

When global warming is mentioned in a conversation, almost always people associate it with just the atmosphere. While the atmosphere can change temperature at a faster rate than the ocean, there is still an effect global warming has had on the world's oceans. Water requires much more energy to increase or decrease its temperature, making the organisms that live in it adapted to a very small range of temperatures. Other aspects of the ocean are responding to global warming as well. The largest reason why this event is happening is the injection of greater amounts of carbon dioxide from large factories into the atmosphere. This carbon dioxide mixes into the ocean through the air-sea gas exchange, mainly through bubble injection during wave action. Carbon is a major building block for ocean organisms, gastropods (snails), corals, and plankton all use calcium carbonate to create protection for themselves in the form of shells or community structures. Carbon dioxide in large amounts can decrease the pH of ocean water, making it more acidic. This process is called ocean acidification, and is the number one issue faced by ocean organisms at this time. In combination with warmer temperatures, ocean acidification spells disaster for animals that use calcium carbonate to survive, as it dissolves or thins in lower pH situations. For corals in Florida Bay, at what range of temperature and dissolved carbon dioxide dramatically reduces calcification rate and what range is the East coast of the US currently at.

Using the three sources, or similar sources, the relationship between calcification rate, coral type, temperature, and carbon dioxide will be studied. The coral dataset (CSV) will be the basis of the project, with finding and manipulating data to study current trends and how they compare to the study can help find potential risks for coral species at current times. On Planet OS, the dates from 2013 to 2020 will provide a timeline of study trend and how the trend has changed over time. Also, location parameters can be set to include the East coast US. The API will provide data to compare environmental data, as well as the ability to see how other species of coral could react differently than the species studied. Different cases can influence environmental data and create outliers such as major weather events like hurricanes, or instrument failure, which also can cause missing data. These cases will be evaluated to find the best solution to create non-bias data. The environmental data could overlap, depending on the duration at which observations were recorded. Duplicate data will be resolved to create a cohesive overlap.