How does the surface temperature in our school prairie compare to the school parking lot?

Team Member Names: Graeme, Selena, Mason

[4th Grade Science]

Advisor Names: Mrs. Kristy DiSalle, Dr. Jodi Haney

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The GLOBE Program

Our Team

Photographer:
Mrs. DiSalle

Experimenters & Data Recorders:
Graeme, Selena, and Mason

Why are Native Prairies Important?

- Increases pollinator population
- Resting spot for migratory birds
- Removes Carbon Dioxide from our atmosphere
- Reduces runoff
- Food source and habitat for animal species

Research Question & Hypothesis

RQ: How does the surface temperature in our school prairie compare to the school parking lot (next to and not next to cars) in sunny spots?

Hypothesis: We think the parking lot will be hotter than the prairie because of the cars. The sun is hot and shines onto the shiny cars and blacktop, which both attract the sun.

Research Abstract

Our team researched how the surface temperature in our school prairie compares to the school parking lot. The data tells us that the surface of different types of ground attract more heat than others and some ground plants and animals can or can't live on surfaces with those temperatures. The prairie was cooler, and a better place for plants to grow. There were more plants in the prairie, than the parking lot. Prairies are good for our environment for our native plants, because they keep the soil cool in the warm weather and warm in the cool weather. Plants like that. Prairies also increase pollinator population, create resting spots for migratory birds, decrease carbon dioxide, reduces runoff, and provide a food source and habitat for animal species. Some solutions to benefit our environment is to plant more native prairies to reduce our surface temperature and increase our natural resources. If we plant more native prairies then, it will help our environment because it will provide more native plants and animals that help us!

Variables

- Independent Variable:

The different locations were tested, the prairie and the parking lot.

Prairie

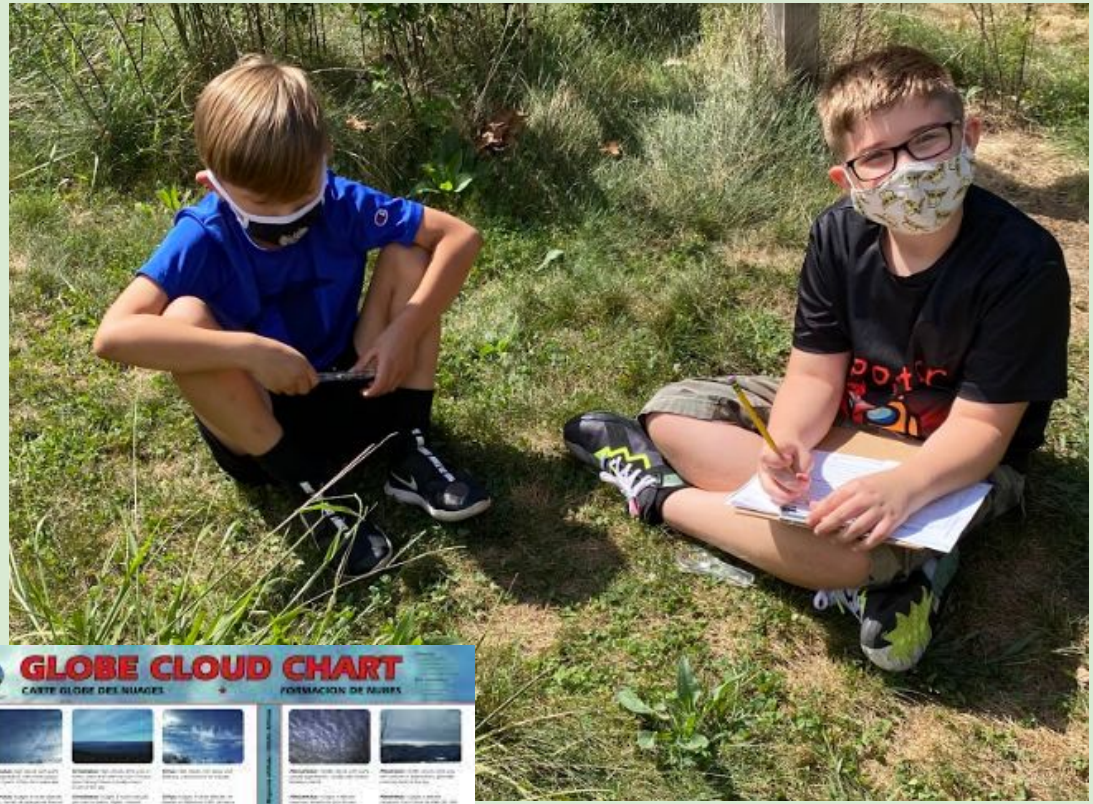
- Dependent Variable:

The surface temperature was measured.
The dependent variable was measured in degrees Celsius with an infrared thermometer.

Parking Lot

Materials

- Infrared digital thermometer
- Clipboard
- Pencils
- GLOBE cloud chart



Step by Step Procedures:

1. Measure and record 4 areas on our school property: prairie, parking lot by cars, parking lot not by cars, and playground blacktop (all in the sun.
2. With each of our different locations, we measured and recorded the surface temperatures 4 times.

Weather Conditions on the Day of Data Collection

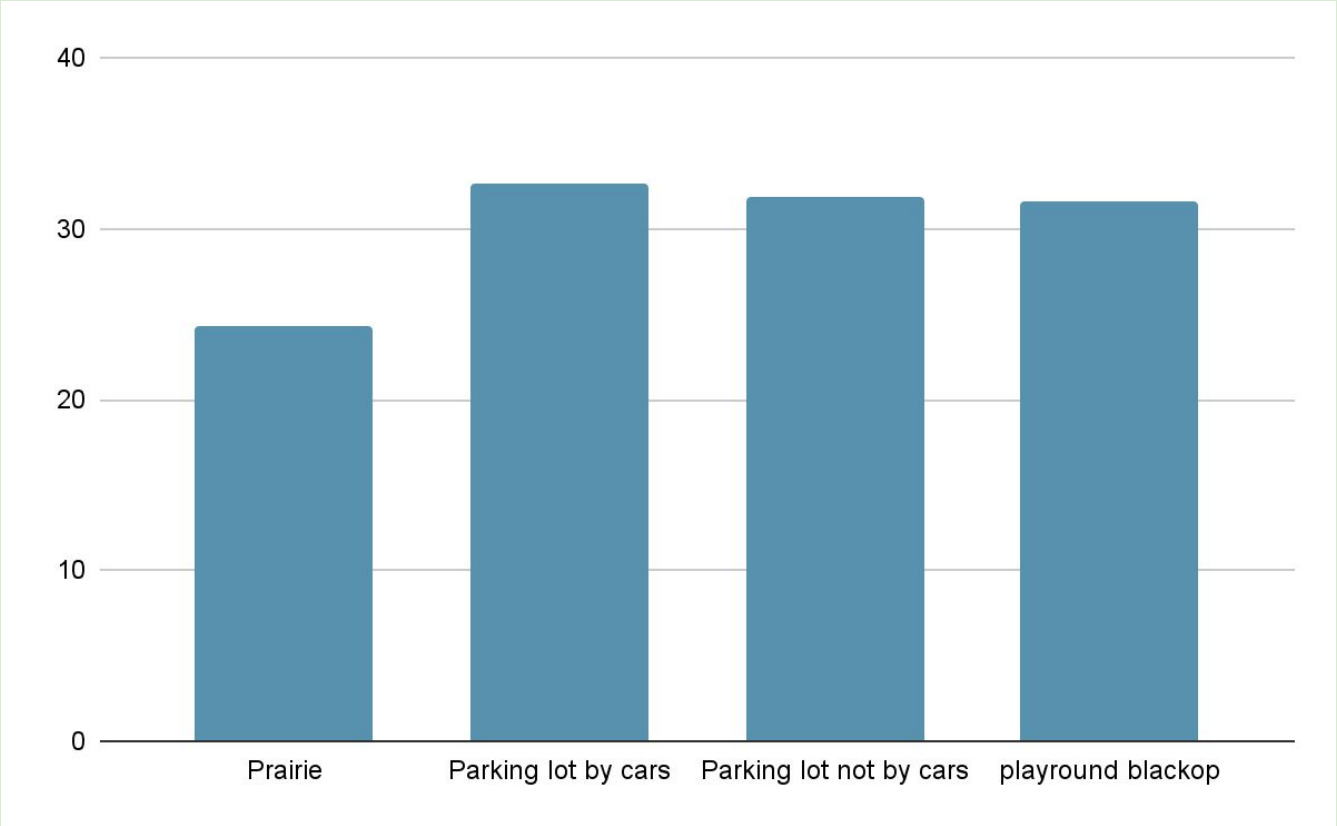
- Mostly sunny
- 72 degrees Fahrenheit
- Little to no wind
- No precipitation

Data Table

Surface Temperature in degrees Celsius of prairie, parking lot (PL) by cars, and not by cars, and playground blacktop

	Prairie - Area 1	Prairie Area 2	Prairie Area 3	PL by cars - Area 1	PL by cars - Area 2	PL not by cars - Area 1	PL not by cars - Area 2	Playground blacktop - Area 1
Measure 1	24.7	25.6	23.5	32.0	33.2	32.4	31.2	31.5
Measure 2	26.0	26.9	21.1	32.2	32.1	32.1	31.4	31.0
Measure 3	25.0	23.2	23.5	31.9	33.6	33.6	32.4	32.0
Measure 4	24.9	26.0	21.8	31.9	33.5	33.5	32.4	32.0
Average Temperatures in degrees Celsius	**24.3**	X	X	**32.7**	X	**31.9**	X	**31.6**

Results: How does the surface temperature compare between the school prairie, parking lot by cars, parking lot not by cars, & the playground blacktop?

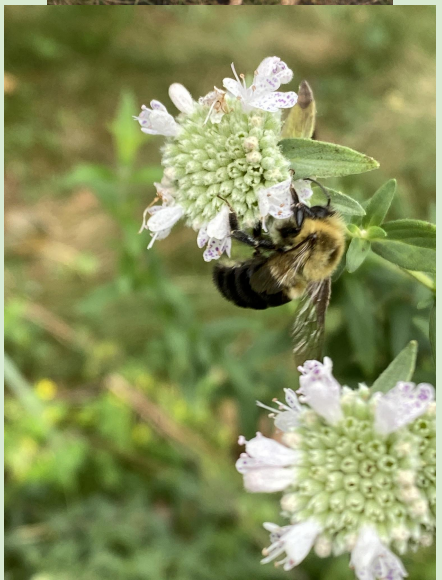


Conclusions:

- The prairie had the coolest average surface temperature.
- The parking lot by the cars had the warmest average surface temperature.
- The parking lot not by cars and the playground blacktop were very close in average temperature (only 0.3℃ difference)

Discussion: What does this mean?

- The prairie had the coldest average temperature because the plants cool the area through water evaporating from the plants and soil.
- The prairie kept our plants cool during the warm day.
- The parking lot by the cars had the warmest average temperature because the metal cars attract heat.
- The parking lot not by cars and the playground blacktop average temperatures were only 0.3℃ different because they were both open blacktop areas in the sun.



Discussion: Possible Solutions!

- Plant more native prairies to reduce our surface temperature.
- Use less electricity.
- Don’t pollute or litter.
- Car pool and share rides.
- Conserve water and our natural resources.

Thank You.!

- Thank you Mrs. DiSalle and Dr. Haney for helping us do GLOBE research.
- Do you have any questions about our research?

Our teacher: Kristy DiSalle
4th Grade Elementary Science Teacher
Dorr Elementary School
Toledo, Ohio

kristydisalle@springfield-schools.org