

## **Project Vitamin Sea**

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As climate change takes effect across the world, temperatures rise to new highs and so does sea level. Major cities around the world now face the challenge of accepting and combating climate change quicker than the rest of the world, due to their geographic location and surrounding environment. In Miami, sea level is predicted to rise by 1 foot by 2060; however, more than 2,500 houses in Miami Dade county are less than 1 foot above sea level<sup>1</sup>. Project Vitamin Sea is a small-scale trial run reverse osmosis desalination plant that is going to be installed 75 kilometers off the coast of South Florida to alleviate climate change from two perspectives: sea level rise and drought. The plant is considered innovative in comparison to past desalination attempts because it will be powered by reverse osmosis through a renewable energy source: the ocean's static pressure above the plant, or the weight of 615 meters of ocean above the plant<sup>5</sup>. In other words, the plant will not require vast amounts of energy making it inexpensive and practical for real time use. As per the Red Queen Hypothesis, countering climate change, or in Miami's case specifically, sea level rise, is going to take more than one renewable energy sourced desalination plant to even come close to the possibility of stopping sea level rise, let alone reversing its effects. So, the purpose of this project is to allow for this trial with the smaller plant to take its course to see if this type of desalination plant is a plausible solution for future endeavors in alleviating climate change and its effects, like drought, ocean acidification, and sea level rise, worldwide. This project will also be environmentally conscious by performing a deep ocean clean up prior to construction throughout the whole area of where the plant will be located. Afterwards, small coral species, ideally, can be added to the installed plant in efforts to increase biodiversity in the surrounding environment, thus promoting health and the success of the plant in its environment. This overall proposal promotes a one health concept of attempting to relieve the increasingly significant effects of climate change through an environmentally friendly and conscious effort for the safety of humans, animals, and, very importantly, their precious shared environment.