



**CALIFORNIA STATE SCIENCE FAIR  
2010 PROJECT SUMMARY**

<b>Name(s)</b> <b>Joshua S. Belford</b>	<b>Project Number</b> <b>S0804</b>
<b>Project Title</b> <b>The Effect of the Depth of a Focus on the Magnitude of an Earthquake</b>	
<b>Objectives/Goals</b> The purpose of this project was to find out at what depth of a focus of an earthquake would it have the greatest magnitude and area of affect (or destruction).	
<b>Abstract</b> <b>Methods/Materials</b> First had to build the Oscillating Earthquake Device (OED), but that is long and complicated and requires soldering. Testing Get Planting pot fill with 5 cm of soil, place the OED at the center of the pot, cover over with 45 cm of soil. Place iPod over focus and run the iSeismometer application, turn on the OED in 5 second bursts (each 5 second burst is 1 trial) Place iPod 10 cm away repeat the last step then repeat it again at 20 cm away from epicenter. Dig out the OED and rebury at 20 cm repeat the last 2 steps, do the same for the depths of 35 cm and 50 cm. The actual process is much more complicated, but I just wanted to give an overview. Short simple list Oscillating Earthquake Device -Comprised of a motor with an off center weight attached -attached to batteries and on/off switch Planting pot (53 cm height by 60 cm rim diameter by 40 base diameter) Soil to fill the pot Pen and paper Meter stick iPod Touch with application iSeismometer. (optional plastic bag to cover iPod from dirt)	
<b>Results</b> 50 cm (depth) strongest at the 0 cm away from epicenter 35 cm (depth) strongest at the 10 cm and 20 cm away from epicenter 20 cm (depth) weakest at the 0 cm, 10 cm, and 20 cm away from epicenter. (Actual results are more detailed and include magnitude measurements)	
<b>Conclusions/Discussion</b> The data supports the hypothesis partially in that 2 out of 3 times the 35 cm depth will have the highest magnitude and area of affect, it was not supported in that the 50 cm depth was the strongest magnitude, but not area of affect. This data therefore can be applied to the purpose in that if an earthquake with a deeper focus occurs, the earthquake will be more far spread, but it will have less strength, and if the focus os shallow, the earthquake will cause more damage, but only within a limited range of the epicenter. (This data can be applied to the Haitian and Chilean earthquakes, as the Chilean earthquake was more shallow and therefore though having a great magnitude, had less area of affect)	
<b>Summary Statement</b> The Effect of the Depth of a Focus on the Magnitude of an Earthquake.	
<b>Help Received</b> Dad helped solder wires together.	