



**CALIFORNIA STATE SCIENCE FAIR  
2010 PROJECT SUMMARY**

<b>Name(s)</b> Spencer G. Ford	<b>Project Number</b> <b>J1905</b>
<b>Project Title</b> <b>Do Solar Cosmic Rays Affect the Earth's Magnetic Field?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> I wanted to find out if there was a correlation between the number of cosmic rays I could detect and where the Earth's magnetic pole is located. The solar wind, which includes solar cosmic rays, can move the Earth's magnetic north pole. I believe that I can find a correlation between the two</p> <p><b>Methods/Materials</b> To perform this project, I built a magnetometer from an empty 2-liter soda bottle and I built a cloud chamber out of an aquarium. Every night, I would take readings from the magnetometer and the cloud chamber. Data recorded from the cloud chamber will be in five minute sessions. After about a month of testing, I will see if there is a correlation between the number of cosmic rays I could detect and the position of the Earth's magnetic field.</p> <p><b>Results</b> The laser beam of the magnetometer struck the wall at an average location of 16.4 cm on the ruler. The highest point was 22.9 cm and the lowest point was 8.1 cm. The average number of cosmic rays per minute I detected was 29.9. The lowest was 10.6 per minute and the highest was 56.2 per minute.</p> <p><b>Conclusions/Discussion</b> There was no correlation between the cosmic ray counts and the magnetometer readings. The NOAA/NWS website indicated that there was very little solar activity this month, so the magnetic north pole was probably not moving much and the cosmic rays I detected were probably mostly galactic cosmic rays and anomalous cosmic rays, not solar cosmic rays.</p>	
<b>Summary Statement</b> I wanted to see if there was a correlation between the quantity of solar cosmic rays and the location of the magnetic north pole.	
<b>Help Received</b> Dad helped me to build the equipment and handled the isopropyl alcohol. Mom helped me lay out the backboard.	