



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

Name(s) Emily P. Africa	Project Number J1101
Project Title Star Light, Star Bright, I Can't See the Stars Tonight! A Study on the Effects of Skyglow on Stellar Visibility	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of my project was to determine the area in the Temecula Valley whose stellar visibility was most affected by skyglow.</p> <p>Methods/Materials Three (3) locations of varying artificial light activity, digital camera with full manual control, image analysis program and constellation guide application obtained from free online source, GPS to determine coordinates of locations. Surveyed each location by taking pictures of same section of sky with constant exposure time, aperture, focal length, and sensitivity, and at the same time every night, then read histograms of images and calculated an EET (equivalent exposure time) from a calibration curve graphed before collecting data from the three locations previously identified.</p> <p>Results After comparing the EETs (equivalent exposure times) of the images, I found that Location A (a residential area) was the area that was least affected by skyglow. Location B (an undeveloped area near a freeway) came next, and Location C (a mountainous area) was ultimately the area whose stellar visibility was most affected by skyglow.</p> <p>Conclusions/Discussion The surveying of three different areas representing various artificial light activity found that the areas whose stellar visibility are most affected by skyglow are not necessarily the most secluded/undeveloped areas, and that factors like moonlight and cloud cover must be taken into account in order to formulate a more accurate conclusion. This experiment could help raise awareness about the diminishing number of stargazing places in easily accessible areas and raise questions about how we can prevent a "starless night" from happening.</p>	
Summary Statement I showed that the areas whose stellar visibility is most affected by skyglow are not necessarily the most secluded areas using a calibrated digital camera.	
Help Received Substantial. I received assistance during transportation to various locations and during the calibration process by family members.	