



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

<b>Name(s)</b> Aiden J. Aceves	<b>Project Number</b> <b>J0601</b>
<b>Project Title</b> <b>From the Moon to the Earth: Does Our Nearest Neighbor Have Any Effect on Seismic Activity?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Earthquakes are naturally occurring phenomena that occur throughout the world with regularity. There is more than one mechanism for the generation of earthquakes, though the majority result from a build up of pressure between the major tectonic plates. The objective of my experiment is to survey earthquake records (a.k.a. catalogs) and search for correlations between earthquakes and lunar phenomena, such as distance, phase and the angle of the moon in relationship to an earthquakes epicenter.</p> <p><b>Methods/Materials</b> Using the NOAA and USGS PDE earthquake catalogs I compared earthquake data with various lunar statistics such as distance, phase and physical geometry searching for patterns and correlations. I used computer programs such as Excel and Basic programming language to facilitate my study.</p> <p><b>Results</b> My work found no relationship between earthquake magnitudes or frequency and lunar distance. However, my analysis shows that there may be a correlation between lunar angle (moon phase) and the location and frequency of magnitude 8.0 or greater earthquakes. As lunar position correlates with ocean tides, so too may there be a correlation between the moons position to the earth and earthquake location. My work also demonstrates that, for earthquakes magnitude 8.0 and greater, a disproportionate number occurred in early morning hours between 4 and 6 AM.</p> <p><b>Conclusions/Discussion</b> My results showed no correlation between earthquakes and lunar distance. The possible relationship between lunar angle, time of day, and earthquake frequency shown by my results is not overwhelmingly strong. More time and effort needs to be applied with consideration of the inclusion of more (smaller magnitude) earthquakes in future trials. Future research should also look at seismically active locales and their earthquake correlations with lunar variables.</p>	
<b>Summary Statement</b> The objective of my experiment is to survey earthquake records (a.k.a. catalogs) and search for correlations between earthquakes and lunar phenomena.	
<b>Help Received</b>	