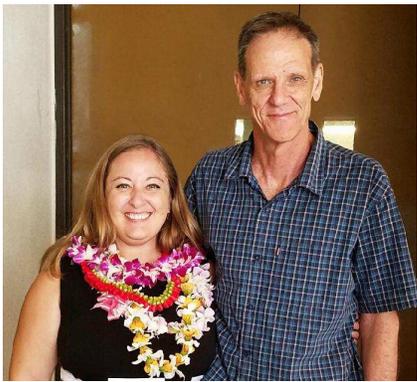




## Focus on Researchers:

### Dr. Abby Frazier investigates the effects of climate variability on rainfall patterns and vegetation response in Hawai'i

It is important to remember that much of the research undertaken for the Climate Science Centers is performed by the next generation of scientists: students working towards their master's degrees and doctorates. Recently, a new doctor was confirmed at the University of Hawai'i at Mānoa, when **Abby Frazier** successfully defended her dissertation based on research for PI-CSC.



Newly defended PhD Abby Frazier with her mentor, Tom Giambelluca.

Frazier focused on the effects of climate variability on Hawai'i, examining first how rainfall patterns across the state have been affected, both in time and by location. Using extensive data sets that date back to 1920, she was able to examine in detail the trends in rainfall variation across the state. She found that detectable and persistent drying trends have been affecting all the islands over the century, but particularly the

western part of the Big Island. Frazier then turned to the response of vegetation to these shifting climatic trends, and did a case study in the high-altitude, forest line ecotone of windward Haleakalā, Maui. For this project, she used remote sensing data from 2000-2015, deriving ratio-indices that can be used to detect the health of vegetation (the greenness). During that timeframe was a long-term drought event (2008-2014) as well as some moderate El Niño events ('02-'03, '09-'10). Frazier found that the long-term drought produced stronger effects in the vegetation, creating detectable browning of the forest and shrubland, but the shorter El Niño events did not.



Dr. Frazier plans to continue her research into droughts and climatic trends in the future, particularly in the Pacific Islands region, with the hopes of providing information to managers and decision makers how best to cope with such conditions.