KABO
Balloon Fest Protocol

Ki Park
Andrea Carroll
Bryson Loughmiller
Octabio Garcia

Purpose: to measure the change in UVB intensity with altitude, how much clouds decrease UVB intensity and compare how different materials decrease UVB ray intensity.

Equipment: Balloon, helium, gondola, stopwatch, 1000 ft. cord, bright orange ribbons, UVB sensor, barometer, LabPro, laptop, sunglasses, water, cloth, glass, sunscreen

Payload: Gondola, LabPro, UVB sensor, barometer

Weight: N/A

LabPro Remote Data Setup:

1. Connect sensors to LabPro and LabPro to computer
2. Verify fresh batteries in LabPro
3. Start Logger Pro software and open saved experiment file
4. Verify that "Interface is connected"
5. Open Experiment menu, select Show Sensors:
Ch1 = barometer (kPa) Ch2 = UVB sensor (mW/m^2)
6. Open Experiment menu, select Data Collection:
Mode = 1 sample/second, Check oversampling
7. Open Experiment menu, select Remote Setup:
Review Settings
Select OK
Make sure the yellow LED on LabPro is turned ON and stays on
8. Disconnect the USB cable from the LabPro. Logger Pro and the Laptop computer can be shutdown.

Ground Procedure:

1. Test different materials on how it blocks UVB rays.
2. Point sensor straight up to the sun
3. Measure how much UVB rays enter through it using the Logger Pro software
4. Rub sun screen on a flat panel of plexi-glass
5. Hold plexi-glass directly above the sensor towards the sun and continue to hold while testing
6. Measure how much UVB rays enter the sensor again
7. Once measurements are completed with the plexi-glass, remove the panel
9. Place panel where it won't affect the readings of the sensor
10. Place sunglass lenses to the sensor
11. Use the Logger Pro to get measurements
12. Once measurements are recorded, remove lens.
13. Repeat Step 10 through 12 using the following materials:
a. wet dark cloth
b. wet light cloth

c. dry dark cloth
d. dry light cloth

Flight Procedure:

1. Fill balloon with helium
2. Verify lift
3. Secure metal ring over the opening using a lot of duct tape
4. Attach all equipment to metal ring
5. Verify equipment working
6. Let out 100 ft. of cord and tie orange ribbon
7. Repeat Step 6 until all cord is out
8. Collect data
9. Bring the balloon down

LabPro Remote Data Recovery:

1. Verify that the green light is still flashing on the LabPro every sample interval
2. Press the Start/stop button to stop the collecting of data. The LabPro should beep once and all lights go out.
3. Restart Logger Pro and the Laptop computer if needed.
4. Reconnect the LabPro (USB) to the computer and verify that the "Interface is connected"
5. "Remote Data Available" window opens:
Select "yes"
6. "Retrieve Remote Data" window open:
Select "Into current file" & "Make data available for multiple retrieval"
Select "OK"
7. Once data is verified and saved:
Open Experiment menu
Select Reconnect Interface
8. "Remote Data Available" window opens:
Select "No" to erase data on LabPro

Data Analysis Procedure:

1. Repeat the above three procedures as needed to get good data. Save each set even if not complete.
2. When all Flight tests are done:
Be sure all data sets are saved and labeled.
3. Analyze the data in the Logger Pro program
a. Add a new calculated column named "UVB intensity"
4. Transfer graphs to PowerPoint
a. In LabPro, select graph window, Ctrl-C to copy the graph
b. Open PowerPoint Presentation, select new page, Ctrl-V to paste the graph on that page.