



California Science Center  
**CALIFORNIA STATE SCIENCE FAIR**  
**2001 PROJECT SUMMARY**

<p><b>Your Name</b> (List all student names if multiple authors.)  <b>Kevin T. Currey</b></p>	<p><b>Science Fair Use Only</b></p>
<p><b>Project Title</b> (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9)  <b>Too Bright at Night? Building a Dark Sky Meter to Measure Light Pollution</b></p>	<p style="font-size: 2em; font-weight: bold;">J0505</p>
<p><b>Preferred Category</b> (See page 5 for descriptions.)  <b>5 - Earth Sciences/ Planetary Sciences/ Physical Environments</b></p>	<p><b>Division</b>  <input checked="" type="checkbox"/> <b>Junior (6-8)</b> <input type="checkbox"/> <b>Senior (9-12)</b></p>
<p><b>Abstract</b> (Include Objective, Methods, Results, Conclusion. See samples on page 14.)          Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.</p> <p><b>Objective:</b> The objective of this project was to compare numeric measurements of light pollution at five different locations using a Dark Sky Meter constructed by the entrant. The hypothesis was that locations farthest from major cities would have the least light pollution.</p> <p><b>Materials and Methods:</b> The Dark Sky Meter compares the brightness of an LED lamp mounted inside a viewing scope with the brightness of the night sky. By turning a dial connected to a potentiometer, the amount of electrical current reaching the LED can be varied until the color and intensity of the LED matches the night sky. The amount of current is measured using a digital multimeter. This provides an objective measure of light pollution. Multiple measurements of the north, south, east, and west quadrants of the sky were obtained at each of five locations. A control measurement - pitch black - was obtained by taking measurements with the viewing scope closed.</p> <p><b>Results:</b> Of the locations measured, Joshua Tree National Park had the least light pollution; a shopping mall in Manhattan Beach had the most.</p> <p><b>Conclusion/Discussion:</b> This project demonstrated that light pollution can be measured objectively and confirmed that places farthest away from major cities have the least light pollution. Light pollution is a problem for professional and amateur astronomers and anyone who enjoys stargazing. Without a Dark Sky Meter, comparing stargazing locations is an entirely subjective exercise. But with a Dark Sky Meter, astronomers can select the best location for viewing the night sky.</p>	
<p><b>Summary Statement</b> (In one sentence, state what your project is about.)          This project measures light pollution using a Dark Sky Meter built by the entrant.</p>	
<p><b>Help Received in Doing Project</b> (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4.          Father drove and acted as second observer to reduce bias; adult answered electronics questions.</p>	