



CALIFORNIA STATE SCIENCE FAIR

2006 PROJECT SUMMARY

Name(s) Corinne Rockoff	Project Number J0124
Project Title Which Type of Roof Survives Hurricane Winds Best?	
Objectives/Goals My objective in this project was to find out how roofs of different types react to winds of hurricane caliber. Mainly, in doing this project, I hoped to find a solution to one of the problems that arose in recent hurricanes, that of roofs acting almost like airplane wings and lifting straight off the houses, causing unparalleled destruction.	Abstract To test this project, I constructed an elliptical tank with a center divider from wood, plastic sheeting, and plexi-glass, and installed a pond pump, creating a circular flow. In this flow, I placed five model roofs. I placed oatmeal in the water and recorded the flow of the oatmeal around the houses, observing apparent areas of high and low pressure.
Results I quantified my data by counting the number of pieces of oatmeal in certain areas prone to low pressure observed in frames of video taken of the experiment. These results averaged with the shed roof being best with an average of 7 1/3, then Mansard roof with 9 1/3, Gambrel roof with 12, Gable roof with 12 1/2, and finally Hip roof with 15 2/3 average. These results correlate with my observations of eddies and whorls in the tank, suggesting that the shed roof, if correctly oriented, may be the best at surviving hurricane strength winds.	Conclusions/Discussion Although other factors such as its structural strength must be taken into consideration, I concluded that due to its low number of surfaces and lack of a curve that might invoke Bernoulli's principle to create low pressure, the shed roof is, if properly oriented, the best at withstanding hurricane winds.
Summary Statement My project explores which type of roof best withstands hurricane winds, using hydrodynamics to illustrate aerodynamic properties.	
Help Received My father and Steve Wasserman helped operate power tools used in building tank; Mother assisted with videography; The Anchor boat shop, Reseda bike shop and Margy Rockoff all donated materials.	