



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Callista S. Hesseltine	Project Number J1907						
Project Title Year of the Sun							
<table border="0" style="width: 100%;"><tr><td style="width: 50%; vertical-align: top;">Objectives/Goals "The sun shines and warms and lights us and we have no curiosity to know why this is so." ~Ralph Waldo Emerson</td><td style="width: 50%; vertical-align: top;">Abstract Some people have the curiosity though and I am one of them. That is why I did my experiment on solar flares. If you think the sun is a pretty orange ball warming our day, think again. If you were to go up close to the surface and watch its activities you would see violent explosions every second of every day. The explosions release energy that causes light. Some of the explosions create electromagnet storms that are carried to Earth by solar wind. When they hit Earth's magnetic field they cause anything from radio disturbances to the Auroras. About every 11 years these storms reach their maximum amount of activity. I investigated whether or not this was the year the sun had reached the height of its 11 year solar flare cycle.</td></tr><tr><td style="vertical-align: top;">Methods/Materials I built a magnetometer out of a soda bottle. Inside the soda bottle was a magnet and mirror glued to an index card which was attached to a string that was hanging from the cap. I had a light at angle of 45 degrees away from the bottle and the light reflected off the mirror onto a centimeter chart hanging on the wall that I made. When the solar storm came and hit the magnet, the magnet moved thus causing the light to bounce off the mirror at a different angle landing at a different spot on the chart. I observed for 30 days whether the magnetometer moved or not indicating a solar storm affecting earth's atmosphere.</td><td style="vertical-align: top;">Results The magnetometer moved 14 times but only 1 of those times did I detect a solar storm. The rest of the times either the magnetometer was attracted to my cell phone, scissors, or a car passing by.</td></tr><tr><td colspan="2" style="vertical-align: top;">Conclusions/Discussion Since in the height of the 11 year solar flare cycle there are normally 3 storms a month and I only detected 1, I conclude it is too early to tell whether or not this is the year the sun reached the height of its cycle.</td></tr></table>		Objectives/Goals "The sun shines and warms and lights us and we have no curiosity to know why this is so." ~Ralph Waldo Emerson	Abstract Some people have the curiosity though and I am one of them. That is why I did my experiment on solar flares. If you think the sun is a pretty orange ball warming our day, think again. If you were to go up close to the surface and watch its activities you would see violent explosions every second of every day. The explosions release energy that causes light. Some of the explosions create electromagnet storms that are carried to Earth by solar wind. When they hit Earth's magnetic field they cause anything from radio disturbances to the Auroras. About every 11 years these storms reach their maximum amount of activity. I investigated whether or not this was the year the sun had reached the height of its 11 year solar flare cycle.	Methods/Materials I built a magnetometer out of a soda bottle. Inside the soda bottle was a magnet and mirror glued to an index card which was attached to a string that was hanging from the cap. I had a light at angle of 45 degrees away from the bottle and the light reflected off the mirror onto a centimeter chart hanging on the wall that I made. When the solar storm came and hit the magnet, the magnet moved thus causing the light to bounce off the mirror at a different angle landing at a different spot on the chart. I observed for 30 days whether the magnetometer moved or not indicating a solar storm affecting earth's atmosphere.	Results The magnetometer moved 14 times but only 1 of those times did I detect a solar storm. The rest of the times either the magnetometer was attracted to my cell phone, scissors, or a car passing by.	Conclusions/Discussion Since in the height of the 11 year solar flare cycle there are normally 3 storms a month and I only detected 1, I conclude it is too early to tell whether or not this is the year the sun reached the height of its cycle.	
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Summary Statement I recorded solar flares coming and disturbing Earth's magneticfield using a magnetometer.							
Help Received mother helped type; parents helped make magnetometer							