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SEMPER SUPRA: THE IMPACT OF THE SPACE DOMAIN ON NORTH AMERICAN ARCTIC COMMUNITIES

Abstract

In August 2024, I'll be crossing the Davis Straight on my way from Greenland to the Canadian High Arctic. While at sea, the most congested lanes of traffic nearby will not be the waves around me; nor will it be the air traffic above. Instead, it will be even further up: 500 kilometers high, where thousands of satellites race by at nearly 8 km per second. These satellites monitor climate and weather conditions; observe war zones and take photos of parking lots; and route the communications and data we use every day. The space industry has seen a massive increase in funding and capability over the last five years: 96 SpaceX rocket launches and nearly 3,000 commercially owned satellites were launched in 2023 alone. Many of these satellites fly in a polar or sun-synchronous orbit, where they all converge and pass over the North Pole approximately every ninety minutes. For some remote communities in the High Arctic, the nearest people may actually be the astronauts onboard the International Space Station, orbiting at around 400 km and passing within 15 degrees of the Arctic Circle. While these satellites may be comparatively near, their effects may seem distant. In reality, increasing space capabilities can benefit everyone on Earth – and this effect is even more pronounced in the High Arctic. On this journey, I'll be collecting quantitative and qualitative data as part of a research project, sponsored by The Explorers Club and Adventure Canada. This research will investigate the hypothesis that recent developments in the space industry have an observable and positive impact on North American Arctic communities in three distinct areas: in the security environment and relationship of Canada, Greenland, and the United States; in commercial infrastructure, as satellite companies develop communications, maritime and air monitoring, and commercial imagery and weather tracking satellite networks; and in sustainability, as space capabilities are used to study climate change, observe natural occurrences like wildlife migration and wildfires, and as an educational tool to connect remote students with the world. The collected data will be used to assess the impact of space on Arctic communities; provide recommendations for future research on the relationship between the space industry, the Arctic domain, and Arctic communities; and provide insight into future opportunities for space companies and government agencies to increase their impact on the Arctic.