

Introducing New Faculty:

ANDERS CARLSON

As a young child, I used to play on the glacial erratics of my grandfather's farm, just south of the Wisconsin-Illinois border. Little did I know that I would later spend the majority of my time attempting to find erratics and interpret the history of Northern Hemisphere ice sheets from such deposits. I became interested in glacial geology as an undergraduate geology major at Augustana College in Rock Island, IL when I spent a summer monitoring modern sedimentation processes at the terminus of the Matanuska Glacier in Alaska. I continued my studies as a master's student at UW-Madison under **Dave Mickelson** before traveling to the west coast for a PhD at Oregon State University. There I became interested in combining terrestrial and marine records of ice sheet behavior to construct a continuous history of the growth and decay of these continental blocks of ice. Subsequently I traveled to the east coast for a post-doctoral fellowship at Woods Hole Oceanographic Institution on Cape Cod before arriving in Madison in the fall of 07.

My main research focus is determining the sensitivity of ice sheets to climate change so as to better predict the future response of the



Anders Carlson.

including field-based observation, cosmogenic radionuclide dating, and geochemical terrane and runoff tracers that are archived in marine sediment, and numerical models. This multi-method approach has required my collaboration with geochemists, glaciologists and numerical modelers from around the globe.

I am currently working on several projects addressing the sensitivity of ice sheets to past climate change. Working with **Brian Beard** and new graduate student **Lisa Colville** along with collaborators at Oregon State University and the University of Quebec-Montreal, we are developing sediment geochemical tracers from the various terranes of southern Greenland to determine the aerial extent and volume of the Greenland Ice Sheet during previous interglacials that were warmer than present with higher sea level. Applying a different approach, graduate student **Libby Obbink** and I, with colleagues at NASA

remaining ice masses to global warming. The Quaternary geologic record contains greater than 40 natural warming events during terminations of glacial periods when climate warmed and ice sheets retreated, eventually disappearing. To address this research question, I use a variety of techniques

Goddard Institute for Space Studies, University of British Columbia and University of New Hampshire are using atmosphere-ocean general circulation simulations of the last deglaciation to force an energy-moisture balance model of Laurentide Ice Sheet mass balance. This research will hopefully identify "tipping points" in ice sheet mass balance under a warming climate. **Libby Obbink** and I are also developing deglacial records of Laurentide Ice Sheet runoff to examine the sensitivity of ocean overturning circulation to freshwater input. I am continuing my work on the Holocene history of the Laurentide Ice Sheet, dating ice margin retreat and disappearance in northeastern Canada with cosmogenic radionuclides, and hope to begin similar research on the history of the southern Greenland Ice Sheet this summer. In addition, I continue associations with glaciologists and civil engineers at University of Guam and University of Arizona addressing the mechanisms of ice sheet movement.

The Quaternary Sediment Lab has been remodeled, and **Brad Singer** and I are updating the cosmogenic radionuclide lab in the department to improve our processing of samples at UW-Madison. Along with **Brad Singer** and **Brian Beard**, I am developing collaborations with **Clay Kelly** and **Shanan Peters** on a variety of paleo climate change issues. It is great to be back at UW-Madison and I am delighted to continue on the tradition of Quaternary research in the Department of Geology and Geophysics. ●

SHANAN PETERS

There are several well-traveled pathways to becoming an earth scientist. Many enter the field after encountering an inspiring college instructor. Others don't realize a connection until after earning a degree in a related discipline, and some just never shook off a childhood fascination with rocks. For these latter fatalists, their passions often reflect the geology upon which they grew up, and so it is with me. Raised just shy of the Illinoian terminal moraine in Ohio, on Mississippian sandstone at the edge of the Appalachian basin, my interests in geology can be traced back to a boyhood love of midwestern geology. Undergraduate work at Denison University, graduate work in paleo-sed at the University of Chicago, and a four-year stint as a Michigan Society Fellow in Ann Arbor all reinforced these early roots.

I've never really shaken off my interest in midwestern field geology, but my research has led me in very different directions. Simply stated, my primary research objective is to quantify the rock record in statistically powerful new ways in order to test a range of hypotheses about the evolution



Shanan Peters.

of life, the drivers of climate change, and plate tectonics. The scope is broad because the rock record makes it so, and I hope to inspire a new generation of quantitative stratigraphers to ask novel questions and to return to classic problems. As a pertinent example, **Norman D. Newell**, a former geology faculty member (1937-1945), was the first to recognize mass extinctions and their tendency to occur at breaks in the sedimentary record. Based on this observation, Newell inferred that mass extinctions and sedimentation must share a common cause, a hypothesis to which I've returned.

Working at a large scale has its rewards, but I continue to do boots-on-the-ground field work, both in and out of the Midwest. Most recently, I've worked on Late Eocene marine siliciclastic sequence stratigraphy and whale taphonomy in the western desert of Egypt, Maastrichtian sedimentol-

ogy and paleogeomorphology beneath the Deccan Trapps of India, and basic stratigraphy and paleontology in the Cambrian of Montana. Patrick McLaughlin, a new geologist at the State Survey, and I hope to start up new field projects here in the midwest and I have a lot of projects in mind for students to tackle.

In addition to getting my own research group started, I'm finding a great academic home in the department. **Clay Kelly** and I are collaborating on macrostratigraphy in the deep sea, while **Anders Carlson** and I are dreaming up some ambitious proposals to study climate change. I'm working with **Alan Carroll** and his student **Wasinee Aswasereelert**, as well as **Kurt Fiegl**, to apply macrostratigraphy to the Wilkins Peak Mbr of the Green River Fm., and it's great to have **Dana Geary** to keep me sharp in evolutionary biology. **John Valley** and I are trying to work on coral banding (wish us luck!), and **Bob Dott** has already taught me a thing or two. Of course, you, our generous alumni, are appreciated every day. All in all, it's a distinct pleasure to find myself in Madison, right back where I started: at the edge of the ice and the Paleozoic. ●