



# Solar Eclipse Weather



This student data book was created to support classrooms participating in the GLOBE Observer Eclipse project by Civil Air Patrol Solar Eclipse Mission volunteers.

To learn more about the GLOBE Observer go to: <https://www.globe.gov>

To learn more about Civil Air Patrol go to: <https://www.gocivilairpatrol.com>

**Name:** \_\_\_\_\_

**Teacher:** \_\_\_\_\_

# My Solar Eclipse Observations



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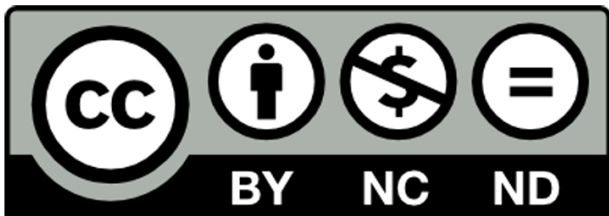
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## Additional Solar Eclipse Activities



Have extra time between observations? Try one of these additional activities.

- **Play With Shadows** - Solar eclipses have unique effects on shadows. Play with the shadows and see what shapes and patterns you can produce. Try using different household items like a kitchen colander to see what types of shadows they will create.
- **Make Your Own Eclipse** - Using a ball, cast a shadow on the ground. Explore how the shadow changes based on the distance the ball is from the ground.
- **Create Eclipse Art** - Bring a little STEAM to your eclipse by creating art or poetry to capture your experience.
- **Make Additional Observations** - Grab a piece of paper and collect more data!

Welcome **Solar Eclipse Citizen Scientist**. Today you will be making observations of a very special astronomical event...a solar eclipse! Over the next 4 hours you will be able to collect both quantitative and qualitative data that will help us learn more about the effects that solar eclipses have on Earth.

Throughout the eclipse you will be collecting different types of observations. Look for these symbols in the corners of your data book to help you flip to the correct page write down your data.



Air Temperature Observations



Weather Reports



Weather Charts



Other Eclipse Info/Activities





## Solar Eclipse Science

Solar eclipses happen when the Moon passes between the Sun and the Earth. This causes the Moon to cast a shadow on the Earth. During the solar eclipse on April 8, 2024, this shadow will cover most of North America.

Many scientists have been preparing for years so that they could be ready to collect science during this eclipse, but the path of the Moon's shadow is so large they can't collect the data they need alone.

That is where your class comes in! Today your class will join thousands of other students across North America collecting air temperature and cloud data as part of the GLOBE Eclipse project. You will collect your data using this data book and your teacher will be uploading the data your class collects to NASA in real time using the GLOBE Observer App.



## Eclipse Weather Word Search



This word search contains 15 terms and words related to the solar eclipse project. See how many you and your friends can find!

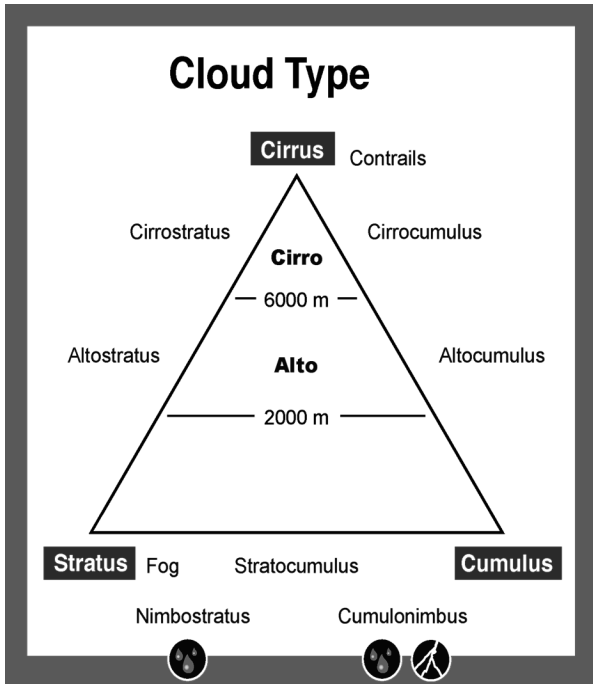
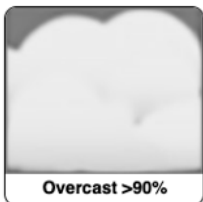
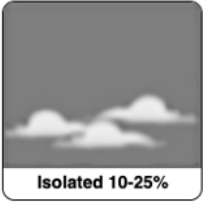
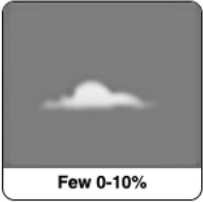
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | C | C | S | U | C | U | M | U | L | U | S | O | I |
| I | T | E | U | C | E | O | T | F | E | T | R | Y | N |
| R | T | M | S | I | R | B | C | E | S | W | S | T | S |
| S | S | O | N | R | C | S | O | A | P | O | L | I | O |
| T | T | O | W | R | O | E | C | U | I | D | O | L | M |
| C | R | N | R | U | O | R | L | T | L | A | M | A | A |
| O | A | S | S | S | A | V | O | I | C | H | P | T | I |
| N | T | C | O | E | D | A | U | S | E | S | I | O | R |
| T | U | T | L | R | L | T | D | C | T | O | O | T | R |
| A | S | I | A | R | S | I | E | S | S | W | I | N | D |
| C | E | L | R | T | I | O | A | H | U | N | S | D | Y |
| T | C | U | E | Y | M | N | A | M | C | N | T | R | T |
| T | E | M | P | E | R | A | T | U | R | E | E | O | T |
| L | S | E | C | O | N | D | C | O | N | T | A | C | T |





# Cloud Charts

Clouds are very good at reflecting energy from the sun. By identifying cloud types and estimating the percentage of the sky covered by clouds you can help scientists estimate how much sunlight is reflected back into space.



# Eclipse Meta Data



In order to be analyzed, data needs context. This information is called **Meta Data** and it helps scientists know who, how, and where the data was collected. Meta data is particularly important for this experiment, because we expect to see different effects based on where in the solar eclipse path the data is collected.

Members of your data collection team:

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Location of your data collection site:

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Latitude and longitude of your data collection site:

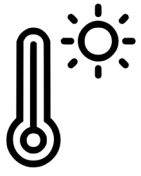
Latitude: 

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Longitude: 

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A lot of the Sun's energy arrives to the Earth in the form of visible light. When the light reaches the Earth, some of it is absorbed and readmitted as heat. By tracking changes in air temperature during an eclipse we can 'see' changes in the amount of solar energy reaching our planet.

## Tracking Air Temperature

|                             |                             |                              |                              |                              |                              |                              |                              |
|-----------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| <b>1.</b><br>Time:<br>Temp: | <b>5.</b><br>Time:<br>Temp: | <b>9.</b><br>Time:<br>Temp:  | <b>13.</b><br>Time:<br>Temp: | <b>17.</b><br>Time:<br>Temp: | <b>21.</b><br>Time:<br>Temp: | <b>25.</b><br>Time:<br>Temp: | <b>29.</b><br>Time:<br>Temp: |
| <b>2.</b><br>Time:<br>Temp: | <b>6.</b><br>Time:<br>Temp: | <b>10.</b><br>Time:<br>Temp: | <b>14.</b><br>Time:<br>Temp: | <b>18.</b><br>Time:<br>Temp: | <b>22.</b><br>Time:<br>Temp: | <b>26.</b><br>Time:<br>Temp: | <b>30.</b><br>Time:<br>Temp: |
| <b>3.</b><br>Time:<br>Temp: | <b>7.</b><br>Time:<br>Temp: | <b>11.</b><br>Time:<br>Temp: | <b>15.</b><br>Time:<br>Temp: | <b>19.</b><br>Time:<br>Temp: | <b>23.</b><br>Time:<br>Temp: | <b>27.</b><br>Time:<br>Temp: | <b>31.</b><br>Time:<br>Temp: |
| <b>4.</b><br>Time:<br>Temp: | <b>8.</b><br>Time:<br>Temp: | <b>12.</b><br>Time:<br>Temp: | <b>16.</b><br>Time:<br>Temp: | <b>20.</b><br>Time:<br>Temp: | <b>24.</b><br>Time:<br>Temp: | <b>28.</b><br>Time:<br>Temp: | <b>32.</b><br>Time:<br>Temp: |



## Weather Report



### 6th Observation

Time:

Air Temperature:

Wind Direction:

Wind Speed:

Cloud Cover:

Cloud Types:

Notes:

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### Fourth Contact

Time:

Air Temperature:

Wind Direction:

Wind Speed:

Cloud Cover:

Cloud Types:

Notes:





# Weather Reports

## Eclipse Maximum

Time:

Air Temperature:

Wind Direction:

Wind Speed:

Cloud Cover:

Cloud Types:

Notes:



## 5th Observation

Time:

Air Temperature:

Wind Direction:

Wind Speed:

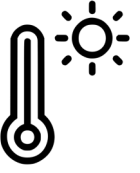
Cloud Cover:

Cloud Types:

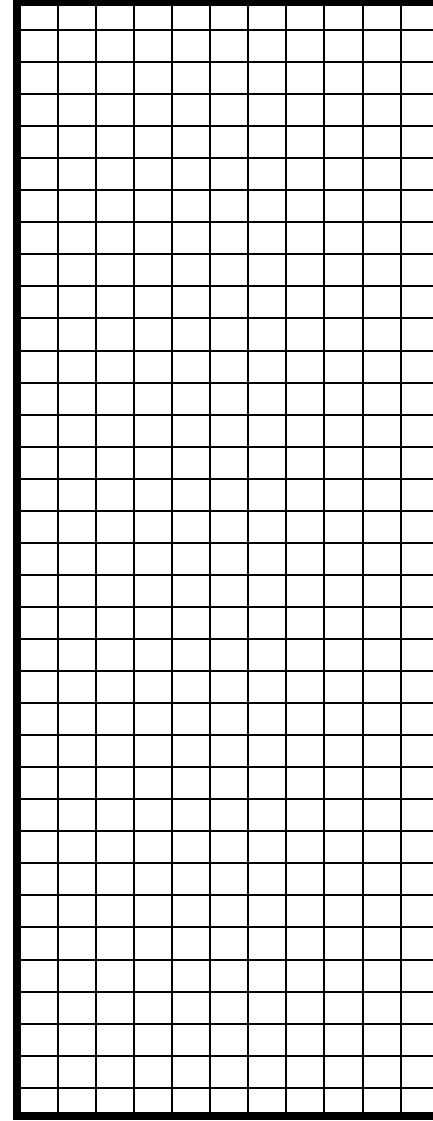
Notes:



# Tracking Graphing Temperatures



## Air Temperature Changes Over The Length of a Solar Eclipse



Observation

Using the graph paper above make a line graph that shows the changes in air temperature you observe during the length of the eclipse. A long the way, make sure to compare your graph with the one your teacher is creating as part of the GLOBE Eclipse citizen science project.

Temperature





## Weather Reports

While the sun provides energy to the earth, all places on the planet do not receive the same amount of energy. Uneven heating of the earth's surface is the creator of weather. During the solar eclipse we will be receiving less energy from the sun than normal. This reduction in energy may create observable changes in air temperature cloud cover/types, and wind speed/direction.

In this portion of the data book you will track data to see how weather changes during an eclipse.

### First Contact

Time:

Air Temperature:

Wind Direction:

Wind Speed:

Cloud Cover:

Cloud Types:

Notes:



## Weather Reports



### 2nd Observation

Time:

Air Temperature:

Wind Direction:

Wind Speed:

Cloud Cover:

Cloud Types:

Notes:

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### 3rd Observation

Time:

Air Temperature:

Wind Direction:

Wind Speed:

Cloud Cover:

Cloud Types:

Notes:

