AGU Abstract

Building Transferable Knowledge and Skills through an Interdisciplinary Polar Science Graduate Program

Lauren E. Culler¹,², Ross A. Virginia¹,², Mary Albert³, Matt Ayres¹,⁴

¹Institute of Arctic Studies, Dickey Center for International Understanding, Dartmouth College, Hanover, NH
²Environmental Studies Program, Dartmouth College, Hanover, NH
³Thayer School of Engineering, Dartmouth College, Hanover, NH
⁴Department of Biological Sciences, Dartmouth College, Hanover, NH

Modern graduate education must extend beyond disciplinary content to prepare students for diverse careers in science. At Dartmouth, a graduate program in Polar Environmental Change uses interdisciplinary study of the polar regions as a core from which students develop skills and knowledge for tackling complex environmental issues that require cooperation across scientific disciplines and with educators, policy makers, and stakeholders. Two major NSF-funded initiatives have supported professional development for graduate students in this program, including an IGERT (Integrative Graduate Education and Research Traineeship) and leadership of JSEP’s (Joint Science Education Project) Arctic Science Education Week in Greenland. We teach courses that emphasize the links between science and the human dimensions of environmental change; host training sessions in science communication; invite guest speakers who work in policy, academia, journalism, government research, etc.; lead an international field-based training that includes policy-focused meetings and a large outreach component; provide multiple opportunities for outreach and collaboration with local schools; and build outreach and education into graduate research programs where students instruct and mentor high school students. Students from diverse scientific disciplines (Ecology, Earth Science, and Engineering) participate in all of the above, which significantly strengthens their interdisciplinary view of polar science and ability to communicate across disciplines. In addition, graduate students have developed awareness, confidence, and the skills to pursue and obtain diverse careers. This is reflected in the fact that recent graduates have acquired permanent and post-doctoral positions in academic and government research, full-time teaching, and also in post-docs focused on outreach and science policy. Dartmouth’s interdisciplinary approach to graduate education is producing tomorrow’s leaders in science.