

Bubbling with Possibilities

University of Alaska Fairbanks scientist Katey Walter has already made impressive strides in her research into methane bubbling in Alaska's lakes, including a study published in the prestigious journal *Science*. Now, thanks to an early-career grant from Alaska EPSCoR, she'll be able to continue her studies in an area that may hold a critical link to global climate change - and may even find a way to put a greenhouse gas to good use.



Katey Walter

Last year, Walter led a team of researchers who determined that methane bubbling out of Arctic lakes was the likely source of a huge spike in atmospheric methane at the end of the last Ice Age. Methane is a greenhouse gas believed to contribute to climate change, and Walter's research suggests the current warming trend could lead to another mass release of methane, in turn exacerbating the warming.

"It tells us that this isn't just something that is ongoing now. It would have been a positive feedback to climate warming then, as it is today," said Walter. "We estimate that as much as 10 times the amount of methane that is currently in the atmosphere will come out of these lakes as permafrost thaws in the future."

Walter's research focused on areas of Siberia and Alaska that, during the last ice age, were dry grasslands atop ice-rich permafrost. As the climate warmed, that permafrost thawed, forming thermokarst lakes. Organic material in the permafrost sunk into the lakes, Walter hypothesized, and became food for methane-producing bacteria. "All that carbon that had been locked up in the ground for thousands of years is converted to potent greenhouse gases: methane and carbon dioxide," Walter said.



Walter ignites a methane hotspot in a lake near the University of Alaska Fairbanks campus in November 2007.

Walter can now continue her methane research thanks to a \$30,000 early-career award she received from Alaska EPSCoR in December 2007. Her current research plans have a more pragmatic side: in addition to further studying the causes of the methane seeps, Walter also hopes to determine whether hotspot methane could be utilized by residents of Interior Alaska as an alternative fuel source. She has already arranged to partner with Chena Hot Springs owner and entrepreneur Bernie Karl to create a pilot project to convert lake methane for household use.

her grant application. "If Alaskan residents are able to capture and utilize lake (methane), not only would they mitigate its effect in the atmosphere as a greenhouse gas, but this local fuel subsidy would reduce the demand for shipping diesel."

"(Methane)-bubbling hotspots may be a viable source of energy for Alaskans," Walter wrote in

Walter also plans to use the grant to put together an interdisciplinary team which will submit a more extensive research proposal within a year, one that would mean more funding - and a chance for one of UAF's most promising minds to keep her face to the ice to see what comes bubbling up.