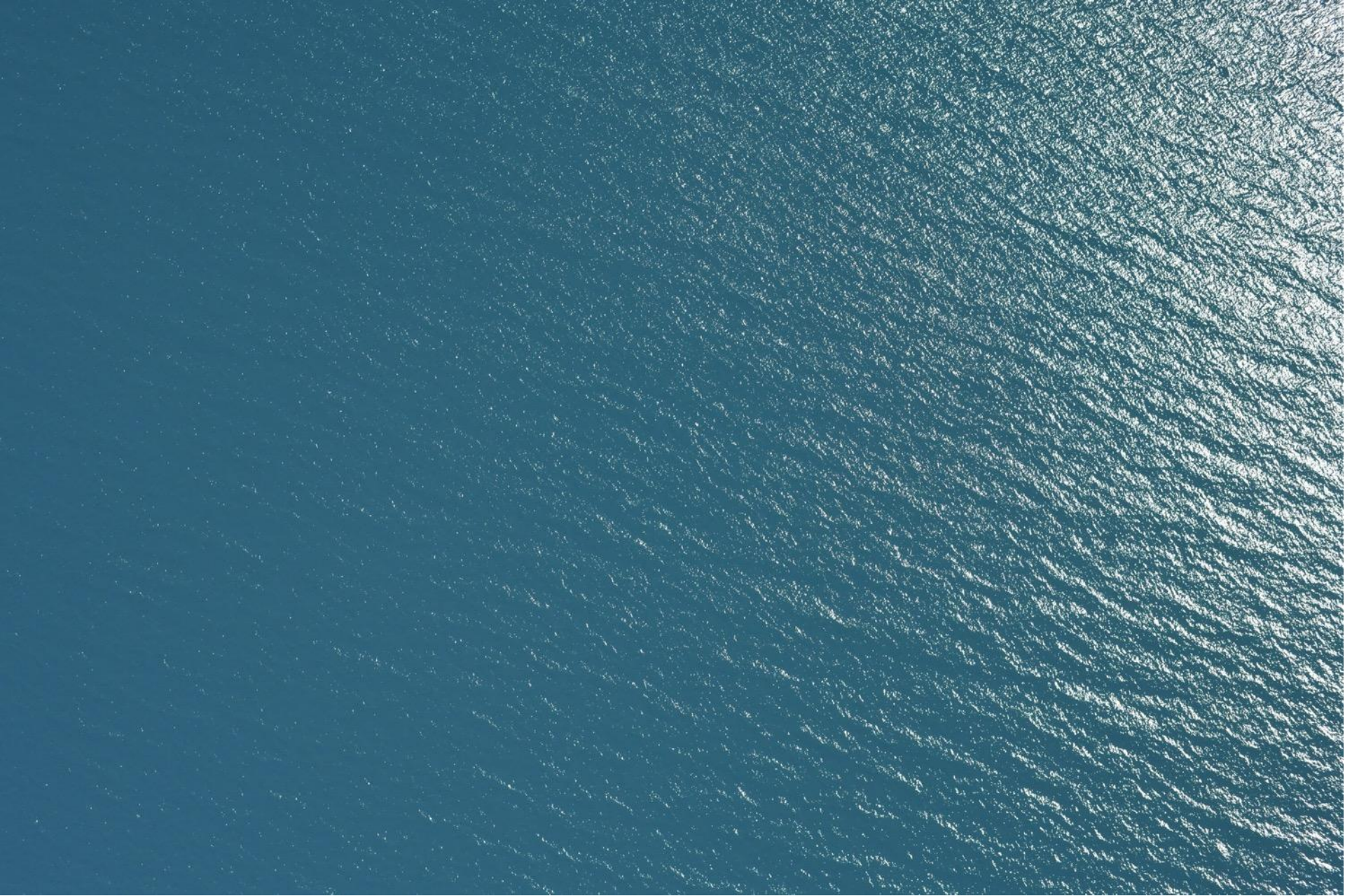
- >30,000 nautical miles of BVLOS flights
- North Atlantic right whales, Gaspé, Canada
- Infrastructure monitoring

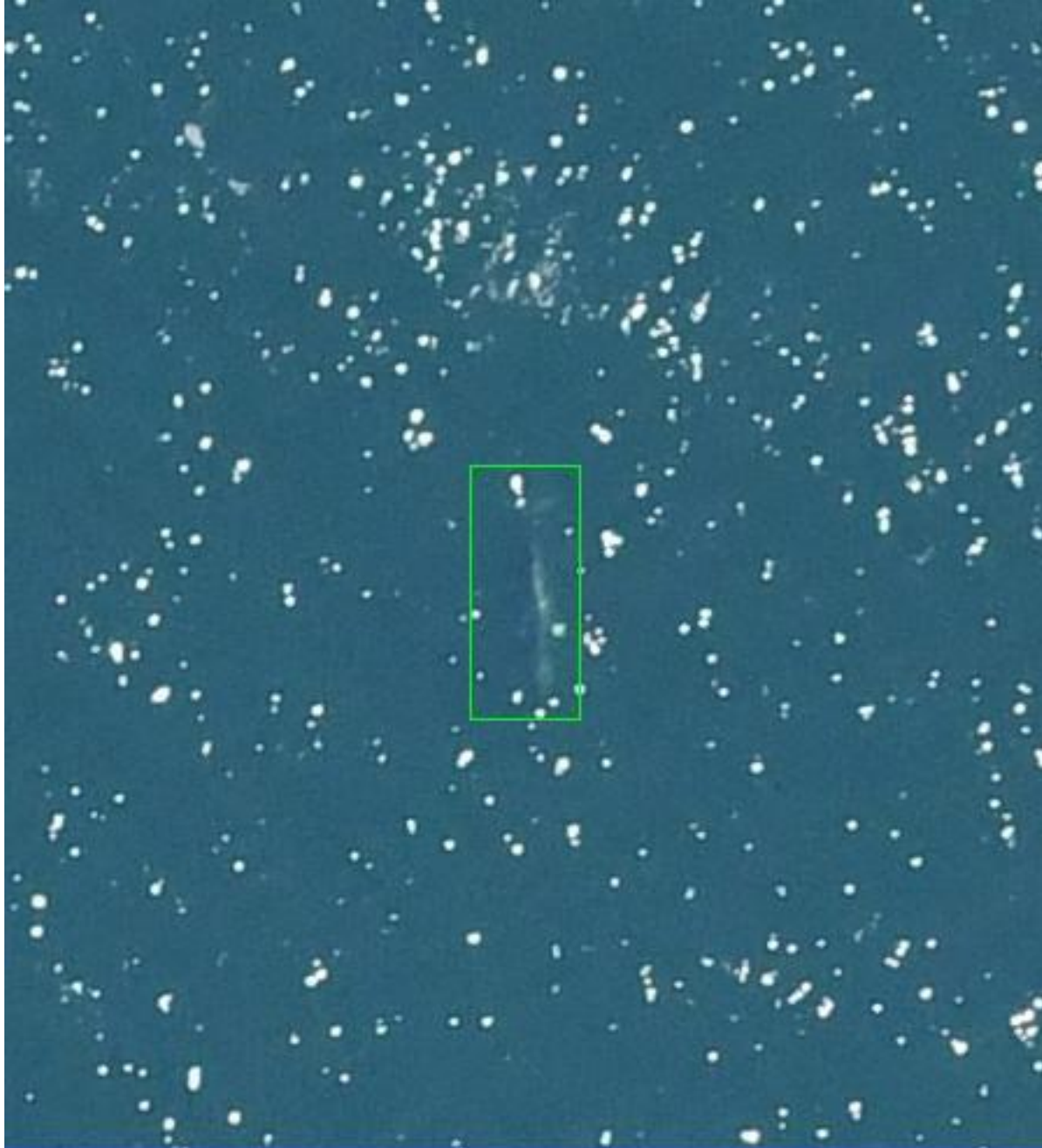


BVLOS Marine Mammal Operations over the St. Lawrence Seaway

UAS tracked by normal flight tracking software







lat[48.77876] lon[-64.01167] quad[NW] zone[-]

Testing at the Coastal Launch Sites being developed in conjunction with the State of Alaska Department of Transportation and Public Facilities and the FAA
(Challenge - cannot fly beyond the 12-mile limit on an exemption or waiver)



Vanilla being launched at Deadhorse Airport
Photo Courtesy of Platform

Ice and Snow

- Development of multiples sensors to determine the thickness and condition of ice on rivers and oceans
- STEM outreach based on drones looking at snow and ice in a school's environment

Disaster Response

- ACUASI is part of an ASSURE project that aims to develop a concept of operations for how different federal, state, and local governments, civil operators, and others can deploy drones cooperatively after natural and anthropogenic disasters including oil spills, train derailments, earthquakes, tsunamis, volcanoes, wildfires, pandemics, etc.



Counter-drone

The ACUASI team has entered the realm of counter-drone (C-UAS):

- We are funded by multiple agencies to do research on the safety and effectiveness of C-UAS systems in the National Airspace System
- Needed to safely protect critical infrastructure, including marine infrastructure like ports and fuel terminals

What's Next?



In the year we will:

- Assist partners in flying the first converted Cessna Grand Caravans in Alaska (with safety pilots on board)
- Fly our first drone mission between Fairbanks and Nenana, AK (~40 miles)
- Return to Canada for whale monitoring (?)
- Conduct several flight campaigns for drone detection, tracking, and identification
- Continue work with the State of Alaska DOT&PF on infrastructure monitoring

The University of Alaska is leading the way to routine UAS operations!

