

Alison Criscitiello



Graduate Institution: Massachusetts Institute of Technology

Location: Cambridge, MA

Graduate Discipline: Geology and Geophysics

Hometown: Winchester, MA

Research Interests:

My research addresses how recent sea-ice and sea-surface temperature (SST) variability influence adjacent ice-sheet chemistry, accumulation rates, temperature and surface melting, and how these parameters have changed through time. By first exploring ocean/ice relationships through glaciochemical proxy development (in particular methanesulfonic acid (MSA) and deuterium excess (dxs)) during the satellite era, I will then reconstruct prior sea-surface conditions and ice-sheet response beyond the satellite era by application of these chemical proxies. My research targets the rapidly changing Amundsen Sea sector of the West Antarctic Ice Sheet (WAIS).

In addition, I have been working to develop an efficient, low-blank method of using U-Th-Pa isotopes to produce precise absolute dates for ancient ice. Other methods of dating ice rely on a continuous sequence of ice, and age constraints on older ice are not precise enough to test climate models, or to make meaningful comparisons to other climate records. We have been developing an efficient method for separating ice from dust, allowing us to measure the build-up of daughter products ^{234}U and ^{230}Th in the ice. Development of this method will help date ice of unknown age in numerous settings, e.g. the edge of ice sheets, the base of long ice cores, and segments of cores that are stratigraphically disturbed such as in GISP2 and GRIP. It also offers a way of decoupling continental and marine climate records.

About me:

I have a BA from Wesleyan University and an MA from Columbia University in Earth and Environmental Science. I am currently a PhD student in the MIT/WHOI Joint Program in Geology and Geophysics, with a focus on Glaciology. In addition to continuing to pursue polar climate research, I am committed to translating our scientific results for policy makers and the public. I believe that the value of research depends on our ability to communicate it in an effective way beyond the scientific community. After completing my PhD, I hope to work in academia where I can pursue research, teaching, and outreach.

Outside of work, I am an avid mountaineer, and guide on Denali and Aconcagua. I love playing the mandolin, blowing glass, and backcountry skiing.



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