



# MASSACHUSETTS CLEAN TECHNOLOGY AWARDS

A Program from The Foresight Project Inc; [www.theforesightproject.org](http://www.theforesightproject.org)



## Middle School Clean Tech Awards:

Region V: Southeast MA

Honorable Mention to:

Samantha Kessler, Gilmore Academy,  
Brockton, MA

*"Our Ocean's Future: A Study of How Salinity Would Change as a Result of Glacial and Ice-Cap Melting"*

My name is Samantha Kessler. I am thirteen years old and I am in eighth grade at the Gilmore Academy. I have been in the talented and gifted program of Brockton since fourth grade. I have lived in Brockton all my life. I am involved in many out of school activities. I have played soccer for close to ten years, I am involved in school performances, and I play the piano. Science has always been one of my top subjects. I would like to be a marine biologist when I grow up and I hope to learn to scuba dive sometime in the near future. That is what sparked my interest for the topic of my project.

### MY PROJECT:

For my project, I wanted to see how global warming will affect the ocean by looking at aspects that are not as commonly thought of. When the ice freezes into glaciers, icebergs and ice fields such as at the poles, the salt that is in the water stays in the water and the ice is mostly freeze (non-salty) water). Because of melting glaciers and extreme weather, more and more freshwater is being added to the ocean, which decreases the salinity level more and more. The problem to my experiment is to determine if the ocean will one day be freshwater due to global warming, how much water, and how many years it would take. It is also to see how this will affect the planet, ecosystem, and scuba diving.

Although this effect has a lot to do with ocean currents, my calculations came to prove that in order for the ocean to become fresh water, over 12 billion cubic kilometers of water would need to be added to the ocean. Whether or not there is enough ice for that amount of water is unknown, but I did determine that over time the salinity level will begin to decrease more and more. It would take hundreds of thousands of years for any significant salinity change, even if everything continued at a steady rate.

The water levels are likely to rise more and more and the ocean is likely to become much less dense as the salinity decreases. As this happens, it could open more opportunity for a great



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freeze - which could be similar to a second ice age - because as the water loses salinity, its freezing point rises. The simple idea of the ocean losing salinity and density is likely to change or effect many aspects of the world in many different ways - some not as obvious as others.

The planet is changing – dangerously affecting many parts of the Earth. My purpose is to help point out more of those possible outcomes in hopes that they will one day be stopped.