



Volume 1 | Issue 1
Feb 2024

Thawing Ground

A bimonthly newsletter of the US Permafrost Association

*USPA encourages sharing
knowledge and data in
permafrost science and
engineering.*

In this issue, we discuss Lukas Arenson's new article on the use of geotextiles to reduce slope displacement, meet members John Thornley and Katherine Schexneider, get some advice from Ed Yarmak, quiz you on permafrost history, and let you know where we could use a little help.

The Active Layer

Lukas Arenson, an engineer with BGC Engineering in Vancouver, and colleagues have just published "Numerical modelling of a reinforced embankment in cold regions environment" a chapter for *Geosynthetics: Leading the Way to a Resilient Planet* (CRC Press, 2023). Arenson *et al.* address the challenge of reinforcing highway embankments, which are at risk for sliding during warmer weather and which are supported in a variety of ways. Focusing their research on the Inuvik-Tuktoyaktuk Highway in the Northwest Territories, they studied the use of woven geotextiles. Wicking types have been shown to manage moisture effectively (31% reduction in large displacements), and geotextile layering performed even better (40% reduction compared to unreinforced sections). Their modelling software, ABAQUS, and its use are well-described, and modelers will appreciate this discussion. Their conclusion was that geotextile layers can be a viable alternative to reducing slope inclination, the latter of which is very costly.

The Active Layer is our main story and highlights recent work done by one of our members.

USPA Leaders

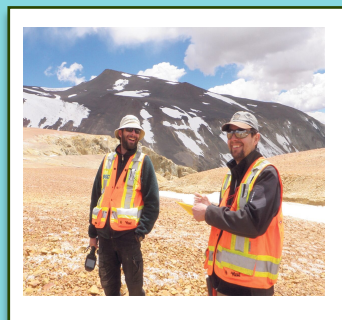
Ming Xiao,
President
Mzx102@psu.edu

Eva Stephani,
President-elect

Wendy Presler,
Treasurer
treasurer@uspermafrost.org

Katherine Schexneider,
Secretary
secretary@uspermafrost.org

USPA Mailbox
info@uspermafrost.org



Lukas (R) and colleague in the field
Photo: From Globe and Mail, Mar 5, 2021.
Fair Use and Fair Dealing

Read Lukas's article via Open Access:
<https://www.taylorfrancis.com/chapters/oa-edit/10.1201/9781003386889-285/numerical-modelling-reinforced-embankment-cold-regions-environment-de-guzman-alfaro-arenson-dore>

"Back in my day..." (sound advice from our "older" members)

When I hear someone say the phrase, "Back in my day...", I roll my eyes and assume that I'm going to hear that life was harder or better in the past than today. For the first issue of "Thawing Ground" I will try not to be that stereotype. Early in my career at Arctic Foundations, I was tasked to install a Thermopile foundation at a village in Northwest Alaska just before freeze-up in the fall. I had lined up a local (to the region) contractor to perform the work, an air charter to transport the piling to the site, and room and board in the village. My plan seemed solid with the goal to finish the installation and have the drill on the barge before the ice covered the river. But that didn't happen. The reality of working in bush Alaska hit at every turn. The barge had a mechanical problem and was late delivering the drill rig. There were weather issues. A plane landed on the runway with the gear up while our plane carrying the piles was enroute, so the runway had to be closed. Et cetera. (cont. on page 2)

Permafrost and glaciers constitute two of the most important and dynamic elements of the global cryosphere.

Richard I. Waller



Featured Board Member: Katherine Schexneider

Katherine is a retired US Navy physician doing volunteer work around climate change in the Arctic. She got the idea for this while visiting Switzerland and seeing glacier recession first-hand. "I had to think about what skills would contribute here since I am not an Arctic scientist or engineer.

Luckily, I found USPA and can serve as the Secretary." She also helps with the ARCUS monthly newsletter and does some hands-on work at conferences. Once Covid restrictions lifted, she traveled to Tromsø and Vienna to pitch in at the Arctic Science Summit Weeks. "It was so exciting to see these cities, meet people in person, and do my part in the sessions." In December 2023, she attended her first AGU Fall meeting and was appropriately overwhelmed.



Above, Katherine in the Vienna butterfly museum, 2023.

"I am learning more and more about permafrost and the dangers associated with its thaw. USPA and its members work on the solution, and it's great to be a part of that."
-Katherine Schexneider

Featured Member: John Thornley

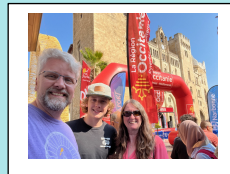
In this issue, we get to know John Thornley, a geotechnical engineer at WSP USA. John specializes in earthquake and permafrost engineering. He spends his free time researching where those two topics collide. Not only is John a permafrost fanatic, but he is also a bicycle fanatic, building and riding bikes with his family, watching racing, and traveling with his wife to Europe to see the pros.



Above: US Geological Survey staff drilling in permafrost.



Left: John hard at work for WSP. Above: John enjoying time with his family in France.



"The study of permafrost is more than just a job. Follow your passion and know that your contributions allow us to understand the frozen ground beneath our feet."
-John Thornley

Permafun Corner

Who was Karl Ernst von Baer? What did he write in 1843? Need help? Go to Wikipedia. Yes, of course it's a history lesson. That's the fun part. Answer below.



(Back in My Day, cont. from p.1) And while we finished the job and the community was happy with the results, I could not help the feeling of failure as the drill rig sat at the barge landing and the local kids scampered across the new ice on the river. I returned to work in Anchorage expecting to be chastised for the extra costs incurred. Erv (Long) just said, "Sometimes things happen." So, my advice is to remember that no matter how much you plan and prepare, **sometimes things happen.** Everyone getting home safe is the most important part of the work. *Thank you, Ed Yarmak, for this great advice.*

We want to hear from you!

How are we doing as your professional organization? What can we do differently, better, or faster? Please contact Secretary Katherine Schexneider at secretary@uspermafrost.org.

We Need Help!

Many of you have skills and experience that will help us improve USPA. You can contact us to find out what's involved before making a commitment. Right now: We are upgrading our website to make it more enticing and user-friendly. **Got website skills?** Contact Julian Dann at jdann@alaska.edu.

Von Baer was a German academic considered the founder of permafrost science. His 1843 textbook was the first one written on our field. His portrait is on the left.