



# CALIFORNIA STATE SCIENCE FAIR 2016 PROJECT SUMMARY

<b>Name(s)</b> <b>Hudson J. Billock</b>	<b>Project Number</b>  36611
<b>Project Title</b> <b>Ultraviolet Light Levels in the Upper Atmosphere</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of the study was to see how UV levels changed as altitude increased.</p> <p><b>Methods/Materials</b> A weather balloon is a large balloon that can go into the upper atmosphere. I had a space balloon carrying the following: a payload with cameras, a raspberry pi, which is a small computer, that had a UV light sensor on it, and a Spot GPS so we could find the balloon when it came down. We bought the UV sensor from ADAfruit, part number GUVA-S12SD.</p> <p><b>Results</b> The UV levels increased slightly as the altitude increased. My hypothesis was that the UV levels would go up as altitude increased, which was correct.</p> <p><b>Conclusions/Discussion</b> In my research, I found that the atmosphere filtered the UV light, so the UV levels should go up, since there is less atmosphere to filter it. This did happen, but The UV levels did not go up as much as I thought they would. My data did show that UV levels increased at higher altitudes, but there was a lot of spread in my data. One reason that there was a wide spread in the data was that I had so many data points. One way this project was imperfect was the swing of the payload when I was measuring the data. The motion could throw the data off because one measurement could be facing away from the sun, making the UV measurement less than it really was, while another could be facing towards the sun, making the measurement higher than it really was. I was fascinated by the pictures the camera took on the balloon. It was really cool to be able to see the curvature of the earth. Another project idea is that I could measure UV light in daily activities such as taking a walk at different times of the day like morning, noon, and night. This would be important to know because UV light can be harmful, so it would be good to know when to protect yourself. My hypothesis would be that activities closer to noon would have higher UV light levels than ones farther away from noon.</p>	
<b>Summary Statement</b> I launched a weather balloon with an Ultraviolet light sensor on it to read UV levels in the upper atmosphere.	
<b>Help Received</b> My dad helped me to launch the balloon and program the UV sensor.	