

DOMED STADIUMS: A COMPARATIVE STUDY

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ABSTRACT

This project is titled “DOMED STADIUMS: COMPARITIVE STUDY” and the project is about why doesn't N.F.L. domed stadiums have a black top. The reason why this project can help is to save money cause of heating and cooling.

This project was very difficult first it was hard to come up with a title. Then it was hard find material to build the domed stadiums. After that the problem was to get a way to take temperatures. An infrared thermometer was used to take the surface temperatures. Then in middle of taking the data on day three one of the domes had fallen over so it had to rebuild again. Finally, type up the results and it should work all out.

PROBLEM

Why do some N.F.L. teams with dome stadiums have white tops or blue tops and not black tops? This has interested me because I really like football and I want to become an N.F.L. superstar one day. Also, like what happened in Minnesota, I don't want the top of a domed stadium falling in on me.

HYPOTHESIS

I think that in my experiment it should be warmer in a black top dome than in a white top or blue top dome.

MATERIALS

- IRT (Infrared Thermometer) Fluke63 with oven mitt

- GPS (Global Positioning System) Garmin eTrek
- Trash bags
- Sticks, poles
- Bricks
- Tape

PROCEDURE

(Also the GLOBE protocol)

Purpose

- To measure surface temperature

Overview

- Surface temperature is measured with a hand-held Infrared Thermometer (IRT) that, when necessary, is wrapped in a thermal glove or has been placed outdoors for at least 30 minutes prior to data collection. The instrument is pointed at the ground to take surface temperature readings. Cloud Protocols are performed along with the Surface Temperature Protocol.
1. Get trash bag
 2. Then get a pole and hammer into ground
 3. Put trash bag over pole
 4. Put bricks on all four corners of trash bag and u have your dome
 5. Then you take your temperatures
 6. Type the data

RESULTS

1st Day; 4th period : Blue 5.4^oc, 5.0^oc, 3.8^oc, 5.0^oc, 4.8^oc, 4.8^oc, 4.8^oc, 4.8^oc, 5.2^oc for an average of 4.68^oc

White 4.8^oc, 3.8^oc, 4.6^oc, 4.4^oc, 4.6^oc, 4.4^oc, 4.8^oc, 5.0^oc, 4.8^oc for an average of 4.57^oc

Black 4.4^oc, 4.4^oc, 4.8^oc, 4.6^oc, 4.8^oc, 4.8^oc, 4.8^oc, 4.8^oc, 4.8^oc for an average of 5.37^oc

Control 4.8^oc, 5.8^oc, 4.6^oc, 5.2^oc, 5.4^oc, 6.2^oc, 5.4^oc, 5.4^oc, 5.0^oc for an average of 5.31^oc

8th period: Blue 2.2^oc, 4.8^oc, 8.2^oc, 5.2^oc, 7.2^oc, 5.4^oc, 1.8^oc, 7.4^oc, 4.60^oc, an average of 5.2^oc

White 5.6^oc, 5.4^oc, 5.6^oc, 4.8^oc, 2.8^oc, 4.0^oc, 3.2^oc, 6.4^oc, 2.4^oc, for an average of 4.6^oc

Black 3.8^oc, 1.8^oc, 4.6^oc, 8.7^oc, 5.8^oc, 10.1^oc, 7.2^oc, 4.4^oc, 4.4^oc, for an average of 6.5^oc

Control 1.4^oc, 2.4^oc, 3.2^oc, 1.4^oc, 1.8^oc, 1.2^oc, 0.8^oc, 0.6^oc, 0.8^oc, for an average of 1.5^oc

Day 2 4th period : Blue 4.6^oc, 5.6^oc, 5.0^oc, 5.4^oc, 4.6^oc, 4.6^oc, 4.6^oc, 5.4^oc, 4.8^oc, for an average of 5.0^oc

White 5.2^oc, 4.4^oc, 4.6^oc, 4.4^oc, 4.6^oc, 4.4^oc, 4.4^oc, 3.4^oc, 4.0^oc, for an average of 4.28^oc

Black 4.0^oc, 4.2^oc, 4.6^oc, 4.2^oc, 4.0^oc, 6.2^oc, 4.0^oc, 4.6^oc, 4.8^oc, for an average of 4.5^oc

Control 3.4^oc, 4.8^oc, 4.8^oc, 5.8^oc, 4.2^oc, 4.6^oc, 4.4^oc, 5.0^oc, 2.2^oc, for an average of 4.3^oc

Period 8th : Blue 4.2^oc, 4.4^oc, 4.4^oc, 3.4^oc, 3.6^oc, 3.8^oc, 3.6^oc, 4.2^oc, 4.0^oc, for an average of 3.8^oc

White 4.0^oc, 4.4^oc, 3.6^oc, 3.0^oc, 3.2^oc, 5.2^oc, 5.4^oc, 3.2^oc, 5.2^oc, for an average of 4.1^oc

Black 5.6^oc, 7.4^oc, 6.6^oc, 6.0^oc, 5.6^oc, 6.2^oc, 5.8^oc, 6.2^oc, 6.8^oc, for an average of 6.2^oc

Control 4.0^oc, 7.0^oc, 8.2^oc, 6.8^oc, 5.8^oc, 2.2^oc, 1.0^oc, 3.4^oc, 7.4^oc for an average of 5.0^o

Day 3 4th period : Blue 4.2^oc, 4.4^oc, 3.4^oc, 3.6^oc, 3.8^oc, 3.6^oc, 4.2^oc, 4.0^oc, 3.4^oc, for an average of 3.8^oc

White 4.0^oc,4.4^oc,3.6^oc,3.0^oc,4.2^oc,5.2^oc,5.4^oc,3.2^oc,3.6^oc for an average of 4.1^oc

Black 5.6^oc,7.4^oc,6.6^oc,6.0^oc,5.6^oc,6.2^oc,5.8^oc,6.2^oc,6.8^oc, for an average of 6.2^oc

Control 4.0^oc,7.0^oc,8.2^oc,6.8^oc,5.8^oc,2.2^oc,1.0^oc,3.4^oc,7.4^oc, for an average of 5.0^oc

8th period : Blue 6.2^oc,5.8^oc,6.2^oc,6.2^oc,6.2^oc,6.2^oc,6.2^oc,6.2^oc,5.8^oc, for an average of 6.1^oc

White 6.2^oc,5.2^oc,6.2^oc,6.0^oc,5.6^oc,5.0^oc,5.2^oc,5.4^oc,5.6^oc, for an average of 5.6^oc

Black 7.2^oc,6.4^oc,6.6^oc,6.8^oc,7.0^oc,6.4^oc,6.2^oc,6.8^oc,7.2^oc, for an average of 6.7^oc

Control 5.8^oc, 6.0^oc, 5.2^oc, 6.3^oc, 5.0^oc, 5.4^oc, 5.6^oc, 3.6^oc, 5.2^oc, for an average of 5.6^oc

Day 4 4th period: Blue -0.4^oc, -0.4^oc, 0.4^oc, -0.4^oc, 0.2^oc, 0^oc, 0.6^oc, -0.6^oc, 0.4^oc, for an average of -0.02^oc

White -0.8^oc, -0.6^oc, -0.6^oc, -0.6^oc, -0.8^oc, -0.4^oc, -0.08^oc, -0.6^oc, -0.2^oc, for an average of -0.68^oc

Black 2.2^oc, 1.8^oc, 1.4^oc, 1.2^oc, 1.2^oc, 1.4^oc, 1.6^oc, 0.8^oc, 1.4^oc, 1.4^oc, for an average of 1.4^oc

Control 0.2^oc,-0.2^oc,-0.6^oc,-0.4^oc,-0.4^oc,-0.2^oc,0^oc,-0.06^oc,0.8^oc, for an average of -0.095^oc

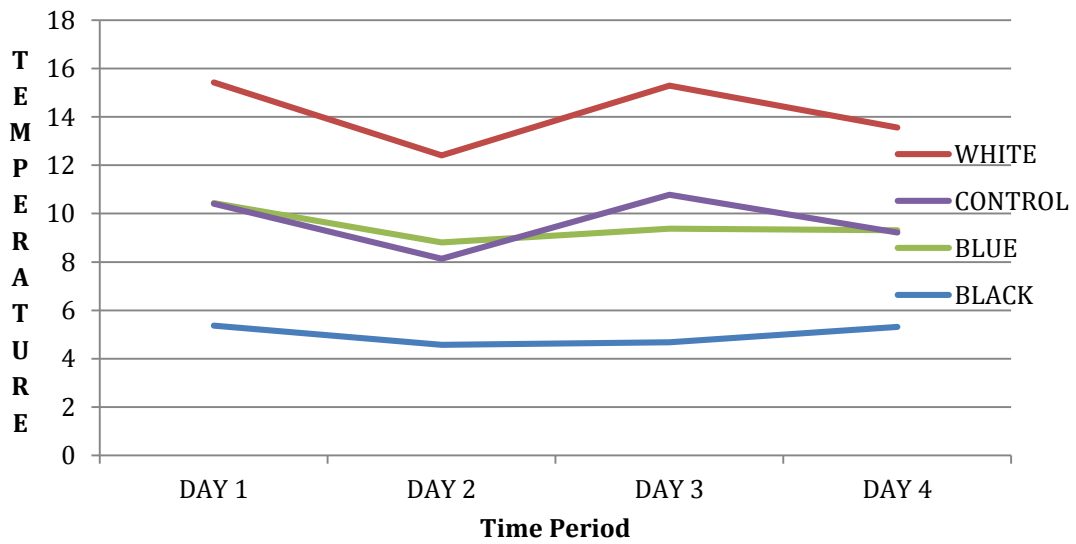
8th period: Blue 5.8^oc, 5.2^oc, 4.2^oc, 4.6^oc, 5.2^oc, 5.0^oc, 4.2^oc, 5.6^oc, 4.2^oc, for an average of 4.8^oc

White 4.8^oc, 4.6^oc, 4.4^oc, 4.8^oc, 5.0^oc, 5.2^oc, 5.0^oc, 4.6^oc, 4.8^oc, 4.8^oc, for an average of 4.8^oc

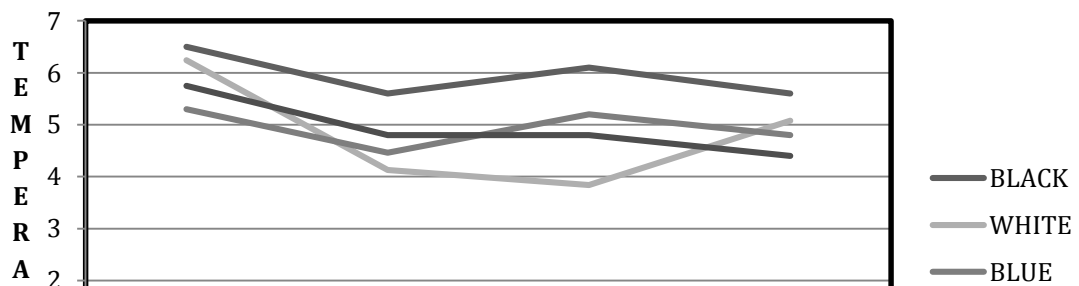
Black 5.6^oc, 5.8^oc, 6.0^oc, 5.8^oc, 6.4^oc, 5.6^oc, 5.8^oc, 6.0^oc, 5.8^oc, for an average of 5.75^oc

Control 4.6^oc, 4.6^oc, 4.2^oc, 4.6^oc, 5.0^oc, 4.6^oc, 4.2^oc, 4.0^oc, 4.2^oc, for an average of 4.4^oc

Surface Temperature results (4th period)



Surface Temperature(8th Period)



CONCLUSION

My data supported my hypothesis for all four days. My hypothesis was that in my experiment it should be warmer in a black top dome than in a white top or blue dome top. The reason why I think the top of the domed stadiums should be black because it can also stop major disasters. A disaster it can stop is a domed stadium collapsing like Minnesota Vikings did do to the snow. Now Minnesota has a white top domed stadium. Maybe if they had a black top domed stadium this could have been prevented because black absorbs heat so it could have melted some of the snow off.

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