CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
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Project Number
S0605

Project Title
Fossil Source Material Movement Due to Tectonic Vibrations

Abstract

Objectives/Goals
My project was to determine if fossil source material could be vertically translated through the sedimentary layers due to tectonic vibrations. I believe that the fossil source material could be translated due to sediment liquefaction, density contrasts, and strong tectonic vibrations.

Methods/Materials
Using a depositional tank that I constructed, three shells were inserted into a sand slurry (sand and water mix). The three shells were placed in three separate horizontal locations in the slurry (Left, Middle, and Right) and at the same vertical level. After five minutes of vibration, I exposed the fossil source material in a cross sectional manner and measured the distance that each shell had been vertically translated.

Results
Each shell was vertically translated. Also a pattern appeared within the data. The middle shell was translated slightly less (30.5 millimeters) than both of the outside shells, which were both translated about the same amount (35.6 millimeters).

Conclusions/Discussion
Fossil source material can be vertically translated due to tectonic vibrations. Each shell was translated downward from the start position. This allows for possible flaws in interpretation relying on the geological law of superposition.

Summary Statement
Can the fossils in strata be altered by liquefaction, density contrasts, and strong tectonic vibrations?

Help Received
Used father's woodshop to construct tank assembly.