



# CALIFORNIA STATE SCIENCE FAIR

## 2007 PROJECT SUMMARY

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| Name(s)<br><b>Nathaniel J. Mooi</b>  | Project Number<br><b>J0716</b> |
| <b>Project Title</b><br><b>Got Salt? Measuring Salinity in San Francisco Bay Before and After Rainfalls</b>  |                                |
| <b>Objectives/Goals</b><br>The primary goal was to determine salinity around San Francisco Bay estuary according to location and before and after rainfalls. Secondary goals were to see if relative salinities can be measured by evaporation and weighing of the remaining salt, to test the effects of temperature on a store-bought hydrometer, and to observe physical factors and organisms at each collection site.   | <b>Abstract</b><br><br>        |
| <b>Methods/Materials</b><br>In November 2006, I collected water samples from 6 places around the Bay and measured their salinity by weight of salt in a certain weight of water. This was done by evaporating the water from sample until only the salt was left. I also tested the salinity of each sample using a hydrometer. I repeated the sampling in December, after several rainfalls. I went to websites to find out how much rain fell during November and December. I also made observations about weather, water temperature, and organisms at each site. |                                |
| <b>Results</b><br>Salinities are highest near the ocean. After the rains, salinities went down, especially near the Sacramento River. The hydrometer gave different readings at different temperatures. I tested the weight method by evaporating a known salinity and found that I got all the salt back. Surprisingly, the dried salt weighed more than the amount I put in, probably because it still had some water in it.   |                                |
| <b>Conclusions/Discussion</b><br>My evaporation method for determining salinity worked well. Rain is fresh water that can lower salinity. It lowers salinity more along the rivers that flow into an estuary because the volume of fresh water is high compared to the water in the Bay. The volume of the ocean is huge, hence the rainfall has little or no effect. Salinity changes are very important for determining what kinds of organisms live in the Bay at certain times of the year.  |                                |
| <b>Summary Statement</b><br>It is possible to detect salinity changes in San Francisco Bay before and after rainfalls by collecting water samples and evaporating them to weigh the salt.  |                                |
| <b>Help Received</b><br>Mom and Dad drove me to localities and helped print the material for the display.  |                                |