CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY

Name(s)

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Project Number

33842

Project Title

An Exploration of the Formation of Trash Islands

Abstract

Objectives/Goals

The objective is to determine if air movements across the surface of a body of water have a greater influence on the development of water currents that form "trash islands" than subsurface events.

Methods/Materials

Volumes of plastic trash, ranging from 250 milliliters to 1000 milliliters, were placed in a 56.775 liter circular metal basin filled with 53 liters of water. The assembly was then subjected to convection, surface, and subsurface currents in order to generate trash islands. Because definitive trash islands did not form, and the convection treatment produced little results, experimentation continued using only surface and subsurface currents. The length of time it took for trash to stop moving, and the volume of floating trash were recorded.

Results

An average of 194 milliliters of trash remained floating after a first trial of 4 surface and 4 subsurface current inducing treatments, while an average of 279 milliliters of trash remained floating after a second series of treatments. The average amount of time it took for the floating trash to stop moving after the first trials was 35 minutes and 57.1 seconds, whereas the average time decreased substantially to 24 minutes and 34.8 seconds after the second trials.

Conclusions/Discussion

It is known that about 70% of the trash where trash islands occur is sunken and 30% is floating. No definitive trash islands formed during this experiment. Trash did float or sink, however, and a relationship between the amount of floating trash and the time it took for the trash to stop moving after the removal of a current-inducing source was apparent. When there was more floating trash, it took less time for the trash to stop moving. Only two trials were run, and more trials are needed to support the findings here.

Summary Statement

My project is an examination of the forces that generate trash islands.

Help Received

My father helped with conducting the experiments and with data formatting and entry.

Preliminary