Permafrost Coastal Systems Network (PerCS-Net)

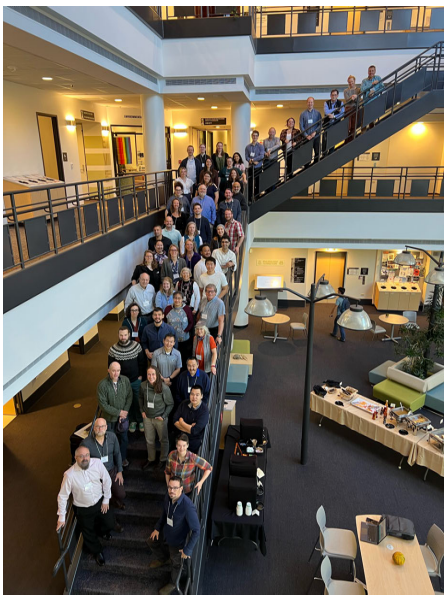
The Permafrost Coastal Systems Network accelerates the process of scientific discovery, facilitates public access to scientific data, and promotes convergence through an international, transdisciplinary network focused on science, engineering, and societal issues associated with permafrost-affected coasts and communities in the Arctic.

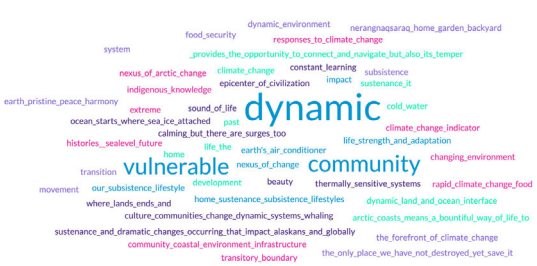
Fall 2023/Winter 2024

2023 Arctic Coasts Workshop in Boulder, Colorado

The Arctic Coasts Workshop was held from 9 to 11 October 2023 at the University of Colorado Boulder in collaboration with the Navigating the New Arctic Community Office. Funding for the workshop was provided by the National Science Foundation Navigating the New Arctic Program, several NNA projects, and PerCS-Net. Sixty-four in-person and 4 on-line participants represented a dynamic group of experts and knowledge holders that were brought together to exchange observations and insight regarding coastal hazards and impacts, to strengthen and expand partnerships, and to develop actionable and immediate recommendations for Arctic research and community resilience. The primary themes included the natural (coastal land and near-shore ocean), engineered (coastal infrastructures), and social (coastal communities) systems. A forthcoming report will summarize discussions and feedback regarding the five themes that guided the workshop:

1) Exchanging lived experience, priorities, and needs from rural community participants.
2) Exchanging successful experiences on resilient community-driven projects.
3) Building partnerships to form local to international collaborative networks.
4) Identifying scientific data gaps, community funding challenges and opportunities, and future goals and proposal strategies.
5) Laying the groundwork for the newly funded NNA Collaboratory - Alaska Coastal Cooperative and other communication and research networks.





Upcoming Conference Sessions at OSM and ICOP!

There are two upcoming international conferences featuring sessions on Arctic Coastal Dynamics and Processes.

The Ocean Sciences Meeting (OSM), 18-23 February 2024, New Orleans, LA

- Session Title: HE001 - Arctic coastal dynamics
- Conveners: Emily Eidam, Madison Smith, Julia Guimond, Roger Creel, and Benjamin Jones
- Weblink: https://www.agu.org/ocean-sciences-meeting/pages/schedule-events

The 12th International Conference on Permafrost, 16-20 June 2024, Whitehorse, Yukon, Canada

- Session Title: 3F - Polar Coastlines in Transition: Arctic, Antarctic, Offshore and Shelf Perspectives
- Conveners: Matt Strzelecki, Louise Farquharson, and Zuzanna Swirad
- Weblink: https://event.fourwaves.com/999e4551-2c44-4e79-8ee8-98270952a41f/pages

Currently, PerCS-Net includes 244 members from 22 countries, with nearly half of the network consisting of early career researchers! Please help us continue to bring together the international coastal permafrost community by providing material for future quarterly newsletters and by spreading the word through your own networks.

Vision Statement

PerCS-Net envisions building:

A sustainable, pan-Arctic permafrost coastal observatory network providing coordinated and timely information to researchers, managers, indigenous stakeholders, and the general public

A transdisciplinary research network that fosters linkages in order to amplify the broader impacts of each individual network and maintain a circumpolar alliance for Arctic coastal community information exchange

An international community that fosters and empowers the next generation of students, early-career researchers, and indigenous communities faced with the known and unknown challenges of the future Arctic System.

PerCS-Net Member Spotlight:

Roger Creel

Hometown: Falmouth, MA
Affiliation: Postdoctoral scholar in the Department of Physical Oceanography at Woods Hole Oceanographic Institution.
Research focus: Sea-level change in the past and future and the interactions that sea level has with ice sheets, coastlines, permafrost, and continental hydrology
Geographic focus: Alaska North Slope (permafrost) and Global (sea level change)
Current challenge: Over the next century, what combined impact will sea-level rise, coastal erosion, and permafrost thaw subsidence have on Arctic coastlines? And how fast will subsea permafrost degrade under high vs. low emissions scenarios?
Recommended reading: Guimond et al 2023 | Wind-modulated groundwater discharge along a microtidal Arctic coastline (DOI: 10.1088/1748-9326/acf0d8)
Finding balance: dance, cook, hike, work on low-impact, high-fun academic side projects

New Network Member Publications

Casas-Prat, M., Hemer, M.A., Dodet, G., Morim, J., Wang, X.L., Mori, N., Young, I., Erikson, L., Kamranzad, B., Kumar, P. and Menéndez, M., 2024. Wind-wave climate changes and their impacts. Nature Reviews Earth & Environment, pp.1-20.

Cooley, S.W. and Ryan, J.C., 2024. Community-scale changes to landfast ice along the coast of Alaska over 2000-2022. Environmental Research Letters, 19 024013.

Jones, B.M., Kanevskiy, M.Z., Parsekian, A.D., Bergstedt, H., Ward Jones, M.K., Rangel, R.C., Hinkel, K.M. and Shur, Y., 2023. Rapid saline permafrost thaw below a shallow thermokarst lake in Arctic Alaska. Geophysical Research Letters, 50(22), p.e2023GL105552.

Jong, D., Bröder, L., Tesi, T., Tanski, G., Oudenhuijsen, M., Fritz, M., Lantuit, H., Haghipour, N., Eglinton, T. and Vonk, J., 2024. Selective sorting and degradation of permafrost organic matter in the nearshore zone of Herschel Island (Yukon, Canada). Journal of Geophysical Research: Biogeosciences, 129(1), p.e2023JG007479.

Kazhukalo, G., Novikova, A., Shabanova, N., Drugov, M., Myslenkov, S., Shabanov, P., Belova, N. and Ogorodov, S., 2023. Coastal Dynamics at Kharasavey Key Site, Kara Sea, Based on Remote Sensing Data. Remote Sensing, 15(17), p.4199.

Kuklina, V., Sizov, O., Fedorov, R. and Butakov, D., 2023. Dealing with sand in the Arctic city of Nadym. Ambio, pp.1-13.

Langer, M., Nitzbon, J., Groenke, B., Assmann, L.M., Schneider von Deimling, T., Stuenzi, S.M. and Westermann, S., 2024. The evolution of Arctic permafrost over the last 3 centuries from ensemble simulations with the CryoGridLite permafrost model. The Cryosphere, 18(1), pp.363-385.

Ray, N.E., Martens, J., Ajmar, M., Tesi, T., Yakushev, E., Gangnus, I., Strauss, J., Schirrmeister, L., Semiletov, I. and Wild, B., 2024. The role of coastal Yedoma deposits and continental shelf sediments in the Arctic Ocean silicon cycle. Global Biogeochemical Cycles, 38(1), p.e2023GB007746.

Richardson, C.M., Davis, K.L., Ruiz-González, C., Guimond, J.A., Michael, H.A., Paldor, A., Moosdorf, N. and Paytan, A., 2024. The impacts of climate change on coastal groundwater. Nature Reviews Earth & Environment, pp.1-20.

Wang, Z., Xiao, M., Nicolsky, D., Romanovsky, V., McComb, C. and Farquharson, L., 2023. Arctic coastal hazard assessment considering permafrost thaw subsidence, coastal erosion, and flooding. Environmental Research Letters, 18(10), p.104003.

For more information, please consider joining PerCS-Net to keep informed about upcoming activities and new products – https://permafrostcoasts.org. We are very excited to build this International Network of Networks with the community!