



## Background

During late summer 2017, a total solar eclipse inspired many Americans with awe, as the moon passed in front of the sun briefly turning day to night. The experience was extraordinary for those who were lucky enough to see it. And, six years later in 2023 and 2024, two solar eclipses cross America within nearly six months of each other.

We hope the following data visualizations will inspire you to go outside and see a solar eclipse with your own eyes – using appropriate eclipse glasses – where you live. Likely, you'll be able to see at least a partial eclipse for both of these events in the U.S.

### 1. **Solar Eclipses: What Are They?**

- Allow your audience to observe and listen.
- View a brief video clip from NASA Goddard's "The Moon's Role in a Solar Eclipse." This clip answers many frequently asked questions about solar eclipses, including when and why they happen. Click [here](#) to watch the whole video, which includes details on NASA's Lunar Reconnaissance Mission.
- The [NOAA GOES](#) satellite was able to capture the Moon's shadow moving across North America in 2017, a total solar eclipse.

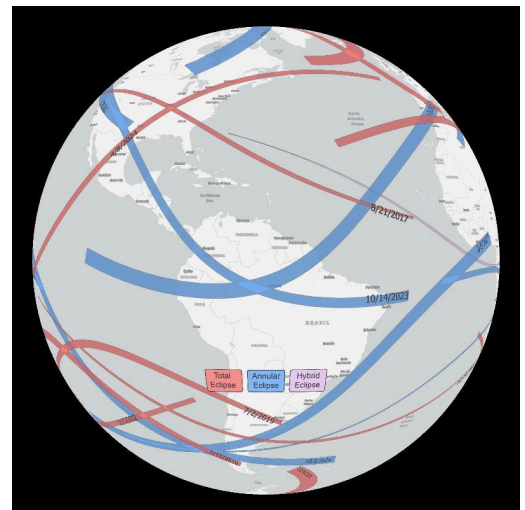


### Engaging Questions

1. What is going on here? Take a moment to consider what you see.
2. How would we be able to see an eclipse like this?
3. How fast would you have to drive if you wanted to watch the solar eclipse all the way across?

### 2. **Solar Eclipse Paths - 2010-2030**

- This dataset gives us a glimpse of what has recently been and what is soon to come. That is, twenty years of solar eclipse paths from 2010 - 2030. Blue represents the total eclipse paths and red represents the annular eclipse paths.
- Eclipses are very predictable as they follow a cycle, known as the Saros cycle, about every





18 years a similar eclipse path arises but shifts over 120 degrees in longitude on Earth.

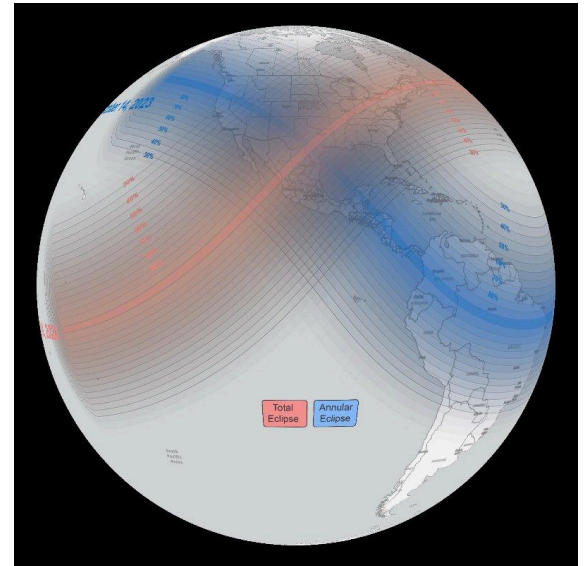
- You can see the cycle pretty clearly when looking at the annular (blue) eclipse on January, 15, 2010 starting in Africa and moving through Asia, as well as the one that will occur in South America and Europe on January 26, 2028.

Engaging Questions

1. Can you find two eclipses that look nearly the same and 18 years apart?
2. Are there more or less solar eclipses than you thought?
3. Are there any eclipses you'd like to travel to in the future?

3. **Solar Eclipse Paths: 2023 & 2024**

- This dataset shows the paths of the 2023 and 2024 eclipses and the percentage of the sun covered by the moon. The paths are layers that can be turned on and off.
- If you are not inside the thin path, you'll see on the dataset contour lines which indicate how much of the sun will be covered by the moon's shadow in your location.

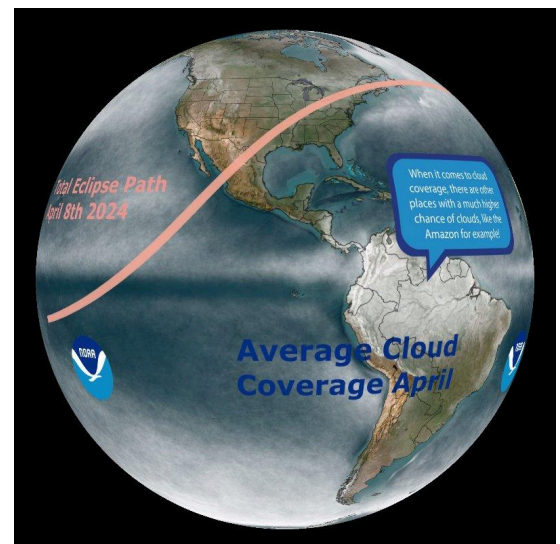


Engaging Questions

1. Which eclipse are you most excited about?
2. How much of the sun will be obscured by the moon where you live?
3. Do you have any friends or family that live under the path of the eclipses?

4. **Solar Eclipse Paths and Cloud Fractions: April**

- This dataset shows the average cloud coverage for April over the last ten years.
- Remember, an eclipse is always worth experiencing regardless of whether it is a cloudy day or not. Also, this shows the past ten years of clouds in April, not a forecast of clouds for that day.





- Check the [National Weather Service](#) forecast about seven days before for a better idea of what is expected to happen.

#### Engaging Questions

1. What do you notice about the clouds in this image?
2. What is your memory of clouds in April where you live?
3. Can you tell what place across the path of the eclipses has the most chance to be cloudy?

#### 5. Solar Eclipse Simulation (NASA) - April 8, 2024

- This dataset shows the animated path of the total solar eclipse on April 8, 2024. If you are lucky enough to be in the skinny path, hooray. If not, we hope you enjoy a partial eclipse!
- Safety is of utmost importance. Please pay attention to the guidance especially for photography, etc.

#### 6. Solar Eclipses and Space Weather Explained

- This narrated movie explains why total solar eclipses are connected to space weather and why NOAA watches the sun 24 hours a day and 7 days a week.

#### Engaging Questions

1. What did you gather from that movie about what space weather is?
2. Are you ready for it?