



## 6<sup>th</sup> World Conference on Climate Change

September 02-03, 2019 | Berlin, Germany

# Keynote Forum Day 1

Climate Change 2019

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## *Peter M Leitner*

National Intelligence University, USA

### **Facilitating access, transportation and opportunities in previously inaccessible areas: The role of unmanned aerial systems in a changing climate**

**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.

**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.

**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.



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## Recent Publications

1. Leitner, Peter and Lucy Leitner. Nemesis Selection. (Washington, D.C.: Capitol Media Group. 2019).
2. Peter Leitner, Daniel Javorsek II, John Rose and Christopher Marshall. "A Formal Risk-Effectiveness Analysis Proposal for the Compartmentalized Intelligence Security Structure," International Journal of Intelligence and CounterIntelligence, Spring 2015, No. 4, pp. 734–761.
3. Peter Leitner, "Bridging the Science/Policy Divide Concerning CBRN Warnings" Chemical and Biological Medical Treatments Symposia (CBMTS) IX, World Congress on the CBRN Threat and Terrorism, Spiez, Switzerland, 7 – 9 May 2012.
4. Peter Leitner. "The Nexus Between Organized Crime and Terrorism" in Regional Security and Intelligence Cooperation in the
5. Western Balkans and Global Asymmetric Threats. CIP: Durrës, Albania, 2012.
6. Leitner, Peter and Richard Leitner, (Eds.). Unheeded Warnings -- The Lost Reports of the Congressional Task Force on Terrorism and Unconventional Warfare. (Washington, D.C., Crossbow Books, 2007).
7. Leitner, Peter and Ronald Stupak (Eds.). Handbook of Public Quality Management. (New York, N.Y.: Marcel Dekker Publishers, Inc., March 2001).
8. Leitner, Peter. Reforming the Law of the Sea Treaty: Opportunities Missed, Precedents Set, and U.S. Sovereignty Threatened. (Lanham, Md: University Press of America, 1996).

## Biography

Peter Leitner. Now a professor in the School of Science and Technology Intelligence at the National Intelligence University, Peter Leitner spent 21 years as a senior strategic trade adviser and negotiator in the Office of the Secretary of Defense. Leitner, who has a doctorate and four master's degrees, helped found the National Center for Biodefense and Infectious Diseases at George Mason University. He has provided intelligence and anti-terrorism training through the Higgins Counterterrorism Research Center. The author of six books and many articles, Leitner has testified before both houses of the U.S. Congress.

## Notes:

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## *Mehdi Azadi*

*The University of Queensland, Australia*

### Recycling coal combustion by-products for minesite rehabilitation

The rehabilitation and closure of mines is often impeded by the presence of mine wastes (spoils, rejects, tailings) with undesirable chemical and physical properties that increase the risks of acid and metalliferous drainage, spontaneous combustion, salinity, dust generation, and erosion. At the same time, the various types of coal combustion by-products from power stations have unique chemical and physical properties such as an alkaline nature, pozzolanic binding effects, high water holding capacity, and particle size distributions which can be beneficial for mine rehabilitation. Many of the coal-fired power stations are located in close proximity to mines. The relatively short distance of coal mines and the power stations reduces the cost of coal transport. It also provides the opportunity to transport coal ash back to the mines at a low cost for the rehabilitation applications, including i) encapsulation and coating of the reactive materials (to prevent acid mine drainage and spontaneous combustion), ii) replacing of some of the costly soil amendment chemicals, iii) backfilling and stabilising final voids and underground workings, and iv) treatment of contaminated water. Our research aims to assess the effectiveness of the technology for improving physical and geochemical stability of mine wastes, and reducing any residual risks after mine closure, by testing the scenarios in which coal ash is reused.

### Biography

Mehdi Azadi obtained his PhD in Chemical Engineering, at The University of Queensland, Australia, after gaining his Bachelor and Master degrees in Chemical Engineering. Dr Azadi's research is currently focused on climate change adaptation technologies in mining industry. With an extensive knowledgebase and multiple skills, he has forged a career that includes mining waste management, mineral processing, separation technologies, and colloidal and interface science, all of which were developed and strengthened in the Academia, resource mining, and oil & gas sectors. As a research scientist and engineer in a multidisciplinary area, his work contributes to various industries by improving the traditional methods aiming for higher quality products and cleaner environment.

### Notes: