Written in the Sand

Alaska EPSCoR's newest outreach tool puts the whole world in your hands.

The "Augmented-Reality Sandbox" uses an overhead projector to turn a box full of sand into an interactive topographic map. When people manipulate the sand, their hills and valleys are translated into contour lines and colored elevations. When a user hovers their hand over the device, it functions as a cloud and virtual rain pours onto the landscape, creating channels and pooling in the valleys.

David Kroto of the Tyonek Native Corporation sculpts a waterway in the Augmented-Reality Sandbox display at the 2014 Alaska Conference on Surveying and Mapping in Fairbanks. (Photo by Eric Engman/Fairbanks Daily News-Miner)

"A person can literally get hands-on and see how these topography lines change when you change the landscape," said Eric Stevens of the Geographic Information Network of Alaska (GINA), a UAF group that Alaska EPSCoR funded to undertake the project. "This is a teaching tool to connect people to know how to interpret these human-made paper maps with the real world."

The sandbox was put together by GINA technicians based on a project by a faculty member at the University of California-Davis. The device has proven itself a wildly popular attraction at conferences and family science activities throughout Alaska, and also at the 2014 American Geophysical Union Fall Meeting in San Francisco. Alaska EPSCoR Education, Outreach and Diversity Manager Tania Clucas said the sandbox is a novel tool to interest students in Alaskan communities in STEM fields, and to raise EPSCoR's profile.

"We try to come up with ways to communicate what we're doing to the people in those communities and try to work with the people in those communities to see what they're interested in," Clucas said. "(The sandbox) lines up with our education and outreach activities, because we try to get the public engaged and interested in science, and it's a way that we can show them what we're doing."

EPSCoR is now crafting curricula that will use the sandbox to teach geography and geology concepts. In addition, a quartet of University of Alaska Fairbanks engineering students have designed a sturdier, more portable version of the sandbox. A second and third sandbox have been built based on their plans, one of which has already departed for a tour of Southcentral Alaska.

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