



# How air temperatures affect cloud coverage

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Credit to: <https://www.freeiconspng.com/images/clouds-png>

## Abstract art

This experiment showed how air temperature effects cloud coverage. The GLOBE protocols we used were visibility and cloud coverage. This experiment was done at Saint Peter's school from January 19th to February 9th, between the hours of 1:50 P.M. to 2:15 P.M., Monday-Friday. The weather conditions were compared to the chart in our classroom. After data was collected we found that there was a connection, until February when the air started to get warmer.



# Introduction-Background Research

We have learned from encyclopedia.com about cloud coverage. The cloud cycle is involved with evaporation, condensation, and precipitation. When air warms it becomes less dense and rises. When it rises it cools so the water in the air condenses into a cloud. When it gets cool enough the vapor condenses and turns into liquid again, then a cloud forms. When cloud particles become saturated with water it falls to the ground, this is called rain. The temperature comes in when it heats up the water turning into vapor into the air.



# Introduction-Background Research Continued

We have learned that when air temperature increases to a certain temperature, water evaporates. Warm air holds more water than cold air. Warm air rises and cools as it ascends. When the air cools the water condenses. When it condenses the water particles stick together, forming clouds. The more clouds the higher the cloud coverage. Clouds are the source of precipitation, they affect the amount of energy from the sun that reaches the earth's surface, and insulate earth's surface.



# Materials

We used pencil and paper to write down the Purple air results temperature, sky color, and cloud coverage daily. We also used [purpleair.com](https://purpleair.com) to examine air quality. We used Google Earth to find our location of the project. Another way we showed our research was using a graph to plot the cloud coverage data against the temperature. We graphed our data first on paper then we put them on digital charts.



## Experimental methods continued

The **constant** of our project is the location of where we took our data. We think if cloud coverage increases then air temperature decreases, but if cloud coverage decreases then air temperature increases. In this situation the air temperature is the **independent variable**. Our **dependent variable** is cloud coverage.



# Materials

- computer
- tri fold boards
- printer
- websites
- iPads

# Procedure

Step 1: grab your data sheet

Step 2: Go to the window

Step 3: look at the clouds, the sky color, air temperature, and Purple Air

Step 4: gather your data

Step 5: record your data on paper then on slides

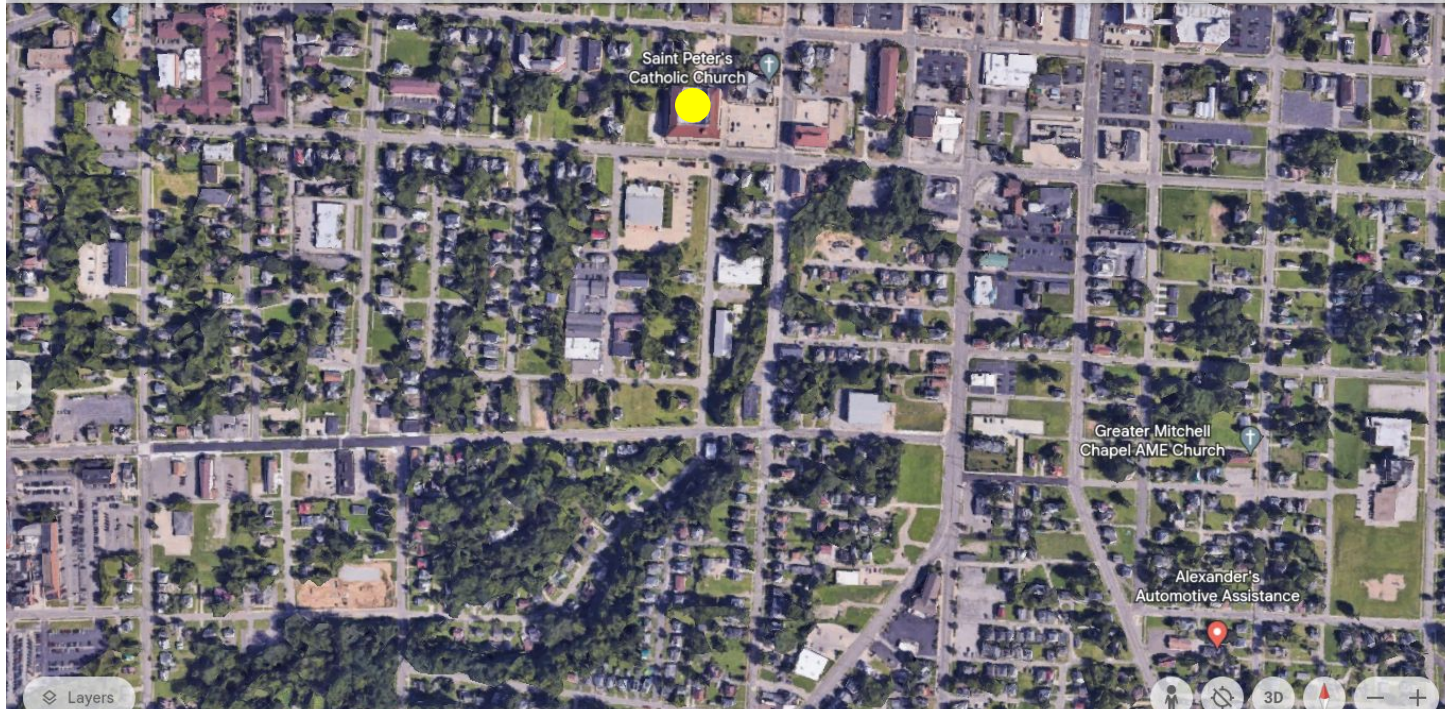
The GLOBE protocol we used were globe protocols we used were cloud coverage and visibility.

# Maps, Tables, Graphs, and other Data

Date	Time	Cloud cover	Visibility	Sky color	Purple air	Temperature
1.22.24	2:10pm	broken	clear	pale blue	9	35
1.24.24	1:54pm	overcast	hazy	milky	3	37
1.25.24	1:45pm	overcast	unusually clear	milky	3	54
1.26.24	1:44pm	overcast	clear	milky	2	54
1.29.24	1:45pm	overcast	clear	light blue	5	31
1.30.24	1:53	overcast	Clear	Milky	7	36

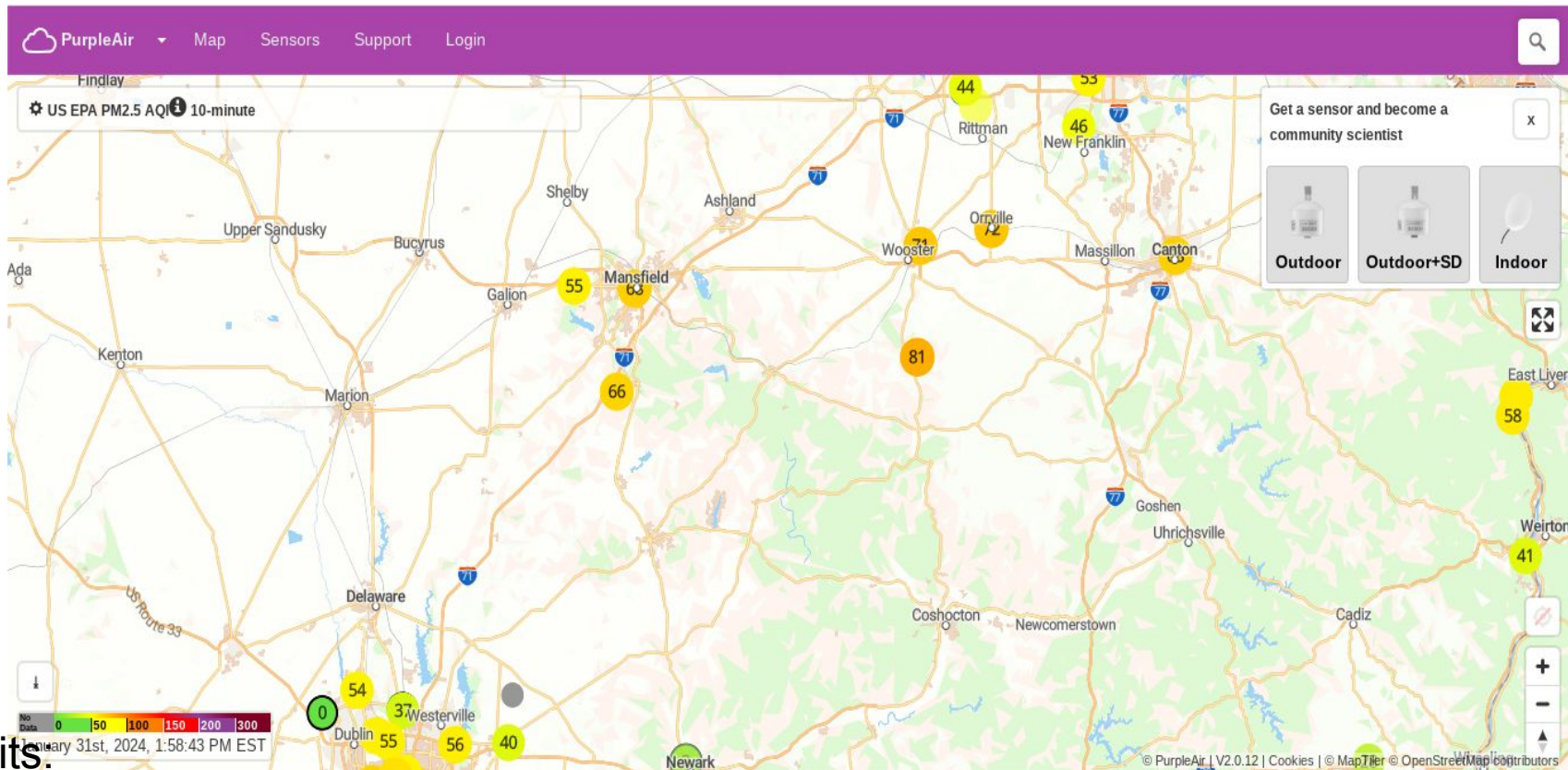


# Location of project



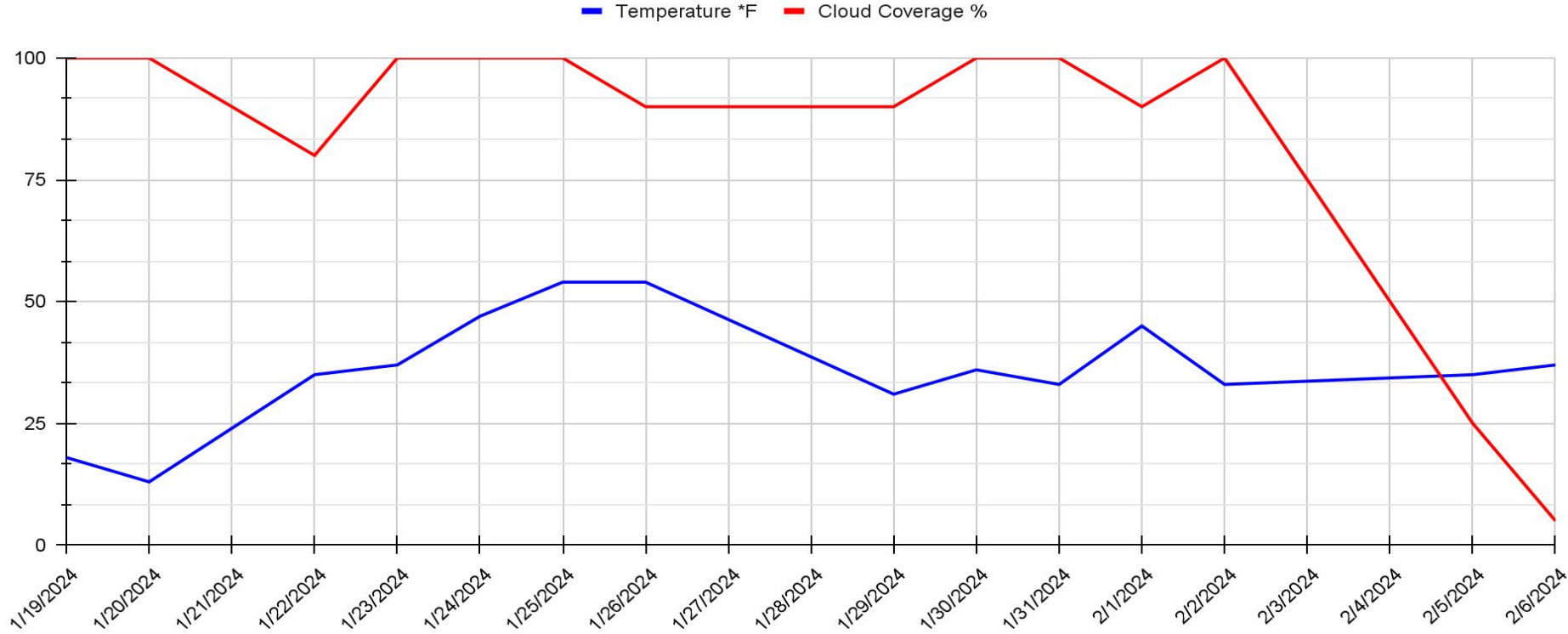
Credits:  
google earth

# Purple air

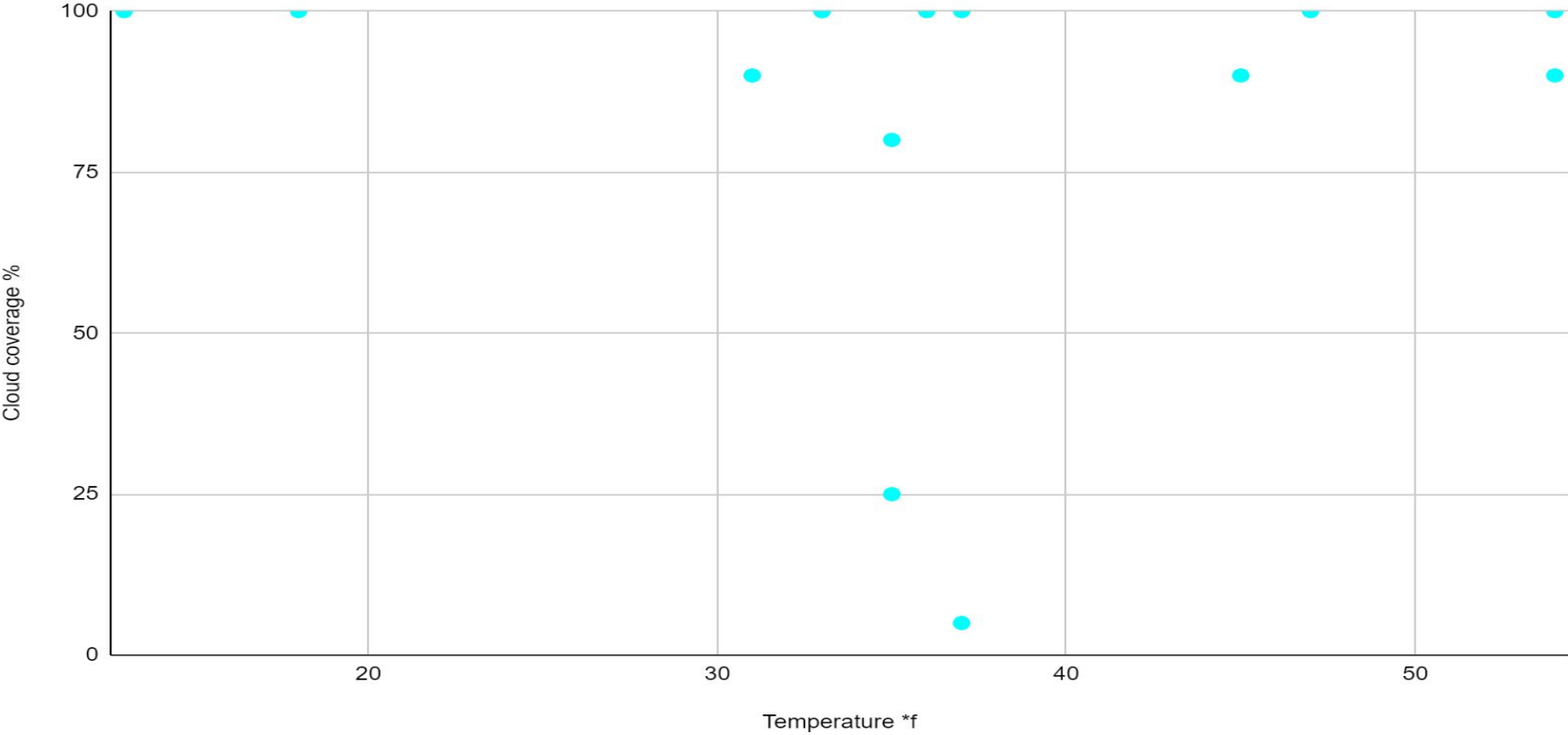


Credits:  
Purpleair

# Temperature and Cloud Coverage in January



Cloud coverage % vs. Temperature \*F





## Discussion of Results

We think that the results are inconclusive. The results were inconclusive because of the conditions of weather we recorded our data in. It would've been more of an experiment if we would've done it in the spring. In the spring the weather is changing so there would be more cloud options. The weather was almost always 100% cloudy because we did it in January. We recorded the cloud coverage, Purple Air, temperature, and sky color. We recorded this data from the 19th of January to the 9th of February.



# Conclusions

Our results are inconclusive, this is because we think that recording data later on in the year would improve our results. If this experiment was performed in the spring, the weather would be more variable and would change each day. Warm air holds more moisture than cold air. Our thoughts on this project were that this was really fun and very exciting to learn about. The next steps are presenting our project. Some advice, at the end of the day learn to be patient and willing to take the time to learn.



# Pictures



# Credits

We would like to thank Mrs. Smith for helping us in the science project. She gave us many materials that we needed in this project. She also taught us what many things meant such as what a dependent and independent variable. Another thing we wanted to credit was encyclopedia, google scholar, purple air, and globe. These things taught us what cloud coverage was and how air temperature affected it.





## Sources:

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