

An Iceberg Goes to Washington

On the face of it, the idea of plucking a 1,500-pound iceberg from a lake in Alaska and shipping it somewhere might not sound like a big deal. After all, Alaskans haul big things out of the water all the time (boatloads of fish, even boats themselves), and barge things as large as buildings to and from the Lower 48.



But you'll have to admit this story is unique. It started as snowflakes high in the Coast Range around the time the Russians were harvesting sea otter pelts along the shores of Southeast Alaska. Still on the ground when the next year's snow began to fall—and the next and the next—those snowflakes began to break down, their crystals realigning under pressure into solid ice.

By the time they attained glacial status some 70 years later (with all the air pressed out of the ice), our snowflakes had embarked on their first road trip, with gravity pulling the huge, frozen mass down through the mountains. At least 200 years after falling from the sky, our fossilized snowflakes arrived at the sea-level terminus of Juneau's Mendenhall Glacier this past September.

Set free as an iceberg in Mendenhall Lake, they drifted for the first time into human hands: a team of volunteers—coordinated by Mary Hakala of the Juneau Economic Development Council's SpringBoard program—was waiting to corral the iceberg and send it on a far different type of journey.

Hauled from the lake onto a flatbed trailer, then onto a barge, followed by a semi reefer, and finally into a delivery truck, the iceberg traveled at warp speed from Alaska's capital to the nation's capital, a continent away. It traveled 12 miles in its first 200 years, then covered over 3,500 miles in less than a week!

Why, you ask? To give countless people a chance to experience and learn about the extraordinary features of the *cryosphere*: Earth's places where water is found throughout the year in its frozen forms. Never before has such an opportunity come along—the Grand Finale Expo of the inaugural, month-long USA Science and Engineering Festival. In just two days (October 23 and 24), the Expo offered hundreds of thousands of people in Washington alone a chance to experience and learn first-hand about science and engineering.

The Festival's ambitious mission was “to reinvigorate the interest of our nation's youth in science, technology, engineering and mathematics by producing and presenting the most compelling, exciting, educational and entertaining science gatherings in the United States.” Judging from the numbers of people and organizations participating in and attending the Expo and related events in Washington and across the country, the mission was accomplished.



Principal interpreters for the *Alaska's Cool Cryosphere* exhibit included Kim Morris of UAF's Geophysical Institute, Martin Jeffries of the National Science Foundation, and Matthew Sturm and Don Perovich of the Cold Regions Research and Engineering Laboratory (CRREL) of the US Army Corps of Engineers—all of them well known and highly respected scientists in the field of cryospheric research.

The Mendenhall iceberg was neither the oldest nor the youngest in the SpringBoard exhibit. Younger by far was the fresh sea ice that Perovich brought from the Arctic. Sturm brought the oldest: a wedge of ice 30,000 years old, taken from a permafrost tunnel in the Fairbanks area. Young and old, the ice was fondled to oblivion over the two-day event at the hands of nearly 10,000 exhibit visitors.

Said Sturm, “Nobody had any idea what permafrost is, and there's a lot of it!” “It was like telling people who have never seen one that there's this thing called an ocean,” he added.



“What's normal for us is so exotic for people elsewhere.”

The scientists were especially happy to have such a concentrated opportunity to connect with people about the cryosphere. “[Perovich] caught it right,” Sturm said, “we connected with more people in two days than we could dream of reaching in an entire year of outreach.”



“The number of people who stopped by was amazing,” said Morris, who spent both days manning three chairs set out in front of the booth. On the chairs sat examples of the kinds of ice being showcased inside the booth, each with a small sign describing the type of ice and its age. Morris encouraged passers-by to touch the ice samples and invited them to learn more inside the booth. “Once the large piece of glacier ice was pointed out to them, most of the visitors who stopped to look at the ice on the chairs went into the booth,” she said.

Apart from being able to touch the different types of ice found in cold places like Alaska, the exhibit also gave them other unique opportunities. For example, visitors could try out an infrared thermometer to measure how different icy surfaces reflect or absorb sunlight—a measurement known as albedo, which is important to understanding the effects of Earth’s warming climate.



On his way to Washington, Perovich gave some thought to how he might approach his time with so many visitors. “When you go into something like this,” he said, “you have a mental script in your head, but once you get there you realize that one size doesn't fit all. When



somebody stops by the booth, you have ten seconds to get them interested, another ten seconds to figure out what their background is, and then you have a few more seconds to try to make your information accessible to each individual.”

Sturm and the other scientists quickly discovered they could just step back and say, “Go ahead, touch this stuff!” and the questions would follow automatically. That would set the scientists up to deliver their main message: “We live in a warming world, and there's a lot of this frozen stuff that needs to stay frozen!”

Elementary and middle school students and their parents were the most common visitors to the booth. “Some kids just came to get their hands stamped,” Sturm said, “but lots of them went on to have hands-on experiences with the ice at the booth.” Morris noticed that adult visitors were especially fascinated by the wedge ice, which was dark because of ancient organic matter included in the ice matrix. The wedge ice produced the most frequent question: “Is it really 30,000 years old?”



“It was great to see the faces of children and adults light up when they saw the big block of ice from the Mendenhall Glacier, too,” said Perovich, “and when they touched the permafrost or held a piece of frozen ocean.”

The scientists and SpringBoard staff estimated that somewhere between 5,000-10,000 people passed through the booth over the two days of the Festival's Grand Finale Expo. Organizers believe the event drew more than 500,000 visitors. “That’s most of the population of Alaska!” Sturm remarked. Another 250,000 participated in 82 satellite events in 27 states.



“The event got me to look at my field with fresh eyes,” said Perovich, who has spent years studying sea ice in the Arctic. He would hand kids a piece of sea ice and ask what they thought they were holding. “Ice,” they'd reply, and Perovich would say, “You’re holding a piece of the Arctic Ocean!” Most people have never had a chance to touch

Arctic ice, he said, let alone hold frozen ocean in their hands. “They'd taste it to see if it was salty, and of course it was!”

Inevitably, people would ask of the Mendenhall iceberg, “How did you get this thing here?” And, as imagined and choreographed by Mary Hakala and her SpringBoard teammates and partners, the tale of the traveling iceberg would follow.

The iceberg’s trip and SpringBoard’s *Alaska’s Cool Cryosphere* exhibit were funded by the US Department of Defense and the National Defense Education Program through SpringBoard’s Science, Technology, Engineering and Mathematics (STEM) educational programs.



Other support for the exhibit came from the Alaska State Museum, the US Forest Service’s Mendenhall Glacier Visitor Center, photographer Chris Beck (whose images were a major element of the exhibit), Taku Smokeries (which stored the iceberg and shipped it to Seattle at no cost along with a shipment of salmon and halibut), and Eran Hood of the University of Alaska Southeast and Peter Ord of Willow Works (who helped Hakala haul the iceberg out of Mendenhall Lake).

When it appeared that the last (and shortest) leg of the iceberg’s trip—from a DC warehouse to the exhibit site—would cost far more than all other legs combined, potentially cancelling the entire venture, Ben & Jerry’s Ice Cream connected the SpringBoard team with its Washington-area delivery service, Berliners Specialty Distributor, which saved the day by delivering the berg at an affordable cost.



For more information about SpringBoard’s STEM education programs, visit JEDC.org/STEM or contact Mary Hakala, STEM Education Coordinator, 907-523-2336 or mhakala@jedc.org.

To learn more about the USA Science and Engineering Festival, visit usasciencefestival.org.

Photos (top to bottom):

- Mendenhall Glacier and Mendenhall Lake, Tongass National Forest, Juneau, Alaska
- Dr. Martin Jeffries, Director, Arctic Observing Network Program, National Science Foundation
- Dr. Matthew Sturm, Research Physical Scientist, Terrestrial & Cryospheric Sciences, US Army Corps of Engineers, Cold Regions Research & Engineering Laboratory
- Kim Morris, Research Professional, Sea Ice Group, University of Alaska Fairbanks Geophysical Institute
- Visitors touch the iceberg
- Dr. Don Perovich, Research Geophysicist, US Army Corps of Engineers, Cold Regions Research & Engineering Laboratory, Engineer Research & Development Center
- Visitors touch ice samples
- Eric Norman, General Manager of Taku Smokeries in Juneau, Alaska, works with an employee to load the iceberg into a large box for shipment.
- Eran Hood and Peter Ord survey Mendenhall Lake in search of an iceberg small enough to ship, big enough to impress.
- A Berliners Specialty Distributor team delivers the iceberg to *Alaska’s Cool Cryosphere*, SpringBoard’s exhibit at the USA Science & Engineering Festival in Washington, DC, October 23, 2010.

These and additional high resolution photos can be obtained by contacting Larry West at the Juneau Economic Development Council’s SpringBoard Program: lwest@jedc.org • (907) 523-2328

