CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
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Project Number
J1527

Project Title
Saltwater and Sound

Abstract

Objectives/Goals
The objective is to determine if sound will travel faster in different salinities of water. I believe that as the salinity increases, the sound will travel slower.

Methods/Materials
The salinities of the Artic Ocean (20 parts per thousand [ppt]), Pacific, and Atlantic Oceans (35ppt), the Salton Sea (44ppt), the Mono Lake (87ppt), and the Dead Sea (210ppt) were used as guidelines for my experiments. I used two transducers and set a signal of a four hertz burst at 1,000,00 cycles per second. The distance of the two transducers over the delay of sound equaled the speed of sound in water.

Results
The higher the salinity became, the faster the sound traveled. The speed of sound ranged from 1,488.1 meters/second to 1,718.4 meters/second between 20 and 210 ppt.

Conclusions/Discussion
I found that the speed of sound changes greatly as the salinity is increased. I believe that this is due to a density factor rather then what I originally thought which was that the salt would obstruct and slow down the sound waves thus making the speed of sound slower.

Summary Statement
I wanted to see if sound would travel faster in different salinities of water and found that as the salinity increased, the sound traveled faster.

Help Received
Father helped with experimentation. RD Instruments provided Oscilloscope, Signal generator, and donated transducers. Mother helped assemble presentation board.