

Effects of Cloud Cover on Prairie Surface Temperature

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Introduction

- Cloud cover affects surface temperature because of blocking of solar radiation.
- Surface temperature affects the growth of vegetation, evaporation rates, and animal behavior.
- Surface temperature can also impact air temperature due to conduction.
- Literature Review – To be completed at a later date

Research Question/Hypothesis

How does cloud cover affect surface temperature? Our hypothesis is that if cloud cover decreases, surface temperature will increase.

Purpose

We're conducting this study to mimic the effects of the upcoming solar eclipses. Data collection will be the same during those eclipses.

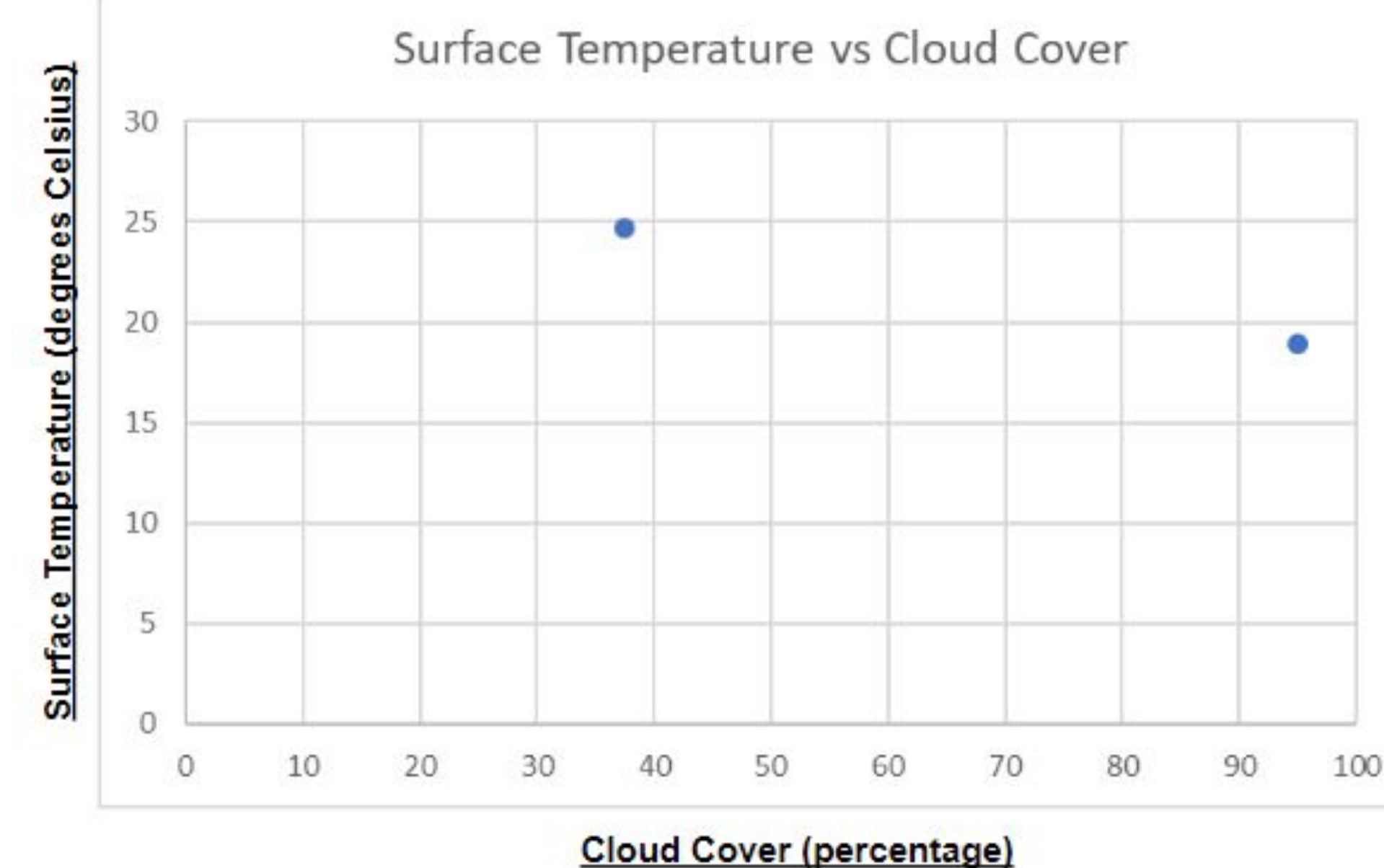
Methods & Materials

- Data was taken daily at approximately the same time using digital infrared thermometers according to GLOBE protocols.
- Surface temperatures presented are the average of nine recorded temperatures.
- Cloud cover observations were taken using GLOBE protocols.

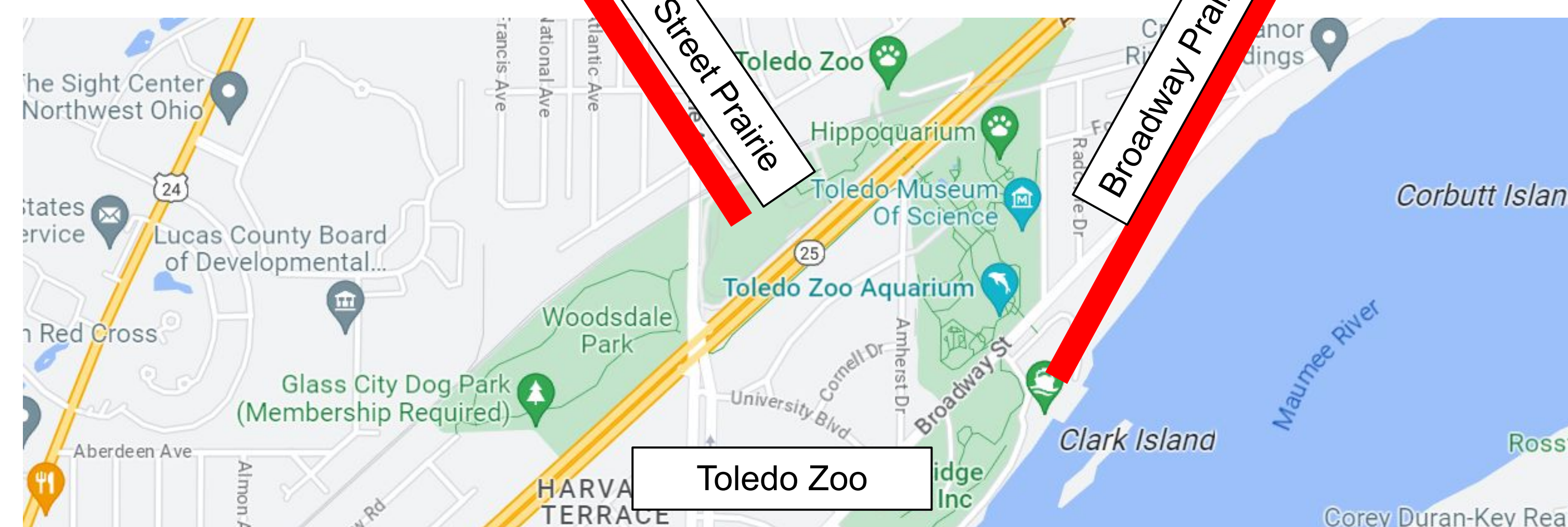
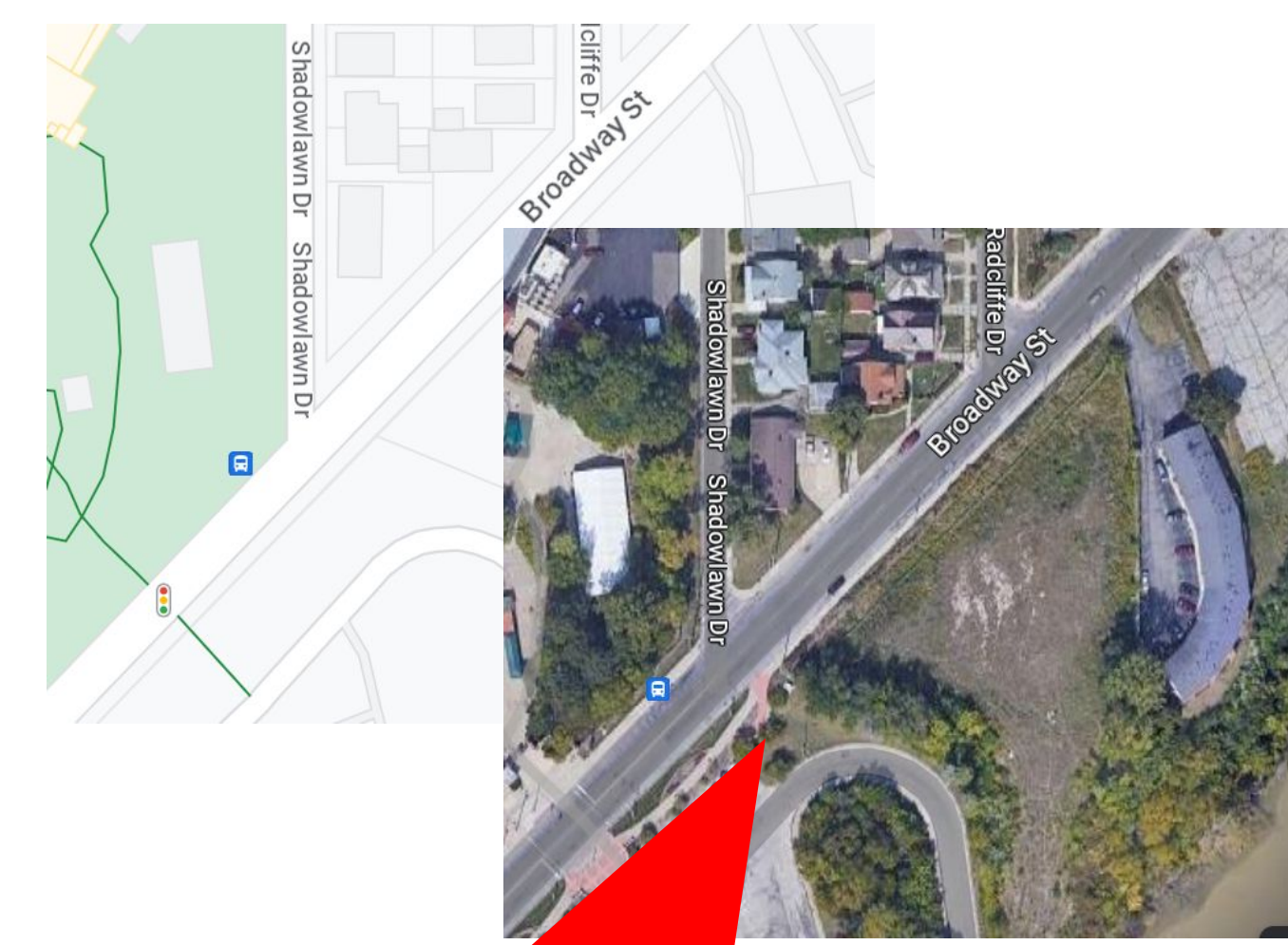
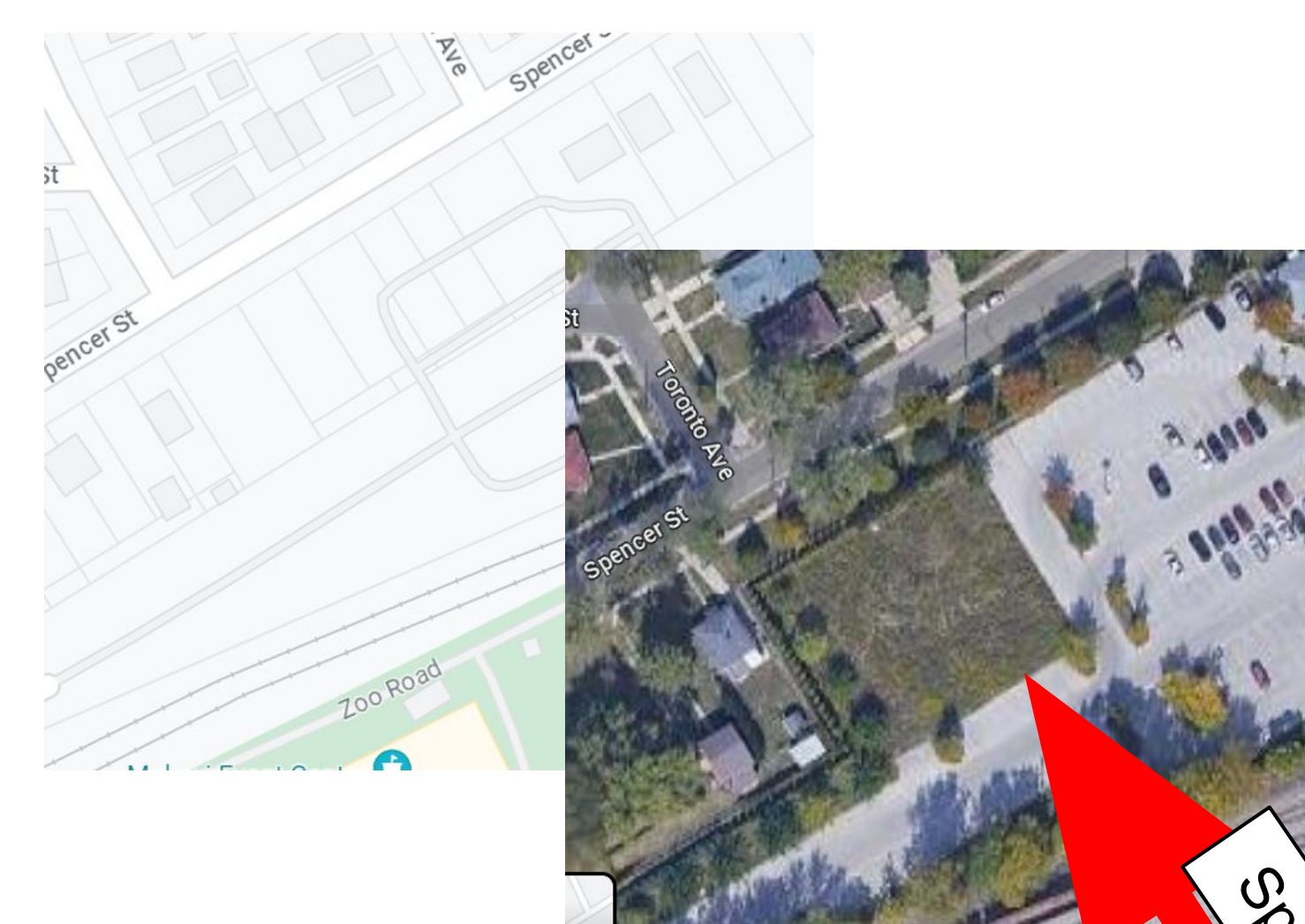
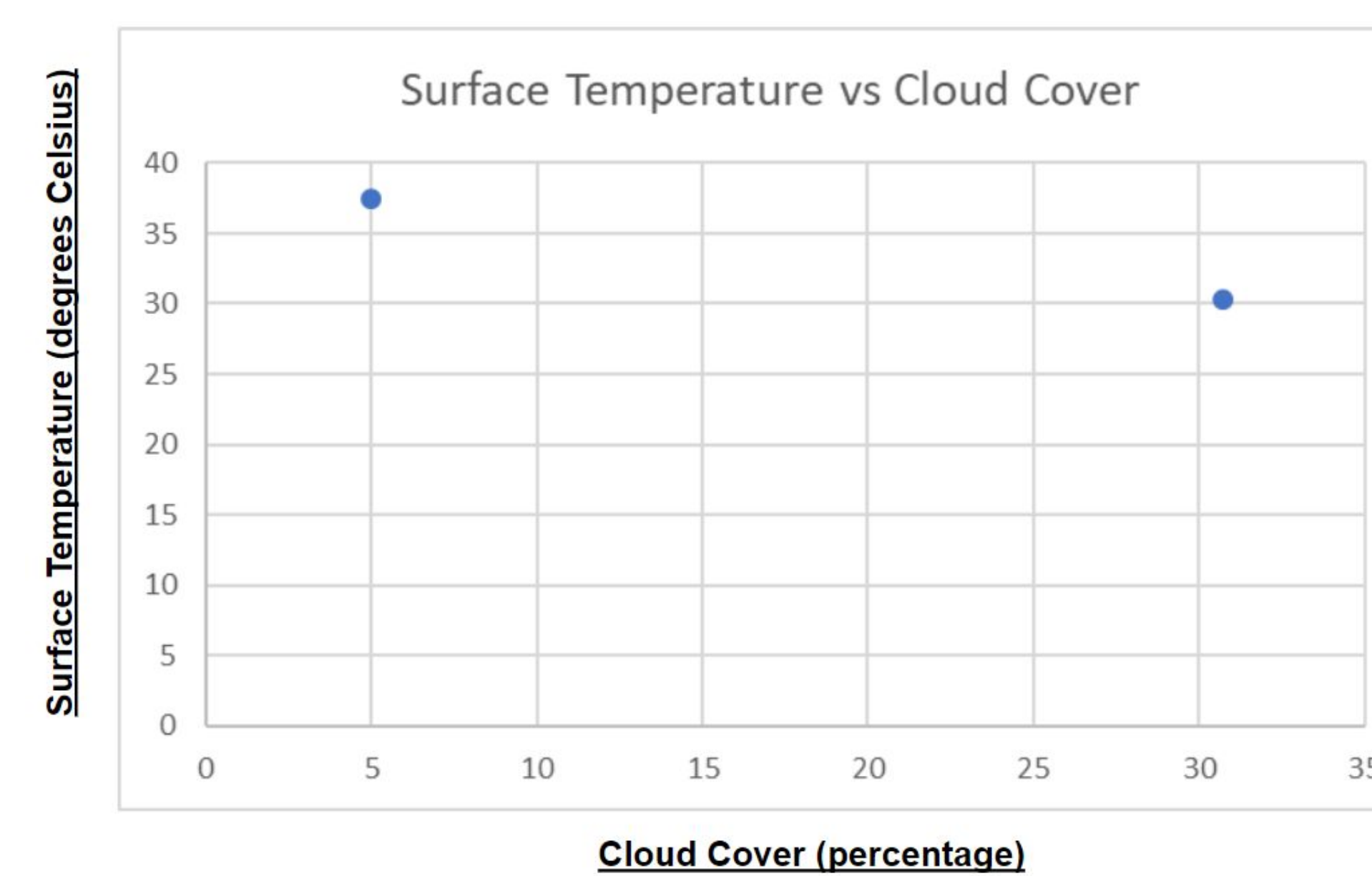


Cloud cover has an inverse effect on surface temperature. If cloud cover increases, surface temperature decreases. If cloud cover decreases, surface temperature increases.

Spencer Street Prairie



Broadway Street Prairie



Abstract

We were interested in how cloud cover affects surface temperature as a precursor to how our prairie at Glenwood Middle School may be affected by the April 8, 2024 total solar eclipse. We found that as cloud cover decreased, surface temperatures increased. This study mimics the activities our students will complete throughout this school year.

Results

Broadway Street Prairie

Date	Time	Air Temperature in Degrees Celcius	Surface Temperature in Degrees Celcius	Percentage of Cloud Cover
28-Jun	11:19	24.3	30.7	5
29-Jun	11:46	27.6	30.3	37.5

Spencer Street Prairie

Date	Time	Air Temperature in Degrees Celcius	Surface Temperature in Degrees Celcius	Percentage of Cloud Cover
27-Jun	11:02	21.1	18.9	95
29-Jun	11:23	25.8	24.7	37.5

Conclusion

- A decrease in cloud cover resulted in an increase in surface temperature
- We predict that, during the 2024 total solar eclipse, we will see the same phenomenon because the eclipse will mimic increased cloud cover observations.
- We found that our hypothesis was supported
- We realize the data is limited in this project

Acknowledgments

We would like to acknowledge the Toledo Zoo, BGSU, the University of Toledo, and Xcite Learning, along with Jodi, Sara, Mitch and Kevin, who have been a great teaching and support team this week. Thanks to our fellow classmates, who are highlighted in our photos!

References

- GLOBE Mission Earth Professional Development packet