

Background

Coastal erosion is when water, wind, or ice break up land on the coast resulting in the continual loss and displacement of that land over time. According to USGS "the remote northern Alaska coast has some of the highest shoreline-erosion rates in the nation" (Laustsen, Gibbs, 2015). Alaskan native communities that reside on coastlines face many threats to their infrastructure, ecosystem, and culturally important sites from coastal erosion (Kitka, 2018, p. 5). Understanding what causes erosion in different regions of Northern Alaska is important in order to come up with solutions to combat it and protect Alaska's coastlines and the Native communities who live there.

Data Set

The data for this research was collected from the Alaska Arctic Observatory & Knowledge Hub or AAOKH. The observations used from AAOKH were made by Billy Adams in Barrow Alaska during August of 2015. Additional background and context information was obtained from two articles, one from the U.S. Geological Survey or USGS, written by Laustsen, p. and Gibbs, A. and the other from the Alaska Federation of Natives or AFN written by Kitka, J..

Methods

Explore the AAOKH database

Analyze/organize data and make graphs

Draw conclusions and find next steps

Collect and observe the relevant data

Find and look for patterns in the data

Results

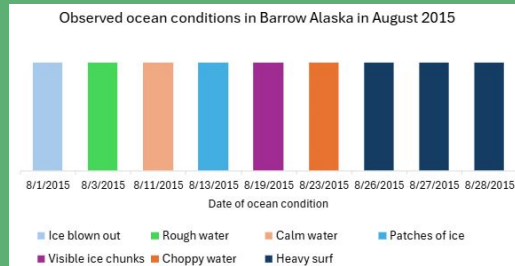


Fig.1. Observed ocean conditions by day. Columns represent observed conditions. Days with no observed conditions are left out.

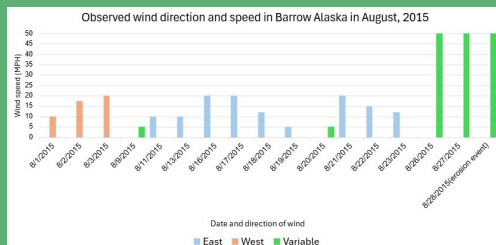


Fig. 3. Observed wind direction and speed (MPH) by day. Winds change from west to east after 8/11/2015.

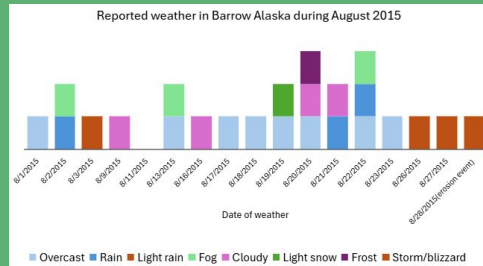


Fig. 2. Reported weather by day. Stacked columns represent observed weather in a day. Days with no observed weather are left out.

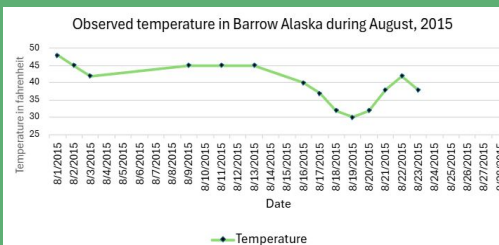


Fig. 4. Observed temperature in Fahrenheit by day. Dots represent observed temperatures during the month.

Discussion

The results show that during and leading up to the erosion event on 8/28/2015 there was storm, heavy surf, and strong winds of 50mph. Which suggests that big erosion events are more likely to happen in stormy conditions where the wind and ocean surf are strong versus when they are calm. The results also suggest that western and or variable winds are more likely to create conditions where erosion is more likely to happen than with eastern winds.



Erosion event ↑

References

Hauser, D.D.W., Glenn, R.T., Lindley, E.D., Pikok, K.K., Heeringa, K., Jones, J., Adams, B., Leavitt, J.M., Omnik, G.N., Schaeffer, R., SimsKayotuk, C., Sparrow, E.B., Ravelo, A.M., Lee, O., Eicken, H. 2023 Nunaagiq Savaqatigvuglich - Working with Communities: Evolving Collaborations around an Alaska Arctic Observatory and Knowledge Hub. *Arctic Science*. <https://doi.org/10.1139/as-2022-0044>

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Laustsen, p. Gibbs, A. (2015, September 1). *Northern Alaska Coastal Erosion Threatens Habitat and Infrastructure*. U.S. Geological Survey(USGS).

Kitka, J. (2018, December). *Erosion and Alaska Native Communities*. Native Federation.

Erosion event photo from Billy Adam's submission in the AAOKH database on 2015-08-28.

Background photo from Nino Maghradze on unsplash.com

Acknowledgements

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