

Evaluating the Current & Future State of Food Security Across the Arctic Regions

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Poster Number: 2575

Session: SY51B: Advances in the Practice and Theory of

Climate Change Adaptation I Poster

Friday, 13 December 2024, 08:30 – 12:20 EST

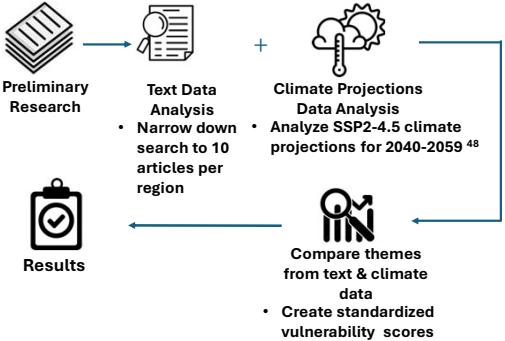
Background & Motivation

Background: Indigenous populations experience socio-economic and growing climate barriers to food sovereignty and security. Specifically, Fennoscandia (Sweden, Norway, and Finland) and Russia experience more issues related to reindeer management and food security due to external markets and powers.¹ Alaska and Canada have more prominent sea ice related subsistence issues and berry harvesting issues as compared with the other Arctic regions.^{19,33, and 38} Greenland is experiencing subsistence related issues due to persistent organic pollutants contaminating the food chain.^{29 and 47}

Motivation: Our research aims to comprehensively analyze food security in the arctic and understand the relationship between climate variables and the future of food security and sovereignty.

Methodology

Figure 1. How was this research completed?



Results

Figure 2. What are the prominent textual themes in each Arctic region?

Alaska texts noted the most overall food security and climate change themes, followed by Canada and Russia.

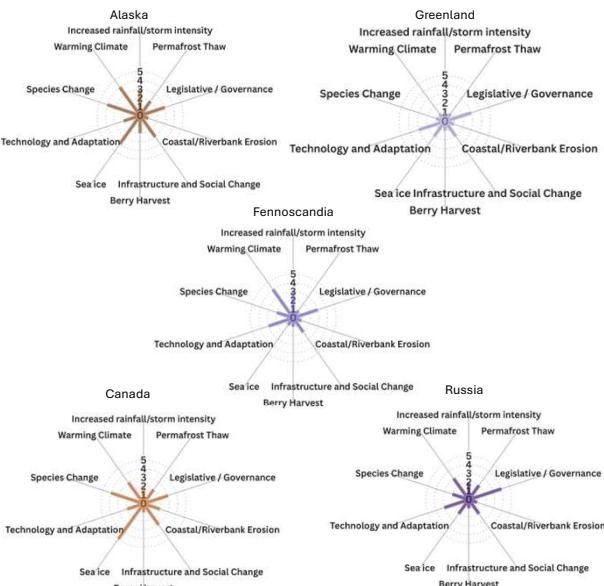


Figure 3. What climate variables will differ the most in standard deviation from their historical mean?

$$Score = \frac{X_{Projected} - X_{historical}}{\sigma_{historical}}$$

Canada predicted the largest overall difference from the historical means.

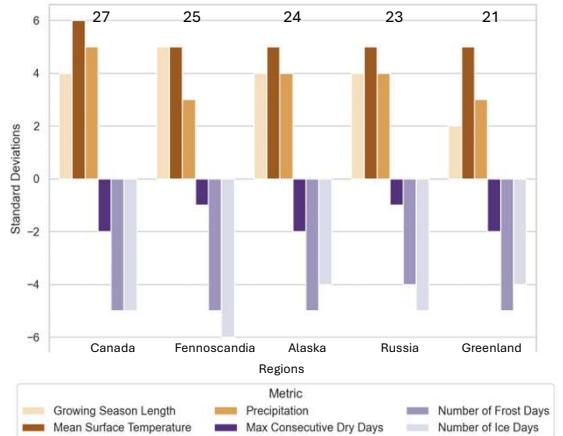
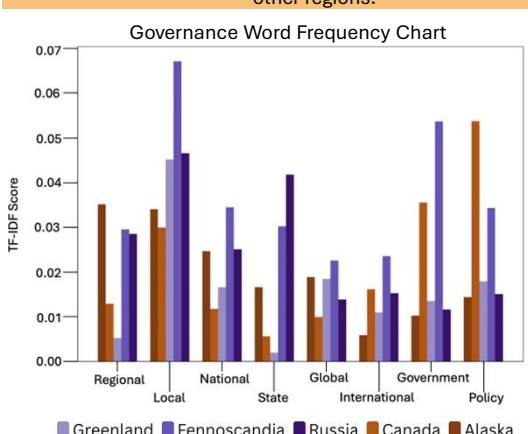


Figure 4. What levels of governance are driving food security?

The TF-IDF Governance bar chart primarily displays local governance as a driving factor in food security texts across regions. However, Fennoscandia mentions global/international governance more than other regions.



References



Acknowledgments

We would like to thank Tarun Kumanduri for supporting the coding. This work is supported by NSF Award # 2314344.

Conclusion

These findings inform region-specific strategies. Alaska and Canada must adapt subsistence practices to declining sea ice, while Fennoscandia's extended growing season requires proactive agricultural and reindeer management. Russia's warming climate calls for enhanced veterinary resources for reindeer, and Greenland should focus on understanding environmental contaminants to promote traditional diets. By aligning subsistence practices with these projections, Arctic communities can strengthen food security amidst rapid environmental changes.

Figure 5. Are words used differently to describe food security across the Arctic regions?

Reindeer are critical to indigenous identity and evaluation of climate change in Russia and Fennoscandia. Health is associated with food discussion in Greenland and Canada. Food Security is not used as frequently in Alaska as in Canada and Russia

