

Permafrost thaw is accelerating

Based on recent measurements on the coldest permafrost in Alaska and modeling results, Professor Vladimir Romanovsky has changed his mind regarding its fate.

“Now I can’t say that near-surface permafrost is safe (from thawing) during this century,” Romanovsky said. “I used to say it was OK for this century.”

In the late 1980s, the mean annual temperature of the top layer of permafrost in Deadhorse on Alaska’s North Slope was minus 8 degrees Celsius. In 2015, it was minus 3 degrees.

If permafrost thaws, some of the North Slope would sink as much as 20 feet. And the warmth would stimulate soil microbes that would consume prehistoric plant and animal remains and emit molecules of greenhouse gases carbon dioxide and methane.

To peer into the future, Romanovsky and his team, including the GI’s Dmitry Nicolsky and Santosh Panda, combined modeling data with field measurements. They projected what would happen to permafrost in two possible futures.

If carbon dioxide emissions flatten to a nonincreasing rate by about 2050 and remain similar until the end of

the century, permafrost would thaw mostly in the northern foothills of the Brooks Range.

However, if worldwide carbon dioxide emissions continue at today’s rates, thawing would extend to the Arctic coastal plain, Romanovsky said. After 2050, thawing would accelerate, and more than half of the North Slope permafrost would thaw by 2100.



photo courtesy Vladimir Romanovsky

THAWING GROUND—Vladimir Romanovsky with an ice wedge exposed above collapsed ground on Alaska’s North Slope.





The real deal gets kids' attention

In these days of life replicated on screens large and small, real objects get a great response from students, according to GI permafrost researcher Santosh Panda.

"Kids love the blowtorch," he said.

The handheld torch is one of many instructive items Panda and others carried to 27 Alaska villages and towns as part of a National Science Foundation funded permafrost outreach project.

With the torch, Panda heats up a palm-size metal house that sits on a cake of ice. The warmed house sinks,

as does a real house that's not insulated from frozen ground.

The sinking house is a small part of an attempt to condense and make portable the most effective learning experiences from the U.S. Army Corps of Engineers' Permafrost Tunnel in Fox, Alaska. The tunnel and its recent new portal have been educating visitors who walk inside them for 50 years.

Panda, Margaret Cysewski and Jessica Garron have traveled to Tanana, Allakaket, Mentasta Lake, Northway,



photo courtesy Santosh Panda



UAF photo by J.R. Ancheta



THAWING—Above, Santosh Panda heats a metal house on top of ice during a presentation near Denali National Park.



photo courtesy XXXXXXXX

SHOWING—At left, an inflatable mammoth named Pingo Peat helps draw interest in educational events. Many ancient mammoth remains have been found preserved in thawing permafrost. Pictured above, left, Margaret Cysewski in the village of Tanana with a boreal forest display she created.

Tok, Nenana, Anderson, Healy and other Alaska communities. While there, they give presentations for school children related to the frozen ground upon which many of them live.

The researchers carry with them pungent, ancient ice from the permafrost tunnel, bones of woolly mammoths and dioramas showing Alaska landscapes underlain with permafrost.

“Kids today are so used to computer graphic effects in movies and on computers, yet when they actually get to

touch something that is 30,000 years old, that is real, and has weight and texture and a smell, they really get excited,” said GI Professor Matthew Sturm, who wrote the proposal to NSF. “It stimulates their curiosity and interest.”

The traveling program has been effective, Panda thinks.

“In Denali Park for Winterfest, we had kids from Anderson and Healy (who had seen their presentation before),” he said. “One kid just started telling us all about permafrost. That tells me we are making an impact.”



UAF photo by J.R. Archeta



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SHARING—Above, GI researchers meet with residents of Allakaket, a village on the Arctic Circle and the Koyukuk River. At right, Margaret Cysewski shows a boy from Tanana wood that thawed from permafrost and is thousands of years old.



UAF photo by J.R. Archeta

TEACHING—Above, Jessica Garron talks about permafrost to students from the village of Allakaket.

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Through donor support, the GI Associates Endowment is used to invest in future scholarship, bringing promising students to work with GI faculty. Endowment funds also support collaboration between the GI and world-class visiting scientists.

Donations allow the GI to support programs like the Science for Alaska Lecture series, where GI scientists share their research with the public. In the current financial climate, "we have to cut back in many areas, but we do really want to bring science to the community," said GI Executive Officer Lillian Anderson-Misel. Thanks to donors, the 2017 lecture series will begin January 31, 2017.

The GI is also accepting donations to support a 2019 exhibit celebrating the 50th anniversary of the Poker Flat Research Range at UAF's Museum of the North.

"All donations that come to the GI are used to sup-

port science and research," said Anderson-Misel. "If someone is looking to donate somewhere where they know their money will have a lasting effect, I encourage them to look into the GI."

For more information on donating to the GI, visit <http://www.uaf.edu/giving/gift/giving-form/schools/GI/>.

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GI photo by LJ Evans