

Spring 2024 GLOBE Workshop: Atmosphere Changes during the Solar Eclipse in Dallas, Texas

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Abstract: Summary- Sixth graders observed cloud cover and measured the air and surface temperatures two hours before and two hours after the solar eclipse on April 8, 2024. Students took three surface area temperature readings at each time interval with an infrared thermometer from three locations on the soccer field. The average of the three surface temperature readings was recorded at each interval. The air temperature data was collected at the onsite weather station at St. John's Episcopal School.

Background Information:

The energy from the Sun warms up our planet. When there are changes in the amount of sunlight we get, there are also changes in the air temperature, clouds, and wind. A total solar eclipse occurs when the Moon blocks the Sun completely, as on April 8, 2024 in North America. This research was conducted at St. John's Episcopal School in Dallas, Texas which experienced 100% eclipse cover at 1:42PM.

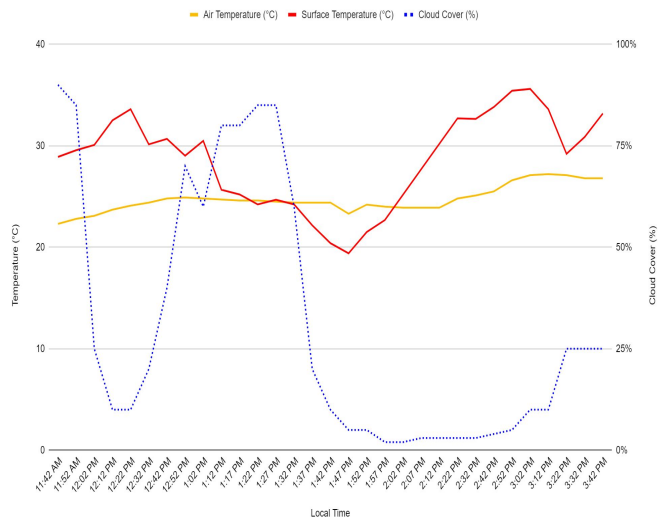
Research Question:

How does air temperature and surface temperature change during a solar eclipse?

Claim/Hypothesis:

As the Sun gets blocked by the Moon, the air temperature and surface temperature will decrease.

Dataset: [St. John's Episcopal School Atmosphere Changes Before and After solar eclipse.](#)



Evidence/Conclusions:

At the start of the data collection, there was 90% cloud coverage. The concern was that the eclipse would not be viewable due to cloud coverage on that day. The cloud coverage varied up until about 10 minutes before totality. Air and surface temperature decreased as the moon began to cover the sun. The surface temperature decreased more rapidly than the air temperature. Both air and surface temperatures rose after the eclipse. The cloud coverage decreased to about 10% at the time of totality and increased slightly until the end of the data collection.

Next Steps/Future Research:

To become more proficient in cloud observation, students will work on determining the percentage of cloud cover, the type of clouds present, and the altitude of the clouds. Additionally, students will focus on making other atmospheric observations, developing research questions, and collecting relevant data.

Bibliography/Sources:

The GLOBE Program. *GLOBE Educator One-Week Pacing Guide: Experiencing a Solar Eclipse.*
<https://www.globe.gov/documents/18527/37661214/Solar+Eclipses>