The Correlation Between Changes in Weather to Changes in Mood Amongst High School Students in Antioch, California

EARTHTEAM
Leadership. Stewardship. Service

The GLOBE Program

Authors: Earth Team Antioch

Table of Contents

Abstract

Background

Question

Investigation

Analysis

Data

Conclusion

Abstract

- For our project we researched the correlation between changes in weather to the changes in mood amongst high school students in Antioch, California.
- To complete this project we collected cloud data through the Globe Observer app, including but not limited to sky color, cloud coverage, and cloud type. We also conducted a survey of high school students in Antioch, California to understand weekly changes in moods and how they might connect to the weather.
- The reason we chose this topic is because the information at hand could be a good way to find out what is contributing to certain moods among the people of Antioch, specifically students in high school.
- The data shows that less cloud coverage causes people to have a happier mood overall.

Research Question and Hypothesis

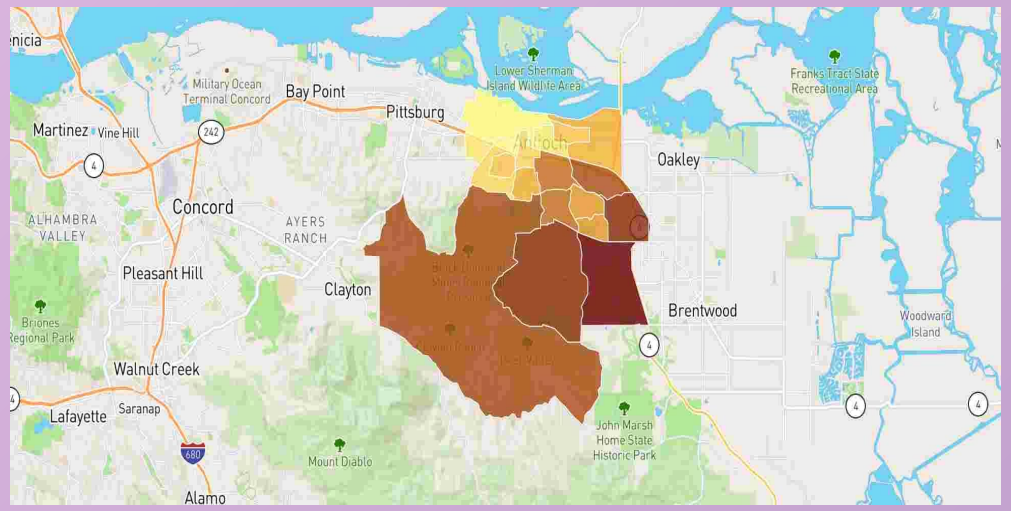
Does cloud coverage have an effect on the moods of teenagers in Antioch, CA?

We were interested in researching this topic because we wanted to learn if there were any similarities or differences in how people of the same age group were feeling. Most teenagers have had to stay indoors more than usual this year due to the COVID-19 pandemic and we know that can be impactful on a person's mental health.

Background Information

The weather can have impacts on our emotions. After much discussion, we were inspired to explore the correlation between different types of weather and our moods.

Changes in weather are constant occurrences that affect our day to day lives. However we typically don't look toward weather as the main cause of our sadness or happiness.

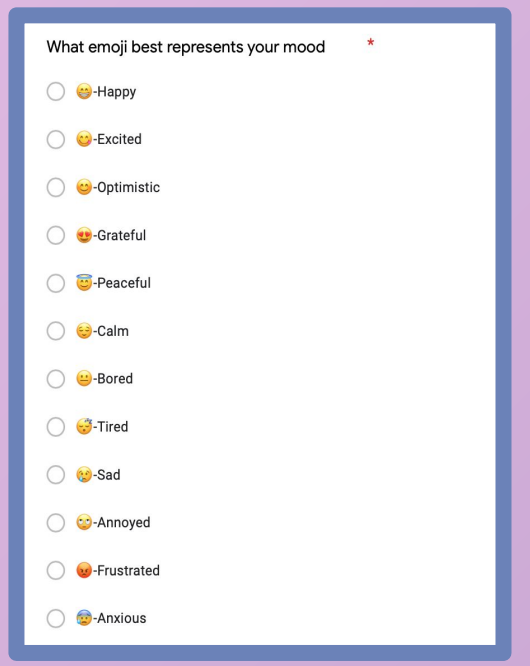


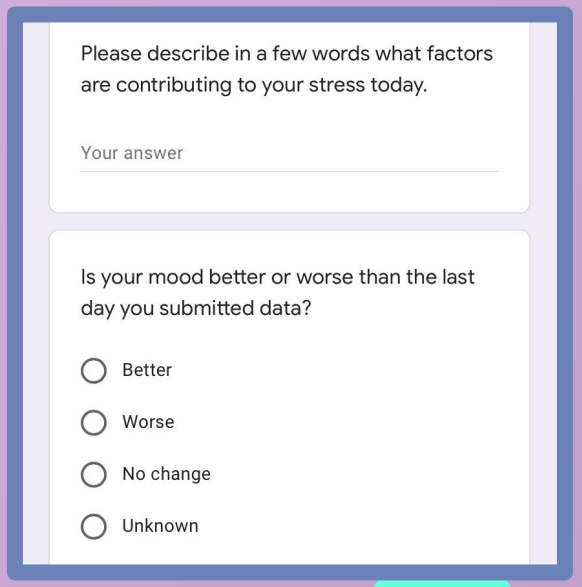
Currently there is research being conducted about weather induced mood disorders. We are building off the ideas from these studies and performing a research project specific to the Antioch Unified School District. From our study we hope to find information regarding the way cloud coverage affects the mood of students in our target area.

Investigation Plan

Our plan for the investigation was to collect data with the use of a GLOBE Research Participant Survey, presented in a Google Form. This survey was created by two of our Earth Team members. It asked questions regarding the weather that day and the participants' current mood. Towards the end of the survey, we asked whether the participants' had seen a visible change in their mood compared to the last time they submitted data.

- The study area was located around East Contra Costa County.
- The target audience was high school students.
- We collected a cloud observation on the same day that participants responded to our survey.





GLOBE Protocols

The GLOBE Protocols for data collection we used was the GLOBE-Clouds on the Globe Observer app.

We used this protocol to help find surface weather conditions, check the sky for any clouds, and to identify the cloud type. Each of the blue pins on the map to the right shows where one of our clouds observations were taken. And in a discussion we had together we agreed that each team member would collect their cloud data 2-3 times a week at the least.

Cloud Coverage Sample Observations

NORTH

SOUTH

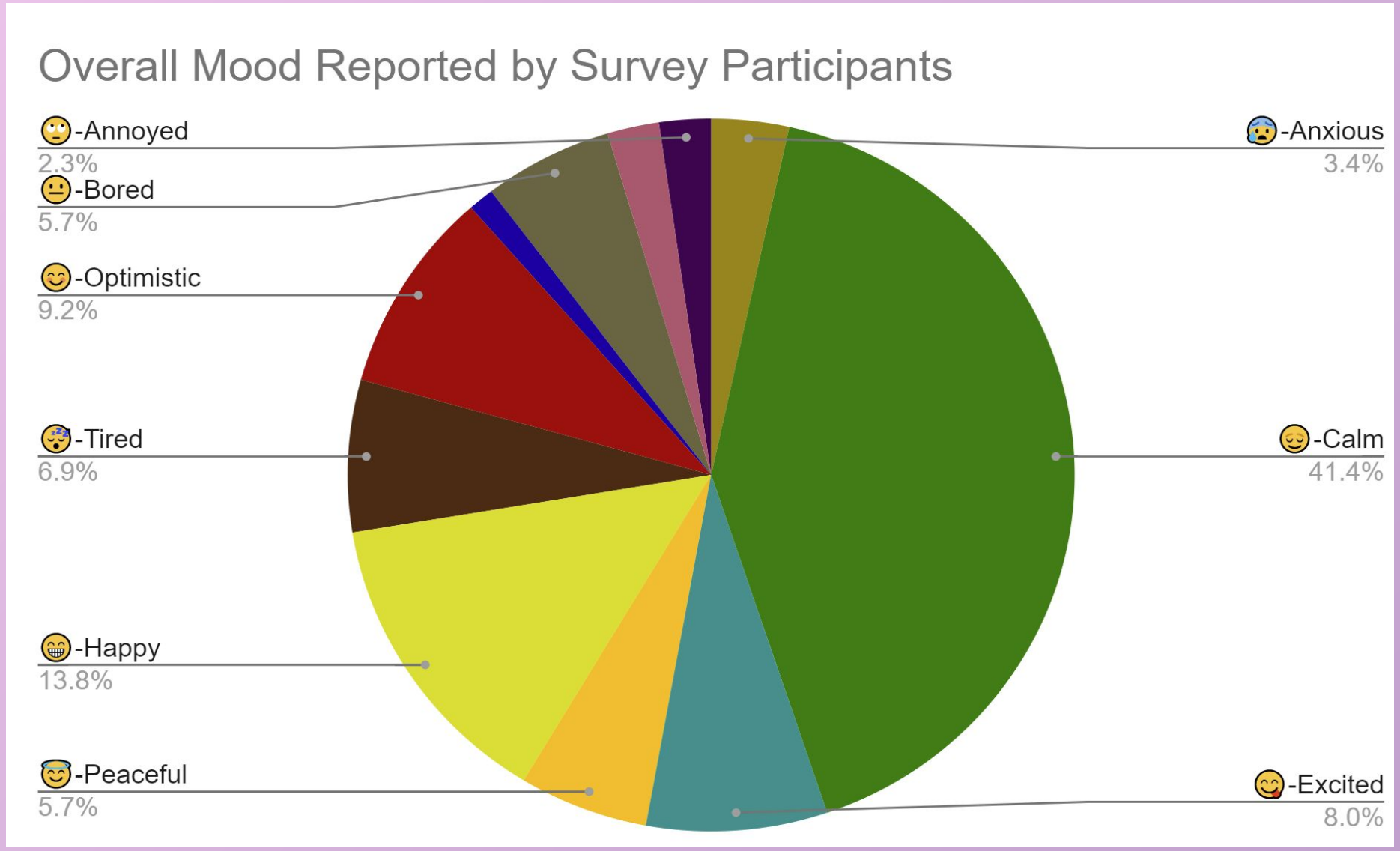
EAST

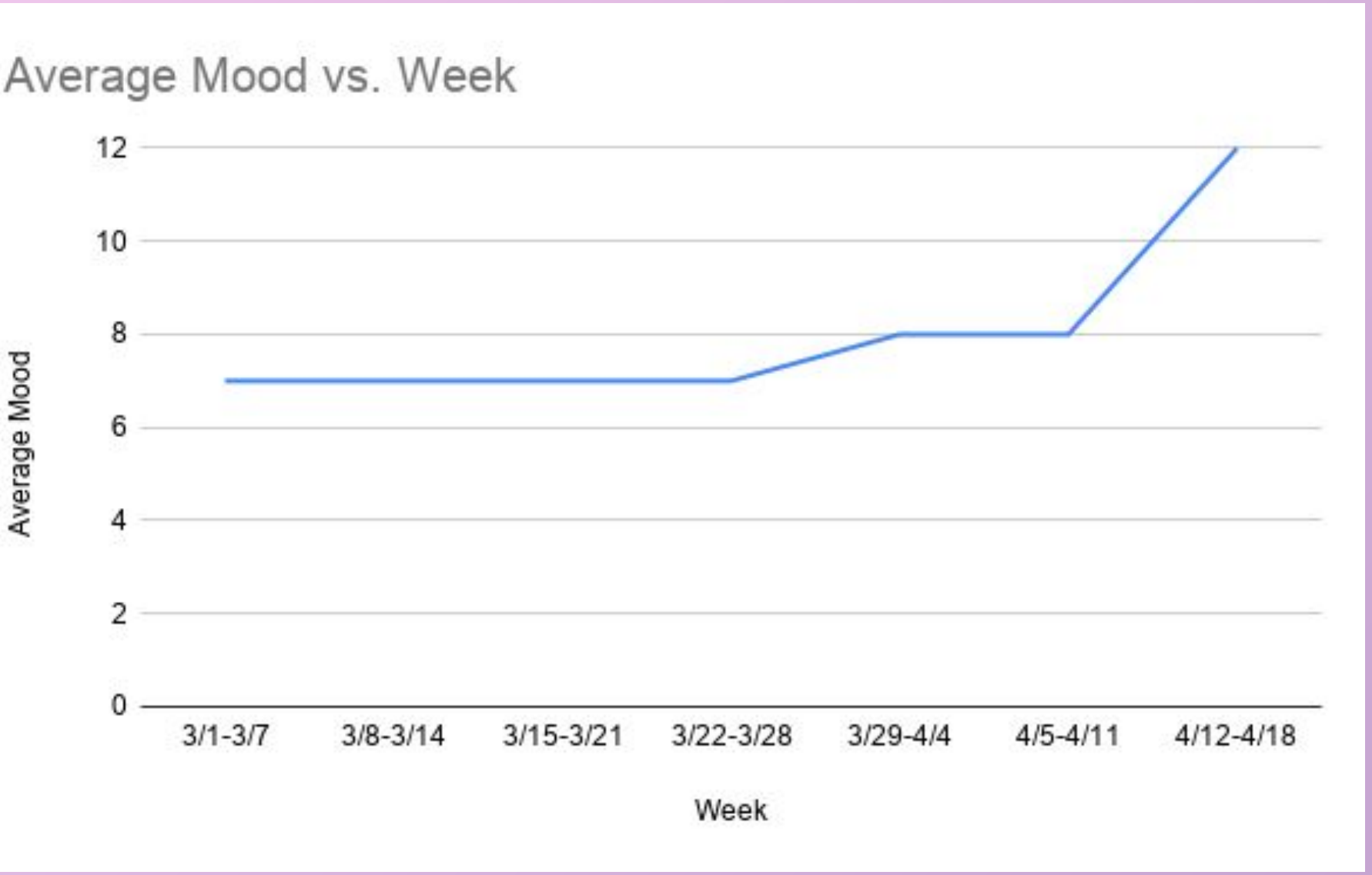
WEST

OVERCAST

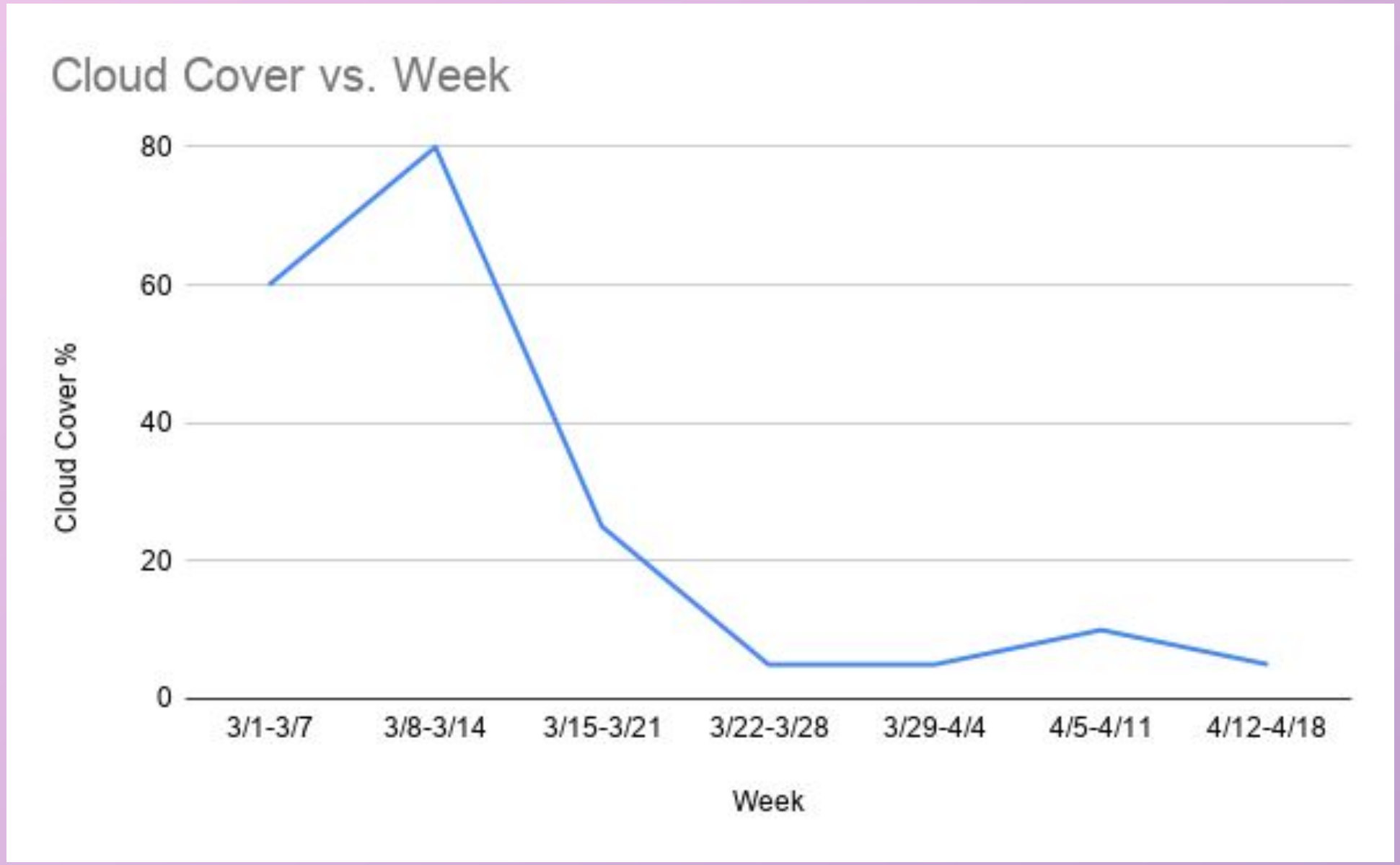
SCATTERED

Mood Survey Data





Average Mood Scale
12-Happy
11-Excited
10-Optimistic
9-Grateful
8-Peaceful
7-Calm
6-Bored
5-Tired
4-Annoyed
3-Frustrated
2-Sad
1-Anxious


Cloud Cover vs. Week
80
60
40
20
0
Cloud Cover %
3/1-3/7
3/8-3/14
3/15-3/21
3/22-3/28
3/29-4/4
4/5-4/11
4/12-4/18
Week

Data Analysis

- In our experiment, 41% of the time students in Antioch, CA described their mood as **calm**
- From March 1st to March 28th the mood of students remained at a steady on the average mood scale, the emotion attached to this is **calm**.
- The week of March 29th the average mood increased to an eight, which represents feeling **peaceful**. This upward trend continued until the week of April 12th, when the average mood was **happy.**
- The week with the highest percentage of cloud coverage was March 8th; an average cloud coverage of 80% was recorded.
- The lowest percentage of cloud coverage recorded was 5% the week of March 22nd, which corresponds with the upward trend in emotions.

Interpretation of Data

- The results help us answer the research question that we presented because they show a correlation between a change in weather averages and emotional averages.
- The results do support our hypothesis because we proved that there is correlation between weather and mood in Antioch CA.
- A possible source of error in our research could be personal interpretation of emotions, as no two people answering the survey will feel emotions the same.
- Uncertainties in our research process include the accuracy of our cloud data, as it was collected by students at various times in the day and at various locations.

Conclusion/Next Steps

Based on this initial research project, changes in cloud coverage does seem to have a correlation with changes in mood of students in Antioch, CA. This means out hypothesis was supported by our data.

An average cloud coverage of over twenty percent correlates with a steady, calm mood. When the cloud coverage drops below twenty percent, on average the mood of teenagers in Antioch becomes happier.

To further our research we would repeat the experiment, this time collecting data for a longer time period and during a different season to see if the results hold true.

Acknowledgements

Earth Team Antioch interns would like to express their gratitude for the GLOBE Program for providing the resources, tools, and support necessary to complete this project.

Participating in the GLOBE symposium has allowed us all the opportunity to practice our STEM skills and develop our interests in pursuing future careers in science.