

My name is Tristan McDonnell, and I'm entering my third year at San Diego State University this fall. My major is Biology with an emphasis in Cellular and Molecular Biology, but I grew up in Monterey Bay, California. As a result, I've always held a deep appreciation for the oceans and marine organisms. This summer, I had the opportunity to apply my passion for science to my interest in coastal ecosystems at the SDSU Coastal and Marine Institute Laboratory.



I spent my summer in Point Loma at CMIL, where the facilities are equipped with everything a marine scientist needs to conduct research. After being accepted into the internship program, I was paired with my mentor, PhD student Alyssa Dubord, and my co-mentee, Diego.



Alyssa's research interests are focused on the coastal carbon cycle in San Diego Bay. While this theme could involve a multitude of experiments, our focus this summer was on two particular areas. The first was a system known as eddy covariance, or EC. This system employs two sensors to detect gases in a specific area and track their movement. Our EC setup is located at the end of Scripps Pier in La Jolla, where data has been collected for nearly a decade. Our goal is to determine whether the kelp-inhabited coastal waters of the Pacific Ocean act as a carbon source or a carbon sink.



Much of our team's work on this project revolved around maintaining the EC system and devising strategies to use EC in more temporary environments, such as on a boat. For this, we had to figure out how to use the datalogger, which connects a computer to the sensors, and as implied by the name also logs data. While it initially seemed straightforward, it ended up consuming a significant portion of our time through trial and error. Below is a picture taken during one of five incredible minutes when Diego and I successfully synchronized the datalogger and our field laptop in the SDSU ecology labs. I consider this moment my first official scientific breakthrough, and I'll remember it for the rest of my life. Another thing I'll remember: When working with finicky sensors, always try a different cord.



The second project we worked on was centered around microplastics and how they affect the environments of the organisms that contribute to coastal carbon flux. This project was a pilot study, so we conducted preliminary research to see if the plan actually worked. We had to workshop and design an apparatus that would hold the net during

collection, keep it at the desired depth, and also avoid the use of plastics while doing so. The project opened my eyes to how much plastic humans use in every part of our lives.



The final Day of my time at CMIL was the Ecology Department meet and greet, where Diego and I presented the poster we created about our research. It was my first time presenting a poster, and I have to say I was blown away by how fun the experience was. Engaging with professors, graduate students, and individuals outside the scientific community led to a diverse array of questions. Not only did these questions demand on-the-spot critical thinking, but they also provided me with multiple perspectives on potential directions for our research.

Experiencing ecology at SDSU was an eye-opening journey. I've developed a sincere appreciation for the unique set of challenges and experimental conditions that ecologists navigate while designing and conducting studies. I am also greatly enthusiastic to witness the eventual outcomes of the projects I contributed to, guided by my exceptional mentor Alyssa. My summer at SDSU CMIL underscored the phenomenal way that science allows everyone to communicate ideas and intrigue through a mix of creativity and passion. Thank you so much to everyone I met at CMIL for the invaluable lessons and the great summer experience!