



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Emily Rose Randall	Project Number J0813
Project Title Infrared Light and Carbon Dioxide Gas: A Planetary Blanket	
Abstract Objectives/Goals The purpose of my experiment was to verify that Carbon Dioxide gas blocked the transmission of infrared light as I learned in did when my science class studied climate change and greenhouse gasses. Methods/Materials Small Glass Bowl, 5 Gallon Fish Tank, Dish Remote Model 5.3IR, Dry Ice, Cyber-Shot Digital Camera, Ring Stand and Clamps, Vernier Labquest, Vernier Light Sensor, Acculab Mass Scale, Lab Notebook, Saran Wrap, 1 Cup Measuring Cup, Spoon, Blue Masking Tape 1.Place the remote control and light sensor in clamps on opposite sides of the tank. 2. Adjust remote control and light sensor to point at each other through the tank. 3. Place masking tape over remote buttons to block their light. 4. Turn off all the lights. 5. Press the aux button on remote, then hold the power button down. 6. Look to see no visible light is shining from the remote. 7. Use camera to make sure the remote is only shining infrared light. 8. Turn on the lights. 9. Pour a cup of hot water into a small bowl and measure its temperature. 10. Put bowl into a tank. 11. Place finger over Vernier light sensor and calibrate to zero. 12. Set the sample time to 100 seconds and the sample rate to 5 seconds. 13. Cut a cube of dry ice and measure its mass. 14. Turn off all the lights. 15. Press and hold the remote's main power button. 16. Start time on Vernier Labquest. 17. Wait 10 seconds then drop dry ice into bowl. 18. Cover top of tank with plastic wrap. 19. Record data for 100 sec and repeat with different masses of CO2. Results The results show that the more carbon dioxide there was, the shorter amount of time it takes for the infrared light to be completely blocked. The result varified that infrared light is blocked by carbon dioxide gas. When we used a one gram cube of dry ice, the infrared light never got completely blocked but did reduce to about half as much. This result showed that inrared light will pass through small amounts of carbon dioxide gas. The results show that the more carbon dioxide gas in an atmosphere, the more infrared light will be blocked. Conclusions/Discussion My hypothesis was that carbon dioxide gas does not block infrared light. I based my hypothesis on the fact that when I use a remote control, it is not blocked by the carbon dioxide in the air. The results of my experiment indicate that my hypothesis should be considered false.	
Summary Statement My project is about designing an experiment to verify that infrared light is blocked by carbon dioxide gas as is stated in theories on climate change.	
Help Received My dad help get the equipment and taught me how to use the ring stand claps. My dad also helps me learn how to use spreadsheets and to write in a lab book. My Brother helped when taking data. My Mom helped me organize my board.	