

Climate Change 2019: Facilitating Access, Transportation and Opportunities in Previously Inaccessible Areas: The Role of Unmanned Aerial Systems in a Changing Climate- Stephen M. Wackowski and Peter M. Leitner- National intelligence University, USA

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Statement of the Problem: The changing environmental and geopolitical conditions in the Arctic present both challenges and opportunities. With the decreasing ice cap allowing much greater access to natural resources and potential new shipping lanes, commercial and military organizations are focusing on how to gain a dominant position. However, there are significant obstacles to Arctic exploration including cold weather extremes, environmental impacts, shifting ice, difficult logistical resupply, and very limited communications, navigational and data support.

Methodology & Theoretical Orientation: The researchers planned and executed ground breaking experiments in real-world Arctic unmanned aerial systems (UAS) operational deployments aboard the U.S. Coast Guard icebreaker Healy (WAGB-20) and the Canadian Coast Guard Icebreaker Louis S. St. Laurent (CGBN). These experiments utilized two types of UAS, the Raven and the Puma, both manufactured by AeroVironment.

Conclusion & Significance: The results of these two Arctic expeditions will be described and the lessons learned as to the utility of unmanned aero systems in filling capability gaps will be characterized.



Findings: The efficacy of UAS's in supporting navigational, environmental and communications needs in increasingly accessible but still highly austere regions and areas was conclusively demonstrated by these missions. Shortfalls in communications capabilities and mission planning effectiveness were identified. This research resulted in updates to UAS mission planning software.