Bringing the glaciers back to the Big Island

…one student's experience at climate boot camp in the Pacific Northwest

By Sarah Nash

Besides a lot of coffee, Washington and Hawai'i have at least one other thing in common…glaciers. That's right, glaciers. A little known fact about Hawai'i is that Mauna Kea used to boast glaciers on and off until about 12,000 years ago, for which there is evidence in the upper reaches of the Big Island's tallest volcano.

Heather Kimball stands only miles away from retreating glaciers in Mount Rainier National Park, Washington. Photo: S. Laursen

Being born many thousands of years too late to see a glacier in the Tropics, Heather Kimball traveled to the wilds of Washington State primarily to engage in the 2015 Climate Boot Camp, hosted by the Northwest Climate Science Center. Read on to see where glaciers come in to the story later.

A second-year master's student in the Tropical Conservation Biology and Environmental Science (TCBES) program at the University of Hawaii-Hilo (UHH), Kimball is interested in developing decision support tools for ecosystem management. Explains Kimball, "More specifically, I'm interested in the interface between science and potential end users, managers or policy makers, to translate the information to make better decisions." And her focus was right on target for this year's climate boot camp.

Conveying climate science to non-scientists took up the first day of the four-day boot camp. Seeing as most climate researchers broadcast their work through traditional scientific avenues—peer-reviewed journal articles, presentations at science conferences and the like—trying out some other means to get their results and conclusions out in the world seemed a beneficial exercise.

The fellows (graduate students and post-docs) learned how to cultivate a short and comprehensible climate message, inform the general public, create short videos, and develop strong science blogging skills. Kimball found these sessions to be inspiring and reflective of her own work. This camp is indicative of a more common trend to learn public communications as

part of the research scientist's repertoire, however, many "scientists are not trained to communicate to non-scientists." Reiterates Kimball, "It's not that they are averse to communicating with the general public, but the usual ways they communicate are not as effective to a general audience. Scientists almost need a public relations firm when it comes down to it."

Some things can't be taught in the classroom, so while many sessions trained the fellows on how to understand climate models and their applications, field trips allowed them to travel away from computers to where they could see how climate changes have affected the landscape. [This is where the glaciers come in.] One excursion took them to the edge of the retreating glacier at Mount Rainier in Mount Rainier National Park. There, park rangers showed the fellows how increasing temperatures led to the loss of 37.5 km^2 (14.5 mi^2) of glacial ice over the past century.

A park ranger at Mt. Rainier National Park describes glacial melt and retreat to the Climate Boot Camp fellows. Photo: S. Laursen

In the Pacific region, obviously we don't have much exposure to glaciers or how they grow or retreat, so in this outdoor session, Kimball "learned a lot about glaciers. To see the effects of climate change in that area in a real way helped to bring home the message in the sessions."

Other themes during the camp focused on tribal engagement and traditional ecological knowledge, or TEK. These sessions resonated with Kimball's interest in how communities or resource managers in Hawai'i work with scientists to co-produce problem-solving measures and require time and energy to benefit all the parties involved. She described using a traditional Hawaiian way of knowing and organizing natural systems, called *papakū makawalu*, to create a research question in one of her TCBES classes. Practicing the method—in which you envision yourself as the organism you want to study and its interactions with other organisms and its environment—was more profound and engaging to her and the other students than merely discussing the method academically.

"The big eye opener was the overwhelming theme on building resiliency instead of mitigating," says Kimball. "It feels like mitigation [of climate change] is not really an option." This shift away from mitigation and toward adaptation came as a surprise to Kimball, but it seems this is a direction where many agencies and governments are moving.

Mitigation is the responsibility of some government agencies, so while they are focused on reducing carbon emissions and the like, the climate science centers are engaged in helping people, communities, resource managers, and policy makers prepare for a different future

through science research and support for making successful decisions. Wrapped up in that preparation are many questions about how to protect endangered species, water resources, cultural sites, recreational access, homes and businesses, and more.

Kimball agrees that early career climate scientists in the Pacific region could really benefit from a climate boot camp, but with more emphasis on TEK, community involvement, and place-based learning to support this emphasis on resiliency. This climate boot camp experience energized her to think about the next steps in her career. Furthermore, she is excited about the possibilities of working in the field of science translation, as a go-between for resource managers and climate scientists to help solve our future climate challenges.

Heather Kimball and the other boot camp fellows should count themselves lucky to have this experience at the foot of Mount Rainier's glaciers, not only to learn about climate science, but to witness these landscape changes firsthand. Such a quest may be harder to accomplish as our nation's and our planet's ice landscapes dwindle in the coming years, and they go the way of Hawai'i's lost glaciers.

The 2015 Northwest Climate Boot Camp fellows and staff. Photo: S. Laursen