



Summertime and the Livin' Is Icy ... for PhD Student Eric Wagner

BY ANNA FIORENTINO

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First-year PhD student Eric Wagner may be too old for summer camp, but Greenland's Summit Camp is right up his alley. Together with Dartmouth engineering professor [Ian Baker](#) and Florida-based middle-school teacher Steve Kirsche, Wagner will touch down on the Greenland ice sheet on June 3rd. The trio will spend approximately three weeks drilling for a snow firn core—a sample of old granular snow in a glacier yet to be fully compressed into ice—to bring home to Dartmouth's [Ice Research Laboratory](#) for analysis.

What are your goals for this expedition?

There is broad interest in understanding firn compaction, most importantly for better interpretation of paleoclimate from air that becomes trapped within the firn. Understanding the density of the firn involves a number of different mechanisms that lead to vapor movement. We will determine the mechanisms of firn densification and microstructural evolution as a function of depth using dynamic observations of the evolution of the firn using X-ray computed microtomography.

How will the trip contribute to climate change research?

A greater understanding of the mechanics of firn compactification is important for a number of reasons. This will contribute to climate research and will allow for more accurate dating of carbon dioxide trapped in ice.

What are you most looking forward to?

I'm interested in seeing the cores as well as the drilling process. Professor Baker is a great, knowledgeable resource. I'm grateful to be working under someone who has worked in this field for so long.

How did a middle-school teacher get involved?

Steve is a teacher who applied to this project through the [PolarTREC program](#), which provides K-12 teachers the opportunity to participate in hands-on scientific research in polar areas. The goal is to engage Steve and his middle school students in an effort to more broadly disseminate this research and increase interest in science in general.

Why is Thayer a good place to do research?



Engineering PhD candidate, Eric Wagner

I was attracted to Thayer specifically because of the school's interdisciplinary nature as well as its remarkable faculty. Thayer felt like a place where a lot of people were doing cool things and wanted to share those things with everyone.

What are your plans for your PhD and beyond?

I have been working on this research since the fall of last year. While my research has climate applications, I'll be focusing on the mechanics of firn and ice. This core could potentially be shared with other groups doing climate research. Eventually, I hope to find industry or public service applications for my work.

More About Firn and Climate Change Research

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