WHAT TYPE OF SURFACE WE SHOULD USE TO SAVE THE WORLD?

presenting:

HAGEFEN SCHOOL

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Abstract

- Context of research: In recent years there has been global warming that causes climate changes and severe natural phenomena. Inside the cities the warming is increasing and this is how the phenomenon of urban heat island was created. In our research, we check which surface should be used to mitigate these phenomena, and to result in a lower temperature being emitted from the ground.
- Research question: What is the connection between the type of ground cover and the temperature of the infrared radiation reflected from it?
- Objectives set: We measured different surfaces inside our urban school and examined which surface is better to use in terms of heat emission.
- Brief methods description: We measured three surfaces across the school: concrete, soil and astroturf (synthetic grass) exposed to the sun.
- Results: synthetic grass (astroturf) reflects the most infrared radiation, concrete reflects less, and soil reflects the least radiation.
- Conclusions: synthetic grass (astroturf) causes environmental warming, compared to concrete which reflects less radiation, and soil which reflects the least radiation meaning it protects better against environmental warming.
- Recommendations for a way forward: check where it is possible to replace surfaces within the city, and plant more trees that will provide shade, to lower the returned temperatures.

- Keywords that emphasize key ideas in the paper: temperature, surface, urban heat.

Research Question

What is the connection between the type of ground cover and the temperature of the infrared radiation reflected from it?

Hypothesis

Our hypothesis was that the synthetic grass (astroturf) will return the most heat compared to the concrete and soil which will return the least heat.

Scientific importance

In recent years there has been global warming that causes climate changes and severe natural phenomena. Inside the cities the warming is increasing and this is how the phenomenon of urban heat island was created. In our research, we check which surface should be used to mitigate these phenomena, and to result in a lower temperature being emitted from the ground. According to the results of our research, we can know what type of surface should be used, in order to get a lower temperature above the ground. We will measure different surfaces inside our urban school and examine which surface is better in terms of heat emission.

Global Warming

Since the Industrial Revolution, the global annual temperature has increased in total by a little more than 1 degree Celsius, or about 2 degrees Fahrenheit. Between 1850—the year that accurate record keeping began—and 1980, it rose on average by 0.07 degrees Celsius (0.13 degrees Fahrenheit) e very 10 years. Since 1981, however, the rate of increase has more than doubled: For the last 40 years, we've seen the global annual temperature rise by 0.2 degrees Celsius, or 0.36 degrees Fahrenheit, per decade.

The result? The earth has never been hotter. The 10 most recent years are the warmest years on record. And the warmer it gets, the more probable it becomes that we trigger climate tipping points (such as rapid glacier melt) that can transform natural systems into entirely different states and lead to more warming.

In 2015, the Paris Agreement codified the recommendation of climate scientists to limit global warming to 1.5 degrees Celsius. Working toward that goal continues to give us our best chance to stave off the worst, most devastating effects of climate change: the extreme droughts, wildfires, floods, tropical storms, and other disasters that are so widespread and costly to both our infrastructure and our health. (1)

Global warming refers to the increase in the planet’s overall average temperature in recent decades. Natural processes have always affected Earth’s temperature and climate, but more recently, the planet’s temperature and climate have changed at a higher pace than nature alone can explain. These rapid changes are due to human activities and the widespread use of fossil fuels for energy. (2)

Glaciers are melting, sea levels are rising, cloud forests are dying, and wildlife is scrambling to keep pace. It has become clear that humans have caused most of the past century's warming by releasing heat-trapping gases as we power our modern lives. Called greenhouse gases, their levels are higher now than at any time in the last centuries.

We often call the result global warming, but it is causing a set of changes to the Earth's climate, or long-term weather patterns, that varies from place to place. While many people think of global warming and climate change as synonyms, scientists use “climate change” when describing the complex shifts now affecting our planet’s weather and climate systems—in part because some areas actually get cooler in the short term.

Climate change encompasses not only rising average temperatures but also extreme weather events, shifting wildlife populations and habitats, rising seas, and a range of other impacts. All of those changes are emerging as humans continue to add heat-trapping greenhouse gases to the atmosphere, changing the rhythms of climate that all living things have come to rely on. (3)

Urban heat island

An urban heat island is a metropolitan area that has much warmer temperatures than the rural areas surrounding it. Heat is created by energy from all the people, cars, buses, and trains in big cities. The difference in temperature between urban and less-developed rural areas has to do with how well the surfaces in each environment absorb and hold heat. Urban heat islands are created in areas like places that have lots of activity and lots of people. (4,5)

Urban areas are densely populated, meaning there are a lot of people in a small space. Urban areas are also densely constructed, meaning buildings are constructed very close to each other. When there is no more room for an urban area to expand, engineers build upwards, creating skyscrapers. All this construction means waste heat— and heat that escapes insulation has nowhere to go. It lingers in and between buildings in the urban heat island.

Nighttime temperatures in urban heat islands remain high. This is because buildings, sidewalks, and parking lots block heat coming from the ground from rising into the cold night sky. Because the heat is trapped on lower levels, the temperature is warmer. (5)

The main causes are changes in the land surface by urban development along with waste heat generated by energy use. As population centers grow, they tend to change greater areas of land which then undergo a corresponding increase in average temperature. (6)

Research Methods

We've done our researches in three surfaces across the school: concrete, soil and astroturf (synthetic grass).

We measured each surface in the same way, the only thing we changed was the surface type.

The data was gathered using an Infrared Thermometer (IRT). In each surface we took 9 measurements randomly, where all the surfaces were exposed to the sun. In addition to the globe measurements, we also typed in the same measurements in a google sheet that we used as our backup data.

Here are the tables of our nine monitorings on each surface, which we entered into our Google Sheets file

30.1.25	אדמה	בטון	דשא סינטטי
1	25.3	27.5	34.9
2	26.8	27	33
3	26.8	33.8	33.4
4	23.5	24	35.1
5	21.8	33.4	36.3
6	24.5	29.3	30.7
7	22	29.1	35.7
8	20.4	32.5	30.2
9	24.6	35	28.7
ממוצע	24.0	30.2	33.1

31.1.25	אדמה	בטון	דשא סינטטי
1	23.3	24.5	31.6
2	23.1	27	33
3	23.9	22.8	34.2
4	22.9	28.5	37.9
5	21.2	28.5	40
6	21.9	30.3	38.1
7	22.4	21	41.5
8	21.7	26	39.8
9	23.3	21.1	39.9
ממוצע	22.6	25.5	37.3

2.2.25	אדמה	בטון	דשא סינטטי
1	22.3	30.7	27.9
2	19.5	30.5	30.5
3	23.3	27	34.8
4	21.3	26.1	35.4
5	19.6	30.4	28.4
6	20.9	29.1	27
7	20.3	27.6	34.3
8	19.8	27.7	36.3
9	20.9	24.6	35.3
ממוצע	20.87	28.2	32.2

4.2.25	אדמה	בטון	דשא סינטטי
1	23.2	24.8	38.4
2	26.2	21.7	41
3	27.4	22.6	38.9
4	22.6	21.3	38
5	21.1	26	38.1
6	20.1	19.4	42.4
7	24.6	26.9	38.5
8	26.9	29.5	39
9	26.2	19.8	39.2
ממוצע	24.3	23.6	39.3

3.2.25	אדמה	בטון	דשא סינטטי
1	20.9	19.7	29.2
2	20.5	26	29.4
3	20.7	20.6	28.2
4	20.6	21.2	24.9
5	20.8	20.3	28.1
6	19.4	19.4	28.2
7	21.7	22.6	27
8	20.4	19.5	28.4
9	20.2	20.5	27.6
ממוצע	20.6	21.1	27.9

5.2.25	אדמה	בטון	דשא סינטטי
1	16.3	20.4	19.3
2	16.4	20.3	18.5
3	16.2	20.2	18.9
4	16.8	20.3	19.8
5	16.1	20.2	17.5
6	16.1	19.6	18.7
7	16.4	20.4	20.8
8	16.2	20.5	23.3
9	17.2	18.4	22.2
ממוצע	16.4	20.0	19.9

8.2.25	אדמה	בטון	דשא סינטטי
1	12.9	18.1	13.4
2	13.6	16.7	12.7
3	14.9	17.6	12.6
4	12	16.6	12.5
5	12.2	14.1	13.5
6	12.3	15.2	14.6
7	11.6	17	14.4
8	12.3	18	14.6
9	11.7	14.9	14.9
ממוצע	12.6	16.5	13.7

7.2.25	אדמה	בטון	דשא סינטטי
1	12.6	16	14.7
2	12.7	15.9	14.7
3	12.6	15.6	14.7
4	12.7	15.6	14.6
5	12.8	14.9	14.5
6	12.7	15.5	14.5
7	12.6	14.7	14.5
8	12.7	14.7	14.6
9	12.6	14.6	14.7
ממוצע	12.7	15.3	14.6

9.2	אדמה	בטון	דשא סינטטי
1	12.6	14.5	14.4
2	12.5	14.4	14.5
3	11.4	14.2	14.5
4	11.6	14.1	14.5
5	12.3	14.3	14.6
6	12.5	13.7	14.6
7	13.5	14.4	14
8	13.3	14.3	14.1
9	12.3	14.1	14.2
ממוצע	12	14.2	14.4

10.2	בטון	בטון	דשא סינטטי
1	12.9		
2	12.3		
3	12.5		
4	12.5		
5	12		
6	12.1		
7	12.2		
8	12.1		
9	12.2		
ממוצע	12.3	היה גשם	היה גשם

11.2	אדמה	בטון	דשא סינטטי
1	14.1	17.1	18.1
2	13.3	17.1	16.8
3	14.4	17	17
4	14.5	16.9	16.9
5	14.6	17	17.8
6	14.5	16.9	17.1
7	13.7	17.1	17.2
8	14.9	17.2	17.1
9	14	17	16.9
ממוצע	14.2	17.0	17.2

12.2	אדמה	בטון	דשא סינטטי
1	12.6	14.4	16.6
2	12.7	14.4	16.8
3	12.7	14.4	16.6
4	12.8	14.3	16.7
5	12.6	14.5	17.3
6	12.6	14.5	16.3
7	12.6	14.4	16.4
8	12.8	14.4	17.5
9	12.7	14.3	18.4
ממוצע	12.7	14.4	17.0

13.2	אדמה	בטון	דשא סינטטי
1	16.1	18.1	21
2	14.6	27.1	26
3	14.9	22.6	26.3
4	15.9	21.8	26.7
5	15	20.9	27.1
6	15.8	22.7	26
7	15.8	21.5	28.4
8	16.8	23	21.6
9	16.8	22	23.7
ממוצע	16	22.2	25.2

14.2	אדמה	בטון	דשא סינטטי
1	13.8	15.8	15.7
2	14.6	19.3	16.8
3	14.5	20	14.7
4	13.7	18.4	17.7
5	13.5	15.7	15.1
6	14.2	18.3	19.1
7	13.3	15.8	20.8
8	13.5	19.1	23.6
9	15.5	19.3	26.3
ממוצע	14	18.0	18.9

16.2	אדמה	בטון	דשא סינטטי
1	17.3	25.2	25.9
2	17.2	24.2	25.9
3	17	23.2	25.3
4	17.2	22.6	29.4
5	17	19.1	30.1
6	17	24.7	31.2
7	16.8	26	34.3
8	16.9	23.3	33.3
9	17.5	26.3	34.4
ממוצע	17	23.8	30.0

17.2	אדמה	בטון	דשא סינטטי
1	24.7	30.1	33.2
2	22.1	29.3	36.3
3	22.2	30.2	34.6
4	20.2	29.2	32.9
5	23.2	28.2	32.2
6	23.9	31.9	35
7	22.6	30.1	33.7
8	23.5	29.4	33.5
9	23.5	26.2	38.5
ממוצע	23	29.4	34.4

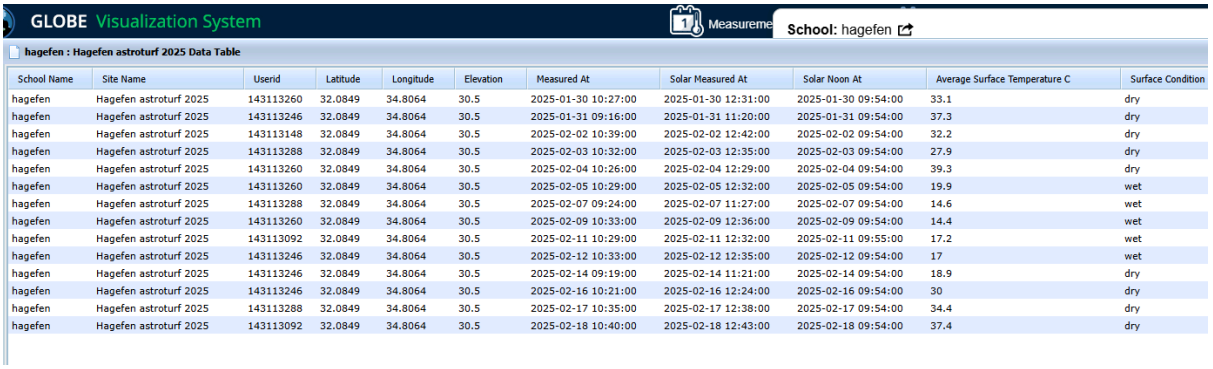
In order to analyze the results we used our class google sheet where we saved the measurements to do an average calculation. That average was then used to create a chart for our result.

Here is the summary table of the averages from all nine measurements we made, to compare them all. This table was also made in our Google Sheets file.

	Suface Temperature					
Date	soil	environement temparature	Concrete	environement temparature	Synthetic grass/astroturf	environement temparature
30.1.25	24	24	30.2	24	33.1	25
31.1.25	22.6	23	25.5	23	37.3	24
3.2.25	20.6	21	21.1	22	27.9	21
4.2.25	24.3	21	23.6	23	39.3	24
5.2.25	16.4	19	20	19	19.9	19.5
6.2.25	12.6	19.5	16.5	19.5	13.7	19.5
7.2.25	12.7	16	15.3	19	14.6	16
9.2	12		14.2	14.5	14.4	15
10.2	היה גשם	היה גשם	12.3	12	היה גשם	היה גשם
11/2	14.2	16	17	17		16
12/02	12.7	14	14.4	14	14.5	
13.2	16	18	22.2	20	25.2	18
14.2	14	15	18	16	18.9	17
16.2	17	21	23..8	21	30	21.5
17.2	23	20	29.4	21	34.4	21
18.2		21	31.1	23		21
ממוצע	17.3	19.2	20.7	19.3	24.9	19.9

Results

The measurement data were of course also entered into the Globe application at the same time, and here are presented the tables from the Globe website, showing the research process


GLOBE Visualization System

Measureme

School: hagefen

hagefen : Hagefen astroturf 2025 Data Table

School Name	Site Name	Userid	Latitude	Longitude	Elevation	Measured At	Solar Measured At	Solar Noon At	Average Surface Temperature C	Surface Condition
hagefen	Hagefen astroturf 2025	143113260	32.0849	34.8064	30.5	2025-01-30 10:27:00	2025-01-30 12:31:00	2025-01-30 09:54:00	33.1	dry
hagefen	Hagefen astroturf 2025	143113246	32.0849	34.8064	30.5	2025-01-31 09:16:00	2025-01-31 11:20:00	2025-01-31 09:54:00	37.3	dry
hagefen	Hagefen astroturf 2025	143113148	32.0849	34.8064	30.5	2025-02-02 10:39:00	2025-02-02 12:42:00	2025-02-02 09:54:00	32.2	dry
hagefen	Hagefen astroturf 2025	143113288	32.0849	34.8064	30.5	2025-02-03 10:32:00	2025-02-03 12:35:00	2025-02-03 09:54:00	27.9	dry
hagefen	Hagefen astroturf 2025	143113260	32.0849	34.8064	30.5	2025-02-04 10:26:00	2025-02-04 12:29:00	2025-02-04 09:54:00	39.3	dry
hagefen	Hagefen astroturf 2025	143113260	32.0849	34.8064	30.5	2025-02-05 10:29:00	2025-02-05 12:32:00	2025-02-05 09:54:00	19.9	wet
hagefen	Hagefen astroturf 2025	143113288	32.0849	34.8064	30.5	2025-02-07 09:24:00	2025-02-07 11:27:00	2025-02-07 09:54:00	14.6	wet
hagefen	Hagefen astroturf 2025	143113260	32.0849	34.8064	30.5	2025-02-09 10:33:00	2025-02-09 12:36:00	2025-02-09 09:54:00	14.4	wet
hagefen	Hagefen astroturf 2025	143113092	32.0849	34.8064	30.5	2025-02-11 10:29:00	2025-02-11 12:32:00	2025-02-11 09:55:00	17.2	wet
hagefen	Hagefen astroturf 2025	143113246	32.0849	34.8064	30.5	2025-02-12 10:33:00	2025-02-12 12:35:00	2025-02-12 09:54:00	17	wet
hagefen	Hagefen astroturf 2025	143113246	32.0849	34.8064	30.5	2025-02-14 09:19:00	2025-02-14 11:21:00	2025-02-14 09:54:00	18.9	dry
hagefen	Hagefen astroturf 2025	143113246	32.0849	34.8064	30.5	2025-02-16 10:21:00	2025-02-16 12:24:00	2025-02-16 09:54:00	30	dry
hagefen	Hagefen astroturf 2025	143113288	32.0849	34.8064	30.5	2025-02-17 10:35:00	2025-02-17 12:38:00	2025-02-17 09:54:00	34.4	dry
hagefen	Hagefen astroturf 2025	143113092	32.0849	34.8064	30.5	2025-02-18 10:40:00	2025-02-18 12:43:00	2025-02-18 09:54:00	37.4	dry

GLOBE Visualization System

School: hagefen

hagefen : Hagefen concrete 2025 Data Table

School Name	Site Name	Userid	Latitude	Longitude	Elevation	Measured At	Solar Measured At	Solar Noon At	Average Surface Temperature C	Surface Condition
hagefen	Hagefen concrete 2025	143113260	32.08486	34.80657	30.7	2025-01-30 10:45:00	2025-01-30 12:49:00	2025-01-30 09:54:00	30.2	dry
hagefen	Hagefen concrete 2025	143113246	32.08486	34.80657	30.7	2025-01-31 09:07:00	2025-01-31 11:11:00	2025-01-31 09:54:00	25.5	dry
hagefen	Hagefen concrete 2025	143113148	32.08486	34.80657	30.7	2025-02-02 10:11:00	2025-02-02 12:14:00	2025-02-02 09:54:00	28.1	dry
hagefen	Hagefen concrete 2025	143113288	32.08486	34.80657	30.7	2025-02-03 10:20:00	2025-02-03 12:23:00	2025-02-03 09:54:00	21.1	dry
hagefen	Hagefen concrete 2025	143113092	32.08486	34.80657	30.7	2025-02-04 10:19:00	2025-02-04 12:22:00	2025-02-04 09:54:00	23.6	dry
hagefen	Hagefen concrete 2025	143113260	32.08486	34.80657	30.7	2025-02-05 10:12:00	2025-02-05 12:15:00	2025-02-05 09:54:00	20	wet
hagefen	Hagefen concrete 2025	143113092	32.08486	34.80657	30.7	2025-02-06 10:06:00	2025-02-06 12:09:00	2025-02-06 09:54:00	16.5	wet
hagefen	Hagefen concrete 2025	143113148	32.08486	34.80657	30.7	2025-02-06 10:06:00	2025-02-06 12:09:00	2025-02-06 09:54:00	16.5	wet
hagefen	Hagefen concrete 2025	143113288	32.08486	34.80657	30.7	2025-02-07 09:20:00	2025-02-07 11:23:00	2025-02-07 09:54:00	15.3	wet
hagefen	Hagefen concrete 2025	143113260	32.08486	34.80657	30.7	2025-02-09 10:19:00	2025-02-09 12:22:00	2025-02-09 09:54:00	14.2	wet
hagefen	Hagefen concrete 2025	143113092	32.08486	34.80657	30.7	2025-02-10 10:08:00	2025-02-10 12:11:00	2025-02-10 09:54:00	12.3	wet
hagefen	Hagefen concrete 2025	143113092	32.08486	34.80657	30.7	2025-02-11 10:13:00	2025-02-11 12:16:00	2025-02-11 09:55:00	17	wet
hagefen	Hagefen concrete 2025	143113246	32.08486	34.80657	30.7	2025-02-12 10:05:00	2025-02-12 12:07:00	2025-02-12 09:54:00	14.4	wet
hagefen	Hagefen concrete 2025	143113092	32.08486	34.80657	30.7	2025-02-13 10:12:00	2025-02-13 12:14:00	2025-02-13 09:54:00	21.6	wet
hagefen	Hagefen concrete 2025	143113092	32.08486	34.80657	30.7	2025-02-13 10:41:00	2025-02-13 12:43:00	2025-02-13 09:54:00	25.2	wet
hagefen	Hagefen concrete 2025	143113246	32.08486	34.80657	30.7	2025-02-14 09:10:00	2025-02-14 11:12:00	2025-02-14 09:54:00	18	dry
hagefen	Hagefen concrete 2025	143113246	32.08486	34.80657	30.7	2025-02-16 10:05:00	2025-02-16 12:08:00	2025-02-16 09:54:00	23.8	dry
hagefen	Hagefen concrete 2025	143113288	32.08486	34.80657	30.7	2025-02-17 10:19:00	2025-02-17 12:22:00	2025-02-17 09:54:00	29.6	dry
hagefen	Hagefen concrete 2025	143113092	32.08486	34.80657	30.7	2025-02-18 10:25:00	2025-02-18 12:28:00	2025-02-18 09:54:00	31.2	dry

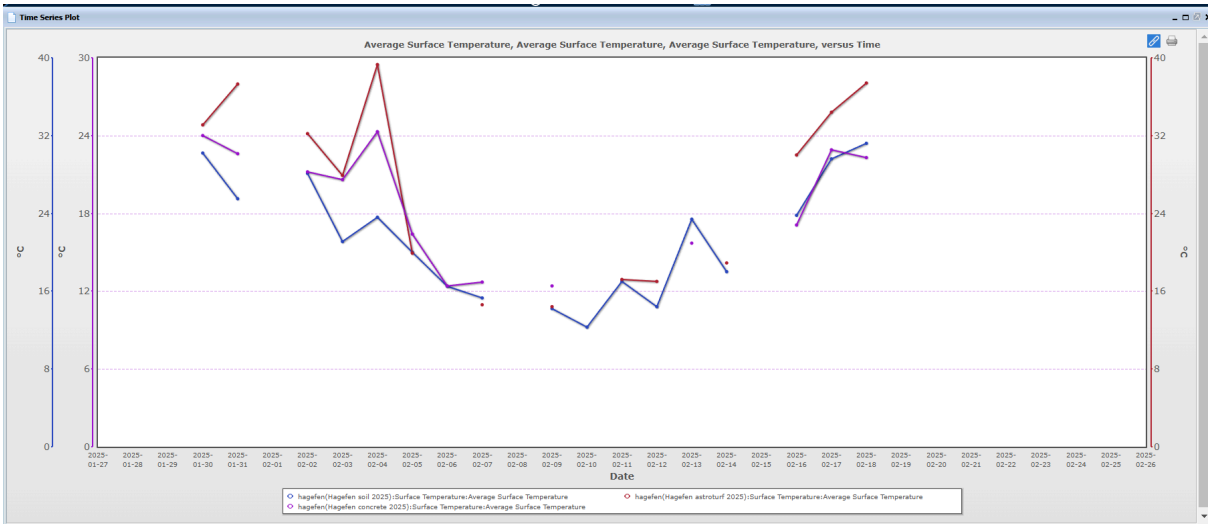
GLOBE Visualization System

School: hagefen

hagefen : Hagefen soil 2025 Data Table

School Name	Site Name	Userid	Latitude	Longitude	Elevation	Measured At	Solar Measured At	Solar Noon At	Average Surface Temperature C	Surface Condition
hagefen	Hagefen soil 2025	143113260	32.0848	34.8064	30.4	2025-01-30 10:50:00	2025-01-30 12:54:00	2025-01-30 09:54:00	24	dry
hagefen	Hagefen soil 2025	143113246	32.0848	34.8064	30.4	2025-01-31 09:13:00	2025-01-31 11:17:00	2025-01-31 09:54:00	22.6	dry
hagefen	Hagefen soil 2025	143113260	32.0848	34.8064	30.4	2025-02-02 10:29:00	2025-02-02 12:32:00	2025-02-02 09:54:00	21.2	dry
hagefen	Hagefen soil 2025	143113288	32.0848	34.8064	30.4	2025-02-03 10:29:00	2025-02-03 12:32:00	2025-02-03 09:54:00	20.6	dry
hagefen	Hagefen soil 2025	143113092	32.0848	34.8064	30.4	2025-02-04 10:08:00	2025-02-04 12:11:00	2025-02-04 09:54:00	24.3	dry
hagefen	Hagefen soil 2025	143113260	32.0848	34.8064	30.4	2025-02-05 10:21:00	2025-02-05 12:24:00	2025-02-05 09:54:00	16.4	wet
hagefen	Hagefen soil 2025	143113092	32.0848	34.8064	30.4	2025-02-06 10:17:00	2025-02-06 12:20:00	2025-02-06 09:54:00	12.2	wet
hagefen	Hagefen soil 2025	143113092	32.0848	34.8064	30.4	2025-02-06 10:42:00	2025-02-06 12:45:00	2025-02-06 09:54:00	12.6	wet
hagefen	Hagefen soil 2025	143113288	32.0848	34.8064	30.4	2025-02-07 09:15:00	2025-02-07 11:18:00	2025-02-07 09:54:00	12.7	wet
hagefen	Hagefen soil 2025	143113260	32.0848	34.8064	30.4	2025-02-09 10:26:00	2025-02-09 12:29:00	2025-02-09 09:54:00	12.4	wet
hagefen	Hagefen soil 2025	143113092	32.0848	34.8064	30.4	2025-02-13 10:35:00	2025-02-13 12:37:00	2025-02-13 09:54:00	15.7	wet
hagefen	Hagefen soil 2025	143113246	32.0848	34.8064	30.4	2025-02-16 10:14:00	2025-02-16 12:17:00	2025-02-16 09:54:00	17.1	dry
hagefen	Hagefen soil 2025	143113288	32.0848	34.8064	30.4	2025-02-17 10:25:00	2025-02-17 12:28:00	2025-02-17 09:54:00	22.9	dry
hagefen	Hagefen soil 2025	143113092	32.0848	34.8064	30.4	2025-02-18 10:36:00	2025-02-18 12:39:00	2025-02-18 09:54:00	22.3	dry

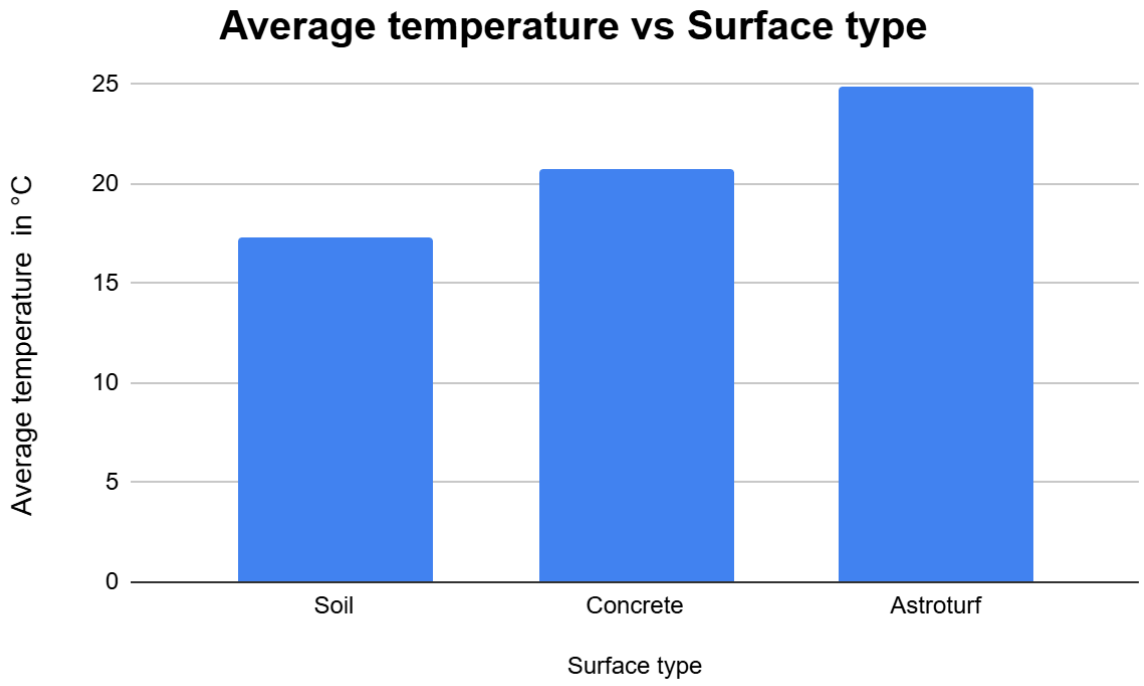
The following graph is also taken from the Globe website and it shows the comparison of the results of the three surfaces



To summarize the results, the summary table and graph are presented which clearly show that synthetic grass (astroturf)

reflects the most infrared radiation, meaning it causes environmental warming, compared to concrete which reflects less, and soil which reflects the least radiation meaning it protects better against environmental warming.

Land cover types	Hagefen astroturf 2025 Synthetic grass	Hagefen concrete 2025	Hagefen soil 2025
The average temperature of the emitted radiation	25.15	20.19	17.653



Discussion

Our results show that the soil is the coldest surface and the Synthetic grass is the hottest.

In our research the possible errors are: Inaccurate measurements, bad weather, changing cloud cover and lack of sun.

Our hypothesis was that the synthetic grass will return the most heat compared to the soil which will return the least heat.

After the research, our hypothesis was verified (synthetic grass is the warmest, soil is the coldest).

Conclusion

We measured the surfaces for 3 weeks in a row, 27 measurements every day and 9 measurements on every surface.

After calculating the average, we came to a conclusion that the astroturf is the hottest material, and the soil is the coldest when exposed to the sun.

This research is important because that's how you know which material is best for the surface when exposed to the sun. The importance of this research is knowing how to prevent global warming in general, and the increase in temperature inside the city in particular.

The improvements that can be done in the methods could have been if we had measured more time, then the results were more pronounced.

The follow-up actions that can be taken is to continue measuring and then we will be sure of the results. Then, check where it is possible to replace surfaces within the city, and plant more trees that will provide shade, to lower the returned temperatures.

In conclusion, we wanted to thank our mentor, the science teacher, Neta Shvaizer. She was also accompanied by a guide from the Globe named Lama Huri. Our mentor taught us how to use the globe app and she initiated the whole project.

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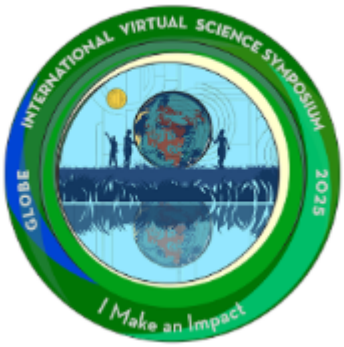
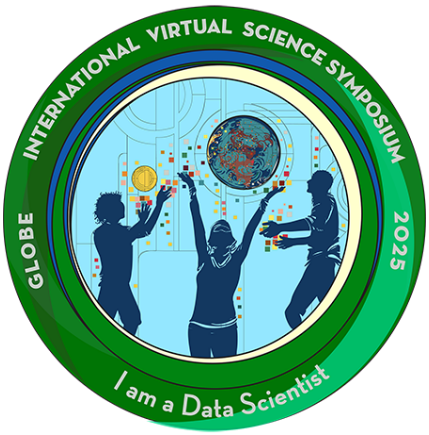


Highlight Badge for 2025 IVSS Theme

I make an impact because our research can lead to a change in our neighborhoods. Initially, the synthetic grass can be replaced with soil in almost every house, gardens and schools, and thus the temperature inside the city will drop.



I am a data scientist in that we measured temperatures on different surfaces, put them in tables, calculated the data, created graphs and drew conclusions.