

Gabriela Vidad's abstract

Coral reefs are foundational ecosystems that become highly stressed by occurrences such as destructive fishing practices or climate change. In the Philippines, coral reefs protect the islands from storms, while also providing food security and tourist revenue. Understanding the socioeconomic causes of destructive fishing practices and its consequences is essential to finding a way to communicate and mitigate man-made coral reef destruction. This thesis explores the development of visual cues and quantification through mapping and classification as a method of communicating the severity of coral reef destruction. Mapping coral reef change is challenging, but recent satellite data contains high enough resolution to perform the task using remote sensing. We use Sentinel-2 satellite data and the European Space Agency's Sentinel Application Platform (SNAP) to develop maps of coral reef changes in the Philippines within a two year span using the Sen2Coral software plugin. Supervised classification within SNAP is used to quantify percent changes in coral cover. We identify a possible shift in the coral-algae ecosystem state of Boracay as a response to the popular tourist destination being closed to visitors in 2018. Changes in coral cover are also seen off the coast of Jomalig Island in Quezon. With the use of freely available data and software, others can follow the steps of this research to analyze and communicate coral health in their own area.