Coccolithophores in a Changing World

Cantillo, Kyla

Ocean Acidification is the reduction in the pH of the ocean due to absorption of CO2 in the atmosphere. When absorbed the carbon dioxide mixes with ocean water to create carbonic acid. The acidity of the water is harmful to marine life, especially organisms that make calcium carbonate shells. Coccolithophores, a type of phytoplankton, are one of these calcareous organisms. At heightened carbon dioxide levels the calcification and growth rates of Coccolithophores are expected to decrease. In this experiment cultures of Emiliania huxleyi Coccolithophores were grown in two different carbon dioxide treatments. The first treatment received carbon dioxide treatments that match present day atmosphere levels while the second treatment received carbon dioxide levels that stimulate the future's atmospheric levels. Coccolithophores were abruptly exposed to carbon dioxide levels and, in another experiment, acclimated to their environmental conditions to determine if there is a difference. Cell concentration, growth, and calcite production were all measured. My findings show that growth was not different between treatments. However, calcification initially increased when the Coccolithophores were exposed to future carbon dioxide levels, and then experienced a decline after being acclimated. This reaction to rising carbon dioxide levels indicates further implications to the oceans and global climate.

Awards Won: