



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Blake D. Krongaard	Project Number J0617
Project Title How Does Pressure Affect the Size and Speed of a Tornado?	
Objectives/Goals The objective of this project was to prove or disprove my hypothesis that as the pressure decreases within the core of a tornado, the size and speed increase.	
Abstract	
Methods/Materials Materials: 3 18 in. plywood disks, 2 18 in. Plexiglass disks, 1 speed controller with potentiometer, 1 radial blower fan, 1 4 x 8 ft. sheet of fiberglass, 1 ultrasonic mist generator, 3 toggle switches, 1 light bulb base with 7W bulb, 1 tube silicone caulk, 2 aluminum strips, 4 ft. PVC pipe, 8 ft. 1 x 2 wood stock, 2 cans black satin spray paint, 8 rivets, 24 wood screws, 1 terminal block, 10# 16 guage wire, 4 wheels, 1 metric ruler, 1 stopwatch. Methodology: A. Construct a tornado generator to simulate the two primary atmospheric components of a tornado (updraft/wind shear, swirling winds). B. Test the tornado generator. C. Operate the tornado generator at various power settings and measure width of tornado at top and bottom. D. Use stopwatch to time the rotational speed of tornado at top and bottom. E. Calculate the rotational speed based on time and distance calculated from C and D above. F. Run two trials. The first using ten power settings (increased vacuum) in increments of 10% (10% to 100%). The second using 10 power increments of about 3% over a range 20% to 50% of power. G. Record data and graph results.	
Results As the percentage of power was increased, the pressure was decreased at the core of the tornado. And as the pressure decreased in the core, the size and speed at the top and the bottom of the tornado increased.	
Conclusions/Discussion The lower the internal pressure of a tornado, the larger and faster it will become. Therefore, colliding weather fronts capable of producing greater internal updrafts and areas of extreme low pressure will produce tornadoes that are larger, faster and cause more damage. I also was able to conclude that if meteorologists could accurately detect these updrafts and areas of low pressure, they could save lives by providing advance warning to those who would be in its path.	
Summary Statement My project is about the study of tornados and how they are affected by atmospheric pressure.	
Help Received My father helped me build the tornado gnerator, type report and construrct the final display.	