Permafrost Coastal Systems Network (PerCS-Net)

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

December 2019

Welcome to PerCS-Net

We are pleased to announce that we have recently been awarded a collaborative grant from the National Science Foundation Accelerating Research through Network-to-Network Collaborations or AccelNet Program for short. The Permafrost Coastal Systems Network (PerCS-Net) is funded by U.S. NSF grant OISE 1927553, 1927137, 1927373 and co-funded by the Arctic System Science Program in the Office of Polar Programs. The PerCS-Net project personnel includes Benjamin Jones (PI – UAF), Louise Farquharson (Co-PI UAF), Chris Maio (Co-PI UAF), Anne Jensen (Co-PI UAF), Vladimir Romanovksy (Sr. Personnel UAF), Andrey Petrov (Sr. Personnel University of Northern Iowa), Craig Tweedie (PI- University of Texas El Paso), and Ming Xiao (PI – Penn State University). The PerCS-Net vision was made possible by more than 50 letters of collaboration provided by colleagues funded by the NSF, US state and federal agencies, and international collaborators from more than a dozen countries. PerCS-Net benefits from the legacy of previous international permafrost coastal system efforts by leveraging these existing linkages that have been in place, in some instances for 20 plus years.

PerCS-Net will benefit the US and international research communities by (1) developing internationally recognized protocols for quantifying the multitude of changes and impacts occurring in Arctic coastal permafrost systems, (2) sustaining long-term observations from representative coastal key sites, (3) unifying annual and decadal-scale observations of circum-arctic permafrost-influenced coasts, (4) refining a circum-arctic coastal mapping classification system and web-based delivery of geospatial information for management planning purposes and readily accessible information exchange for vulnerability assessments, (5) engaging local communities and observers to capture impacts on subsistence and traditional livelihoods, and (6) promoting synergy across networks to foster the next generation of students, postdoctoral scholars, and early-career researchers faced with the known and unknown challenges of the future Arctic System.

Image Credit - Ming Xiao

Upcoming Events

Members of PerCS-Net will be very active at the 2019 AGU Annual Fall Meeting in San Francisco, CA from 9-13 December. Sessions of interest include C12B - Arctic Coastal Changes, Hazards, and Risks: Circumpolar Truths and Future Outcomes I which includes oral presentations between 10:20 and 12:20 in Moscone West – 2006, L2 on Monday, 9 December 2019 as well as the C13D - Arctic Coastal Changes, Hazards, and Risks: Circumpolar Truths and Future Outcomes II Posters which includes poster presentations between 13:40 and 18:00 in Moscone South – poster hall on Monday, 9 December 2019.

PerCS-Net will also be hosting a meeting on Wednesday, 11 December 2019, from 4:30 to 5:30 pm in the Hotel Nikko Monterrey I room. This will be followed by additional presentations and light snacks from 6:00 to 8:00 pm at SPIN San Francisco.

Currently, PerCS-Net includes 128 members from 21 countries, with more than 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.

Network Member Publications (2019)

Angelopoulos, M. et al., 2019. Heat and salt flow in subsea permafrost modeled with CryoGRID2. Journal of Geophysical Research: Earth Surface, 124(4), pp.920-937.

Bronen, R. et al., 2019. Usteq: integrating indigenous knowledge and social and physical sciences to coproduce knowledge and support community-based adaptation. Polar Geography, pp.1-18.

Cunliffe, A.M. et al., 2019. Rapid retreat of permafrost coastline observed with aerial drone photogrammetry. The Cryosphere, 13(5), pp.1513-1528.

Gibbs, A.E. et al., 2019. Assessing patterns of annual change to permafrost bluffs along the North Slope coast of Alaska using high-resolution imagery and elevation models. Geomorphology, 336, pp.152-164.

Irrgang, A.M. et al., 2019. Impacts of past and future coastal changes on the Yukon coast—threats for cultural sites, infrastructure, and travel routes. Arctic Science, 5(2), pp.107-126.

Isaev, V.S. et al., 2019. Cliff retreat of permafrost coast in south west Baydaratskaya Bay, Kara Sea, during 2005–2016. Permafrost and Periglacial Processes, 30(1), pp.35-47.

Jensen, A.M., 2019. Critical information for the study of ecodynamics and socio-natural systems: Rescuing endangered heritage and data from Arctic Alaskan Coastal sites. Quaternary International, Online First.

Jones, B. M. and H. Lantuit. 2019. Transforming permafrost coastal systems: Advancing scientific discovery through international collaboration. Research OUTREACH, 110.

Lauzon, R. et al., 2019. Ice and permafrost effects on delta morphology and channel dynamics. Geophysical Research Letters, 46, 6574-6582.

Oberle, F.K. et al., Towards determining spatial methane distribution on Arctic permafrost bluffs with an unmanned aerial system. SN Applied Sciences, 1(3), p.236.

Overduin, P.P. et al., 2019. Submarine Permafrost Map in the Arctic Modeled Using 1 D Transient Heat Flux (SuPerMAP). Journal of Geophysical Research: Oceans.

Petrov, A.N. and Tysiachniouk, M.S., 2019. Benefit Sharing in the Arctic: A Systematic View. Resources, 8(3), p.155.

Tanski, G. et al., 2019. Rapid CO2 release from eroding permafrost in seawater. Geophysical Research Letters, 46 (20), 11244-1252.

The Perks of PerCS-Net

PerCS-Net is providing travel support to five early career researchers and professionals to participate in network activities that are being planned in conjunction with the annual AGU Fall Meeting in San Francisco, CA. This opportunity will allow them to meet colleagues from across PerCS-Net and to discuss current collaboration objectives, as well as future directions for studying arctic coastal dynamics from local to pan-Arctic scales.

Dr. Alisa Baranskaya

Research Faculty, Moscow State University, Moscow, Russia

Dr. Natasha Belova

Research Faculty, Moscow State University, Moscow, Russia

Mr. Rich Buzard

PhD Student, UAF, NOAA Digital Coastal Fellow, Fairbanks, AK

Dr. Matthias Fuchs

Post-Doc, Alfred Wegener Institute, Potsdam, Germany

Ms. Jacquelyn Overbeck

Geologist and Director, State of Alaska DGGS Coastal Hazards Program

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