Investigating the disappearance of Palau’s jellyfish through Holocene climate reconstructions
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The goal of this project was to establish a sedimentary age-depth model for Jellyfish Lake in Palau. This lake is named and known for its large population of medusae jellyfish, which generally holds at about 8 million. Following a strong El Niño, between March and May of 2016, all of the jellyfish disappeared. Due to the El Niño, there was an increase in lake temperature and a decrease in rainfall, which lead to a decrease in runoff and an increase in lake salinity. These conditions are potential stressors for the jellyfish and their symbiotic zooxanthellae, which is one hypothesis for their disappearance. The Sachs lab obtained sister piston cores of the lake sediment and is currently seeking to reconstruct changes in the jellyfish population and hydroclimate of Palau over the Holocene in order to determine the stability of the jellyfish population and potential climate response over time.

The first step in this work is to establish an age-depth model of the recovered sediment. This required travel to the National Lacustrine Core Facility in Minneapolis, and $^{14}$C dated by accelerator mass spectrometry. This expensive, yet critical first step was made possible by a grant from the Quaternary Research Center. We were able to obtain high quality radiocarbon dates for the sister piston cores going back more than 10,000 years. Future work on these cores will provide a vital addition to the sparse hydrologic records of the tropical Pacific over the Holocene.

*Splitting and logging sediment cores during our November 2017 trip to LacCore.*
Recovery of a piston core from Jellyfish Lake during September 2016 fieldwork.
Jellyfish Lake in 2015 with normal jellyfish population of ca. 8 million (top: above water by Lori Bell; bottom: in water by Laura Martin).