



**CALIFORNIA STATE SCIENCE FAIR  
2008 PROJECT SUMMARY**

<b>Name(s)</b> <b>Jamie L. Ferrell</b>	<b>Project Number</b> <b>J1604</b>
<b>Project Title</b> <b>The Incredible Expanding Comet Holmes</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My project measures the coma (dust cloud) around Comet Holmes. I want to find out if the dust cloud is expanding, and if so, is the rate of expansion accelerating or decelerating?</p> <p><b>Methods/Materials</b> Materials: Computer, Photos of Comet Holmes, Photos of the Pleiades Star Cluster to determine my plate scale, Calculator, Metric Ruler Methods: I have nine photos of Comet Holmes taken between Oct. 27, 2007 (after the comet's outburst on Oct. 24, 2007) through Jan. 30, 2008. (I got them from astronomer, Rick Nolthenius). I measured the diameter of the dust cloud image on each printed photo in centimeters. I measured perpendicular to the direction of the solar wind at the visible edge of the dust cloud, trying to stay consistent on each photo. I converted the measurements (from centimeters to kilometers) of the diameter of the dust cloud in each of my comet photos to its actual size in space. I plotted my results on a graph. I have three data sets: One is my measurements for the dust cloud (in kilometers), one shows measurements from cloudbait.com (a website that measured the dust cloud on similar dates). The third is a curve drawn through my measurements showing an average change in the dust cloud size. I used that curve to determine if the dust cloud change in size was accelerating or decelerating.</p> <p><b>Results</b> The dust cloud around Comet Holmes is expanding, but the expansion is not decelerating or accelerating. The comet's initial outburst was on Oct. 24, 2007. On Oct. 30, the date of my second photo, the comet's dust cloud expansion starts to decelerate. However, it didn't keep decelerating. Instead, the curve on my graph climbs at a steady rate which means that the dust cloud is expanding at a steady rate.</p> <p><b>Conclusions/Discussion</b> In conclusion, the dust cloud around Comet Holmes is expanding, but it is not decelerating or accelerating. It is expanding at a steady rate over the course of my data set. The unsteady solar wind, which I hypothesized might influence the expansion rate, appears to not have a big effect on the steady expansion rate I found of Comet Holmes.</p>	
<b>Summary Statement</b> My project measures the expansion of the dust cloud of Comet Holmes and determines if that expansion is accelerating or decelerating.	
<b>Help Received</b> Astronomer Rick Nolthenius provided pictures of Comet Holmes, the formulas for calculating the arcminutes into kilometers, and helped me understand how things worked in space. He helped me take one of the photos. My mom taught me how to use programs on her MAC, and helped me proofread.	