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Interactive Synthetic Environment (ISE) to Evaluate Zero-Carbon UAS Launch Platforms in the Arctic

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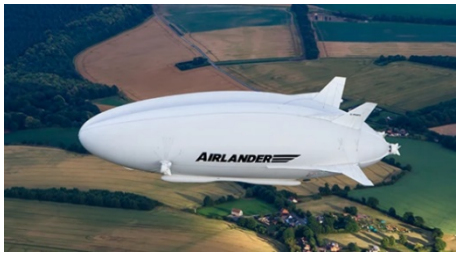
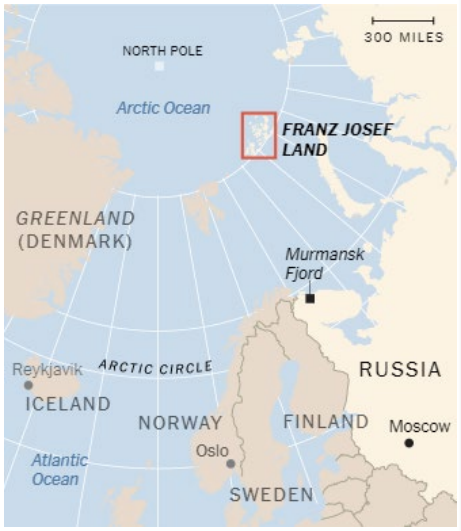


HAV's Airlander 10: The Zero Carbon Platform we intend to model Persistent UAS Swarm Deployment in the Arctic to augment the Fleet



Map of Arctic Ocean showing where Russian military is deploying Bastion Surface Missiles on the Franz Josef Land

Problem Statement

- What are you trying to do? In accordance with the Department of the Navy (DON) Science and Technology (S&T) Strategy for Intelligent Autonomous Systems, this research seeks to enable **battlespace expansion** for our Fleet through the detailed assessment of **zero-carbon, airborne platforms** to **launch swarms of unmanned sensors** to augment increasing **US Naval surface presence** requirements around the globe.
- What is your approach? We will take a critical geopolitical and military issue and use modeling and simulation (M&S) tools to experiment with various options on how to best employ emerging systems and tactics into a geospatially realistic environment to assess it utility. This approach should inform the Navy and Marine Corps on the best practices to "wargame" future concepts and military doctrine based on how technology evolves.

Impact

- What contribution does this work make to your field? **China and Russia are now establishing a presence in the Arctic Ocean.** Given the projection it will be ice free in the summer by mid-century, this work will offer our leadership an evaluation of a potential zero-carbon asset to deploy to provide a continuous surface presence.
- What is the warfighting impact? **Lighter-than-air vehicles can have many military applications to** include support of surface surveillance, conduct of Expeditionary Advanced Base Operations (EABO), and execution of Contested Operations in a Littoral Environment. This research will offer a means to test commercial technologies in a military context to assess their performance during military operations.
- How will you measure success? Success will be measured through the integration of this technology for the deployment of UAS Swarms into **future US Navy Live Virtual Constructive (LVC) training events**

Transition

- Who cares? This work is critical to Office of the Under Secretary of Defense for Policy as the DoD seeks to build Arctic awareness, enhance Arctic operations, and strengthen rules-based order in the Arctic. Within service specific domains, the Navy and Marine Corps can potentially use zero-carbon airborne assets to execute the 2018 National Defense Strategy (NDS) and maintain our strategic interests in the region.
- What are specific sources of continued support and collaboration? **NPS and HAV** have a **three-year CRADA** in place to continue this research and analysis of lighter-than-air vehicles to support the Navy. Since the Marine Corps is also interested in this technology for EABO, we intend to utilize the M&S tools developed for this work to model these global military missions.

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