

Are your datasets updating? If not,
contact: sos.support@noaa.gov

SOS Education Forum



National Oceanic and Atmospheric Administration
U.S. Department of Commerce

August 23, 2023





Agenda

New eclipse datasets, Live Program, activities - Beth, Hilary, Juan Pablo

SOS Visualization Lead to discuss open source and free tools used to develop Science On a Sphere - Juan Pablo Hurtado

Q/A





SOS Education Forum

This group is...

- Inclusive, open to all of the SOS Network, including presenting.
- Flexible, this forum is open to discuss anything and everything having to do with education and engagement.
- Designed to help you utilize your SOS system, understand NOAA's resources, and the SOS data catalog.





Reminders from SOS Team in Boulder

New Datasets

SOS Upgraded:

Check out June Ed Forum for more info

<https://sos.noaa.gov/education/education-forum/>

Contact sos.support@noaa.gov to get the latest

Social Media tagging:

Facebook & Instagram - @scienceonasphere

SOS Ed Forum Topics:

We are always open to your ideas and suggestions for topics and presentations or needed trainings. Email Hilary.Peddicord@noaa.gov



[View My Playlist](#)

Solar Eclipses: What Are They?

SOS Explorer

Added on August 13, 2023

Add to Playlist



Solar Eclipse Paths: 2023 & 2024

SOS Explorer

Added on August 13, 2023

Add to Playlist



Solar Eclipse Paths and Cloud Fractions: October

SOS Explorer

Added on August 13, 2023

Add to Playlist



View as

- Grid
- List

Sort by

Newest first

Category

- Select a category -

Subcategory

- Select a subcategory -

Platform

- Select a platform -

Is Realtime

Solar Eclipse Paths and Cloud Fractions: April

SOS Explorer

Added on August 13, 2023

Add to Playlist



Solar Eclipse Paths - 2010-2030

SOS Explorer

Added on August 13, 2023

Add to Playlist



Temperature Anomaly: Surface - Real-time

SOS Explorer

Added on August 8, 2023

Add to Playlist



Select a platform

Is Realtime

Has Audio Description

Is Narrated Movie

Keyword

- Select a keyword -

Theme

- Select a theme -

Year

Allowed years 500-2100.

Next Generation Science Standards

Minimum Grade Level

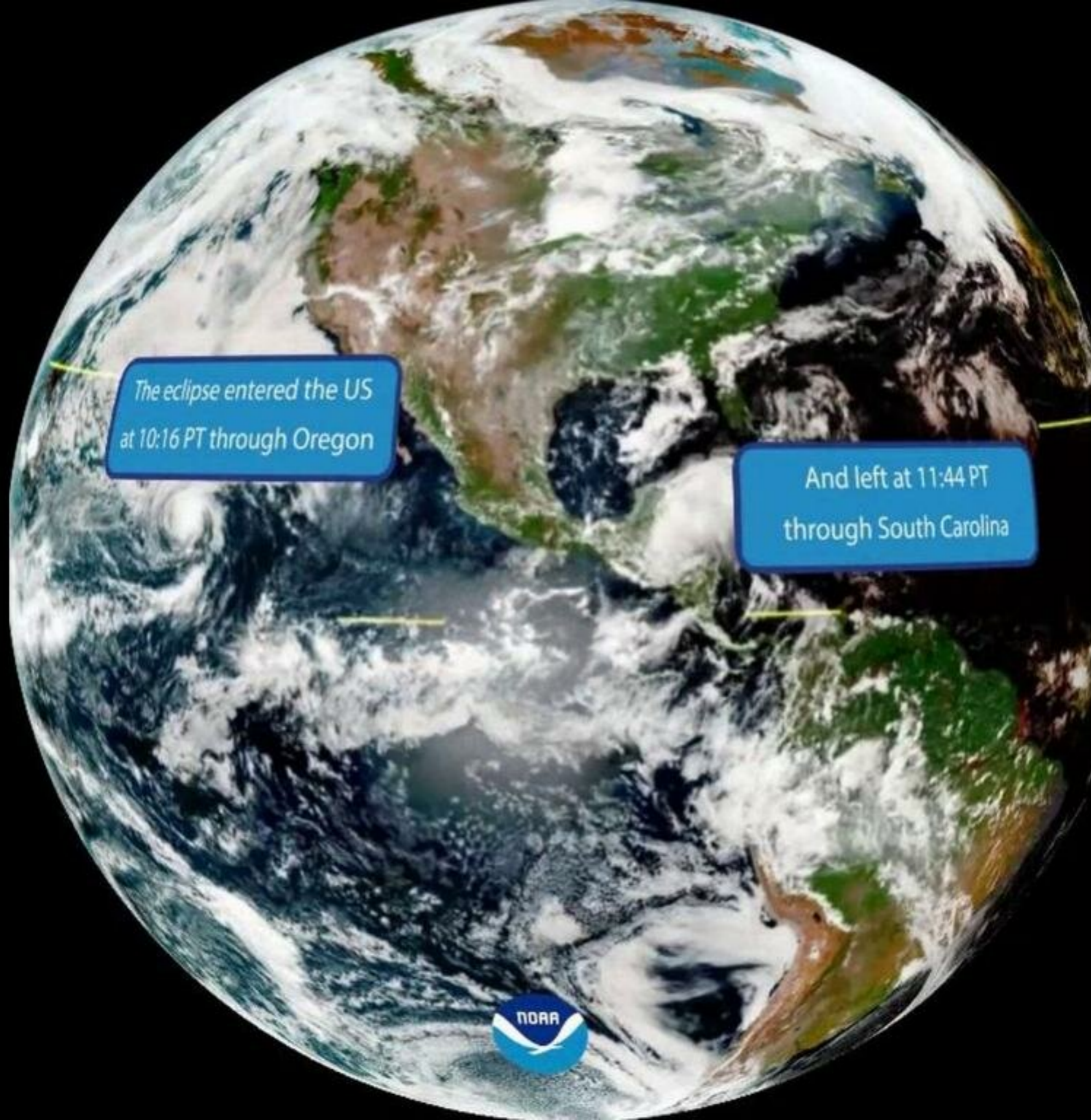
- Select a grade level -

https://sos.noaa.gov/catalog/datasets/solar-eclipse-paths-2010-2030



What is going on here?

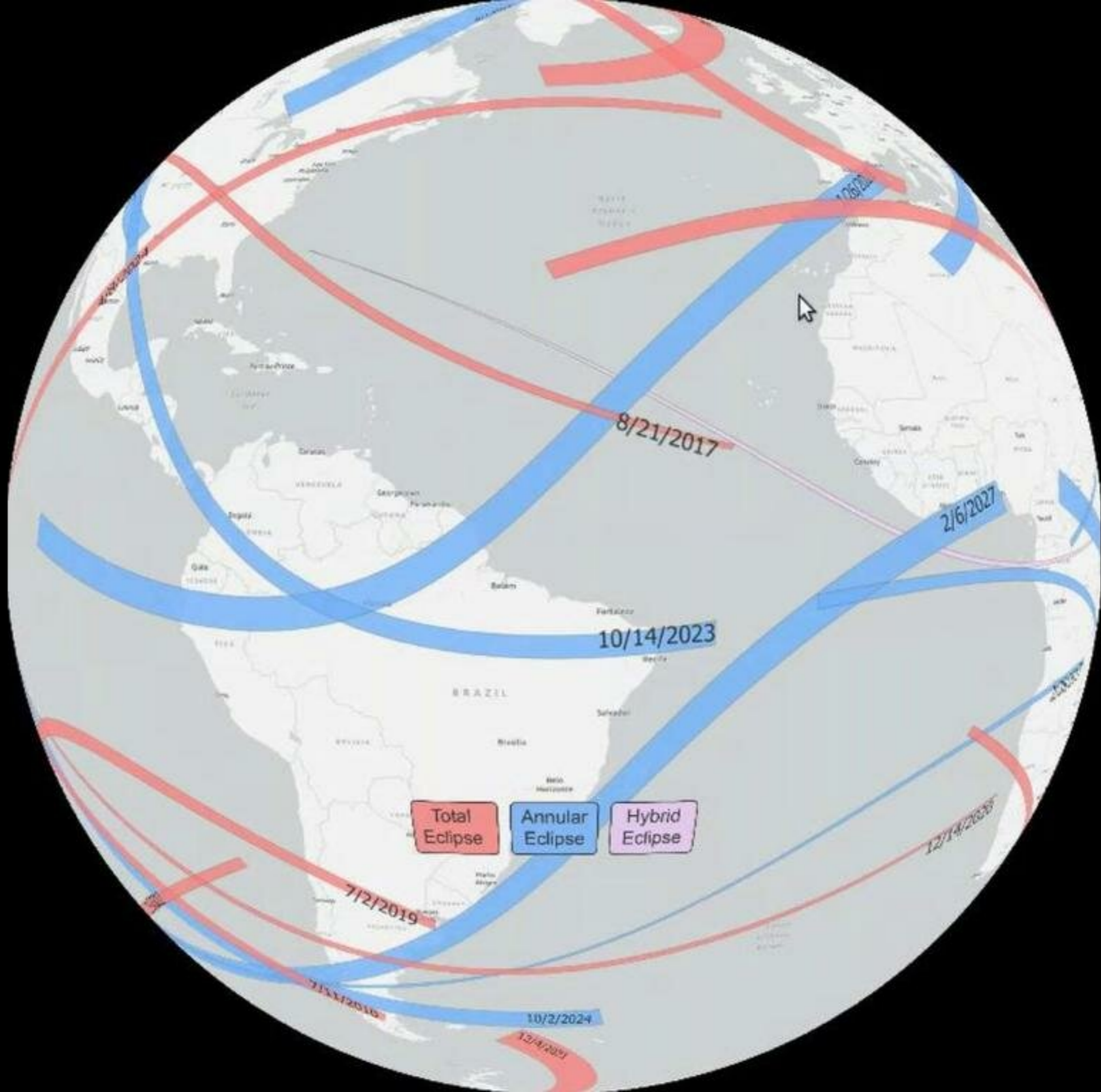




The eclipse entered the US
at 10:16 PT through Oregon

And left at 11:44 PT
through South Carolina

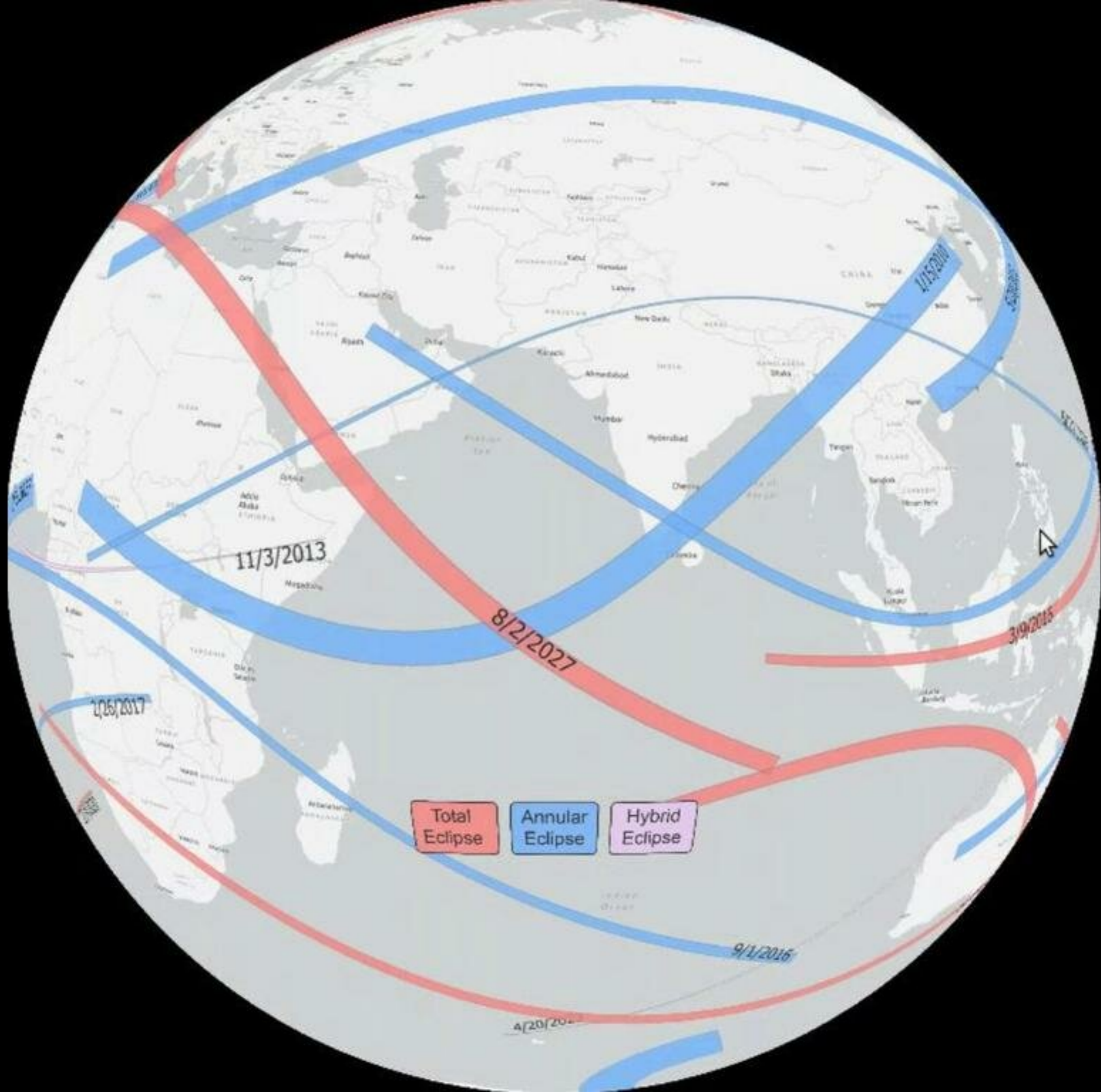




Total Eclipse

Annular Eclipse

Hybrid Eclipse



11/3/2013

8/2/2027

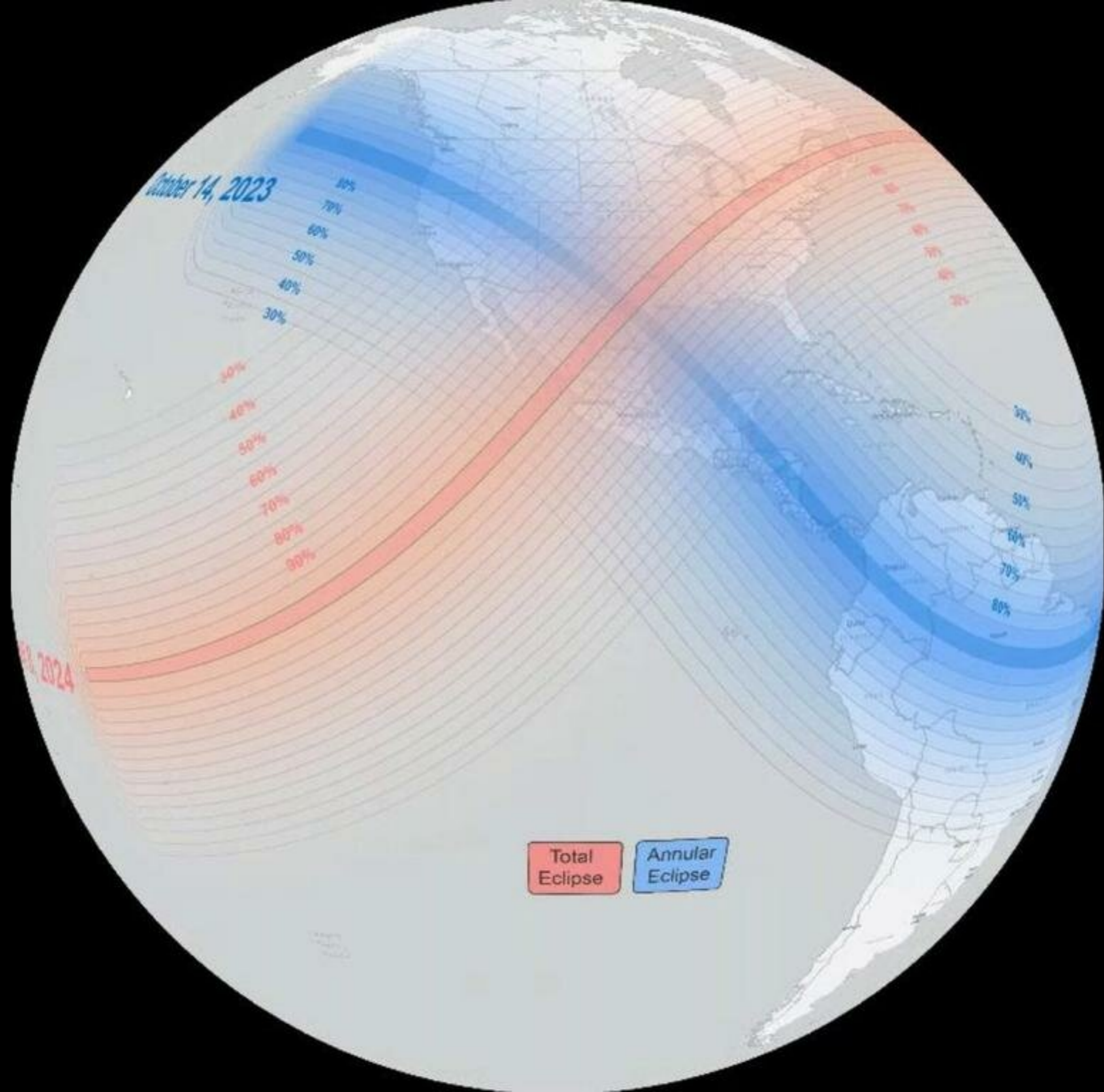
3/9/2015

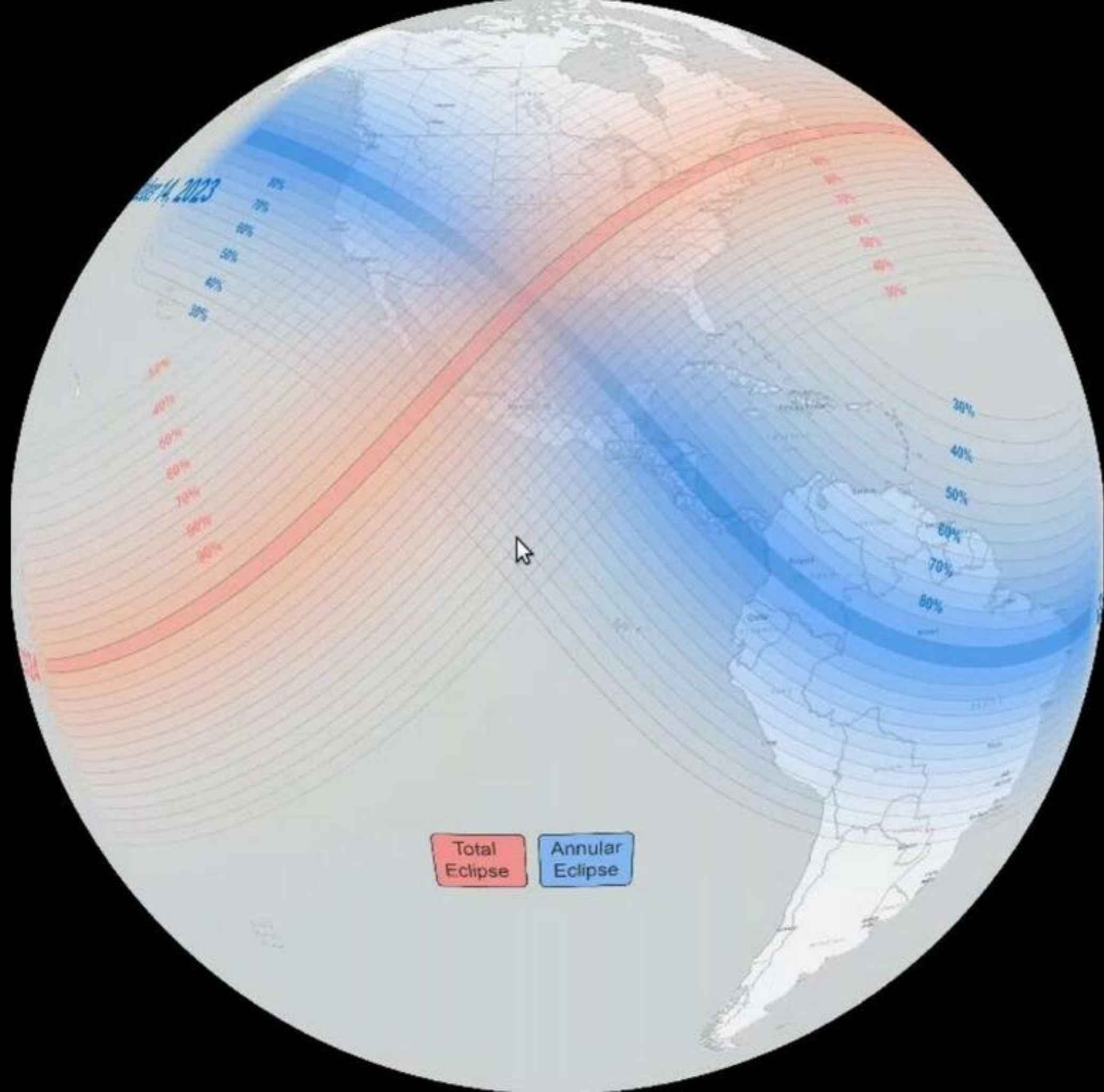
10/6/2017

9/1/2016

4/20/2014

- Total Eclipse
- Annular Eclipse
- Hybrid Eclipse





**Partial Eclipse Path
October 14th 2023**

**Average Cloud
Coverage October**

When it comes to cloud coverage, there are other places with a much higher chance of clouds, like the Amazon for example!





Total Eclipse Path
April 8th 2024

Even if there are clouds during an eclipse, you can still tell it's happening. It will become noticeably darker and a bit cooler outside.

Average Cloud Coverage April





[Video \(Download\)](#)
[Image \(Download\)](#)

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Description [🔗](#)

Seeing a solar eclipse is magnificent regardless of whether or not it is cloudy; however, if the sky is clear of clouds, the sun will be fully visible and thus the experience fully realized.

Your supreme autumn day may include a free and spectacular show in the contiguous United States. Watch the sun temporarily cast a ringlike shadow upon the fall leaves as the annular eclipse path crosses from Oregon through Texas.

This dataset shows cloud fraction average in October over a recent ten year period. Cloud fraction is the percentage of each pixel of satellite imagery that is covered in clouds. Looking at a ten year average of cloudiness in October allows us to see what the likelihood is of the solar eclipse occurring on a cloudy day.

Remember, an eclipse is always worth seeing regardless of whether it is a cloudy

Notable Features [🔗](#)

- See the cloud fraction over a ten year period for the areas where the annular solar eclipse will be occurring on October 14, 2023 but it is not a forecast
- Clouds obscure the sun but you will still notice instant darkness and cooler temperatures around you

Data Source [🔗](#)

[NASA NEO](#)

This dataset shows cloud fraction average in October over a recent ten year period. Cloud fraction is the percentage of each pixel of satellite imagery that is covered in clouds. Looking at a ten year average of cloudiness in October allows us to see what the likelihood is of the solar eclipse occurring on a cloudy day.

Remember, an eclipse is always worth seeing regardless of whether it is a cloudy day or not. Also, this shows the past ten years of clouds in October, 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.

Content Creation Details [↗](#)

April average monthly cloud data for the last 10 years was obtained from [NASA Earth Observations](#) and averaged using ArcGIS Pro (for a free alternative use [QGIS](#)). The eclipse path was obtained from [NASA's Scientific Visualization Studio](#) and edited using Adobe Illustrator. The final video was made using [Shotcut](#), a free and open source video editing software.

Contacts [↗](#)

Dataset Vis Developer [↗](#)

NOAA Environmental Visualization Lab / Office of Education
Contractor I.M. Systems Group, Inc. [↗](#)

Data Source [↗](#)

[NASA NEO](#)

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Juan Pablo



Live Programs Catalog

Home >> Catalog >> Live Programs

A Closer Look at El Nino & La Nina

SOS

Added on May 3, 2015



A Tale of Three Planets

SOS

Added on February 27, 2013



A Tale of Three Planets (Autorun version)

SOS

Added on February 27, 2013



View as

- Grid
- List

Sort by

- Name (A-Z)
- Name (A-Z)**
- Name (Z-A)
- Oldest first
- Newest first

Reset

Description [↗](#)

In the summer of 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 now, six years later, we look forward to two solar eclipses across America within nearly six months of each other.

In honor of these momentous occasions, we have created new datasets that will inspire your audiences to go and see the alignment of the Sun, the Moon, and Earth near them.

Don't miss the art, citizen science, and classroom activities that have been curated and created as part of this program. They include a poem, hoping to inspire visual art making in the museum or the classroom, as well as two different citizen science data collection apps and classroom lesson plans. In addition, we have created a [FAQ](#) page to help you answer all the fun and quirky questions that will come as part of this astronomical event.

Datasets included [↗](#)



1



FAQs for the 2023, 2024 Solar Eclipses

1. What happens if it is cloudy?
A: This shouldn't be a big concern, you most definitely will get to have a unique experience. It will still get dark out and it will feel cooler. It's absolutely still worth watching.
2. Will it be nighttime?
A: It's more like it is an hour after sunset, not like the middle of the night.
3. Why is it important?
A: Only in recent decades has the ability to see the corona without an eclipse been possible.
It creates a bridge to our ancestors. Maybe you can consider what it would be like to experience it before modern science, media and technology.
Scientists study the brief changes in the density of the ionosphere at the top of our atmosphere.
4. How do animals react?
A: It depends on the animal. Deer think it's nighttime. Birds go back to their nests. Crickets and cicadas start chirping if it happens in summer. I've heard of cows going back to bed. Dogs and cats probably won't notice much.
5. Can I drive fast enough to see it for longer?
A: You'd have to be driving more than 2,000 mph!
6. What can I do with my glasses after?
A: Keep them in a safe place - don't bend or scratch them. You can use them to view the Sun any day. You can see sunspots - darker regions on the Sun. In fact, there are more Sunspots between now and 2027 than there have been for many years. Also, fun fact, Sunspots are bigger than the Earth!



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 7. How wide is the path?
A: Depending on location, it's around 110 to 120 miles.
 8. Will I be able to see planets?
A: Yes, maybe so! Jupiter and Venus likely, as they are bright in the sky, also maybe even the brightest of stars if you are far enough away from light pollution.
 9. Does it happen at night?
A: No. Just when the Sun is out.

Earth near them.

Don't miss the art, citizen science, and classroom activities that have been curated and created as part of this program. They include a poem, hoping to inspire visual art making in the museum or the classroom, as well as two different citizen science data collection apps and classroom lesson plans. In addition, we have created a [FAQ](#) page to help you answer all the fun and quirky questions that will come as part of this astronomical event.

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- [Solar Eclipse Paths and Cloud Fraction: April](#)

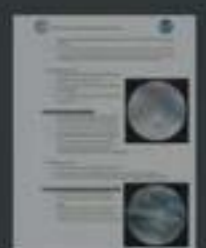
[Script](#)

Poetry and Art [↗](#)

- Read to students the poem entitled, "[Total Eclipse of the Sun.](#)"



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Celestial Dance: The 2023 and 2024 Solar Eclipses



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 some of the annular eclipse or the total eclipse.

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.

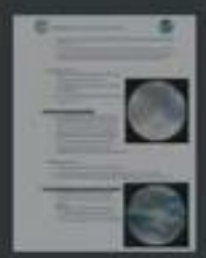


Engaging Questions

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?



1



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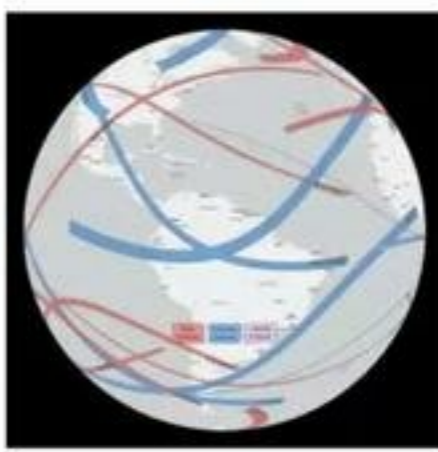


Engaging Questions

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





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Celestial Dance: The 2023 and 2024 Solar Eclipses



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

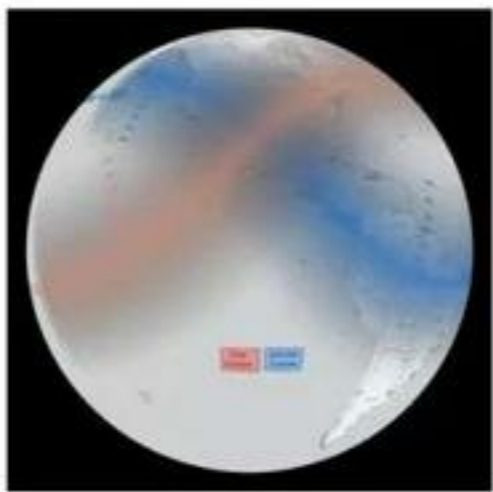
- You can see the cycle pretty clearly when looking at the annular (blue) eclipse on January, 15, 2010 starting in Africa and moving through Asia, as well as the one that will occur in South America and Europe on January 26, 2028.

Engaging Questions

- Can you find two eclipses that look nearly the same and 18 years apart?
- Are there more or less solar eclipses than you thought?
- 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.



Datasets included [↗](#)

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[Script](#)

Poetry and Art [↗](#)

- Read to students the poem entitled, "[Total Eclipse of the Sun.](#)"
- Alternatively, print the hand-out for students to read in [English](#) or [Spanish](#).
- Have the students draw, paint, or digitally create a picture of a scene that is described in the poem.
- Send a photo of your art or photos of your students' art to: hilary.peddicord@noaa.gov or upload to social media and tag @scienceonasphere. The most common hashtags for the eclipse are #eclipse2024 #eclipse2023
- We hope to use your art in a movie we are making!

https://sos.noaa.gov/media/downloads/live-programs/celestial_dance/Poem_Activity-English.pdf [Activities and Lessons](#) [↗](#)



1



Total Eclipse of the Sun

By: Hilary Peddicord

Never have I ever felt closer to my ancestors more than the time the midday Sun turned black.

Reaching back in time and consciousness I wondered, how did they feel, with no knowing of stars and planets and moon orbits, when father Sun succumbed to darkness.

I've heard stories from Asian, Pacific and Native American peoples who believed that a giant frog was trying to eat the sun. Warriors would scream and fight and threaten the frog until the Sun was free again.

So here I was, feeling the fear, myth and confusion of my familial line and a sense of reverence as sister moon commanded my attention.

In the moment that day turned to night, father sun's mane, like wild tentacles, flowed out in all directions showing me that he was still in charge.

And yet the birds and bugs silently stared and the crickets rushed to play their night songs. Our breaths stopped. It felt as if life was begging my sister to relent.

Slowly her night crescent shifted letting the light flow, gracing us once again with life force, blinding and hot but calming. Because our Sun would shine again.

I was shocked, when the day began oddly anew, and the roots that broke through the soil of time awakened my cells. I was instantly one with all life. The day that time did not end.

Activity:

Solar eclipses are impactful events for those that are lucky enough to experience them. Impactful events or even daily beauty can awaken our artistic senses. We sure hope you will have the opportunity to see an eclipse at some point in your life. The annular solar eclipse (almost total) will happen on Oct 14, 2023. The total solar eclipse will happen on April 8, 2024.



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This FAQ was created as part of the [NOAA Education Science On a Sphere \(SOS\) Live Program](#) Celestial Dance: The 2023 and 2024 Solar Eclipses



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- We hope to use your art in a movie we are making!

Citizen Science Opportunities and Lessons [↗](#)

GLOBE Observer [↗](#)

Through GLOBE Observer, the app of The GLOBE Program, you can monitor changes in temperature and clouds throughout the eclipse. Learn more at [GLOBE Observer Eclipse](#). See how we plan to use it by [clicking here](#).

CrowdMag [↗](#)

CIRES Education & Outreach [GeoMag](#) page and explore Earth's geomagnetism using NOAA's [CrowdMag app](#) and classroom lessons on [Geomagnetism and Earth's Magnetic Field](#).

Contacts [↗](#)

What is GLOBE Eclipse?



On 14 October 2023, an annular eclipse will take place in North, Central and South America. The path of maximum eclipse will be across parts of the United States, Mexico, Belize, Honduras, Nicaragua, Costa Rica, Panama, Columbia and Brazil (the path from upper left to lower with yellow circles in the diagram below). A partial annular eclipse will be visible in Canada, and other parts of Central and South America. This map of the 2023 eclipse shows the percentage of obscuration for any location.



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Citizen Science Opportunities and Lessons [↗](#)

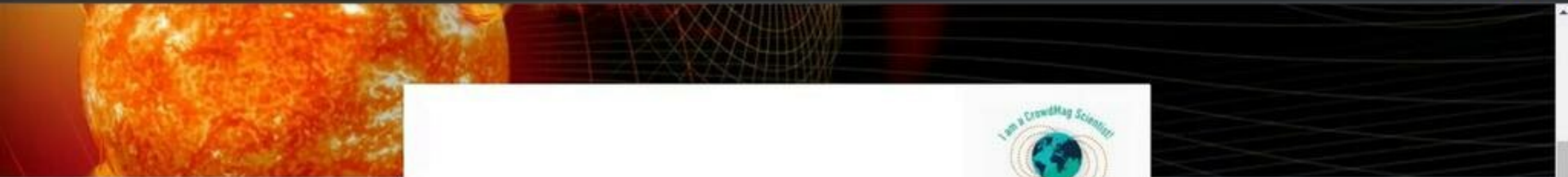
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Contacts [↗](#)



GeoMag

Explore the power of community/citizen science, Earth's magnetic field, space weather, and data collection with a series of lessons, videos, and webinars designed for middle and high school students, undergraduate students and the general public. Your data contributions will help scientists understand changes in Earth's magnetic field that will lead to improvements in navigation and help to protect our communication systems and electric grid from space weather.



AUDIENCES
[Education](#) [Students](#)



[Who is this program for?](#)

[Funding information](#)

Curriculum

Geomagnetism in the MESA Classroom: An Essential Science for Modern Society
Middle School

Geomagnetism Challenge
Middle School, High School, Informal Audience

Geomagnetism: Earth's Magnetic Field
Middle School

Analyzing Geomagnetism using the CrowdMag App
University/College



Description [🔗](#)

In the summer of 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 now, six years later, we look forward to two solar eclipses across America within nearly six months of each other.

In honor of these momentous occasions, we have created new datasets that will inspire your audiences to go and see the alignment of the Sun, the Moon, and Earth near them.

Don't miss the art, citizen science, and classroom activities that have been curated and created as part of this program. They include a poem, hoping to inspire visual art making in the museum or the classroom, as well as two different citizen science data collection apps and classroom lesson plans. In addition, we have created a [FAQ](#) page to help you answer all the fun and quirky questions that will come as part of this astronomical event.

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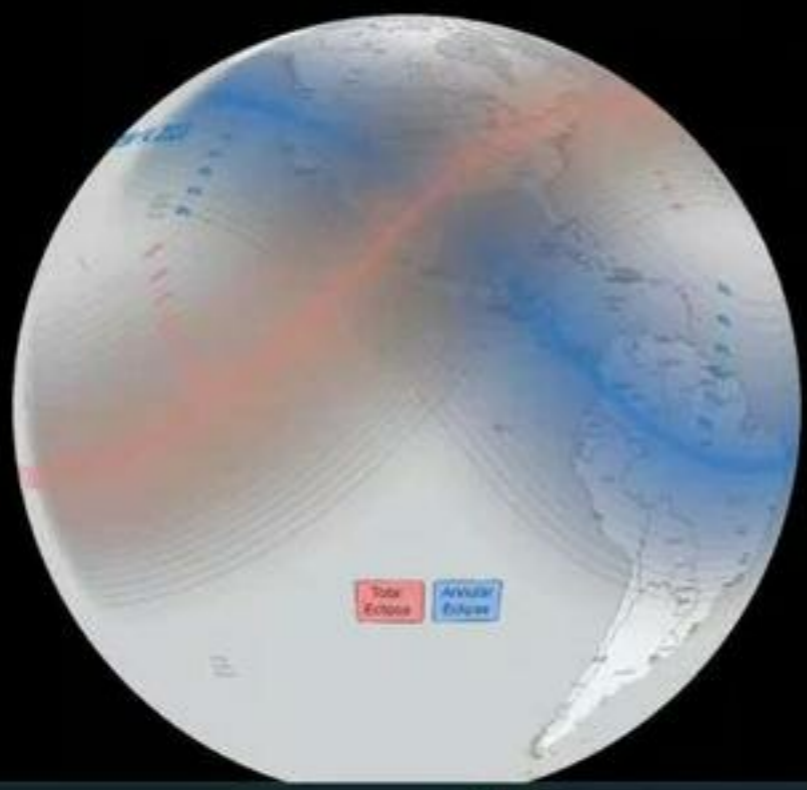
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Celestial Dance: The 2023 & 2024 Solar Eclipses

Home >> Catalog >> Live Programs >> Celestial Dance: The 2023 & 2024 Solar Eclipses



Details

Added to the Catalog

14 Aug. 2023

Available for

SOS Explorer

Categories

People: Live Programs

Space: Live Programs

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[Image \(Download\)](#)

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Explorer® (SOSx), and SOSx Mobile (Mobile).

Updates and new releases are available periodically, so be sure to check here and keep your system up to date! For any questions, or to request help upgrading your system, [email us](#).

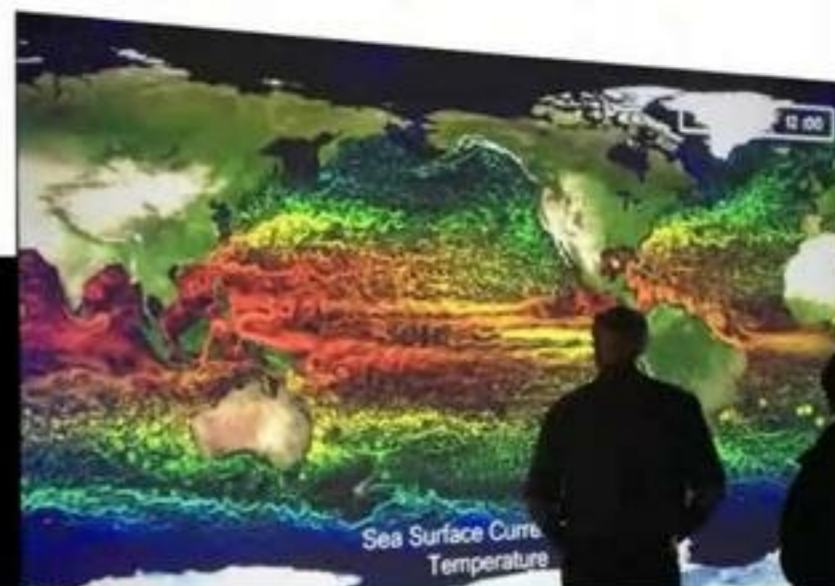
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SOS Explorer®

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SOS Manuals

Home >> Support >> Science On a Sphere® >> Manuals

Quick Links

- [Alignment Manual](#)
- [Automation Control Protocol](#)
- [Content Creation Guidelines](#)
- [Datasets Manual](#)
- [Display Software Manual](#)
- [Operations and Systems Administration](#)
- [Playlist Format Reference](#)
- [Presentation Manual](#)
- [Public Kiosk Manual](#)
- [Remote App Manual](#)
- [Translations Manual](#)
- [Visual Playlist Editor Manual](#)

Product Suite

The Science On a Sphere® product suite is the collection of software and resources that are available from the NOAA SOS development team to all SOS and

https://sos.noaa.gov/support/sos/manuals/remote-app/



Remote App Manual

[Home](#) >> [Support](#) >> [Science On a Sphere®](#) >> [Manuals](#) >> [Remote App Manual](#) >> [Single Page](#)

Remote App Manual

- System Requirements
- SOS Software Version
- iOS Software Version
- Connection Options
- Configuring
- Presentation
 - Playlist / Catalog
 - Presenter Notes
 - Orientation
 - Playback

The SOS Remote App for Science On a Sphere® (SOS) is an iPad app and is the primary way to control an SOS system. The app displays a list of datasets in the current presentation playlist and has intuitive orientation and playback control for the dataset loaded on the sphere. The app also supports many features such as annotation, zooming, layering, quickly searching and browsing through the entire SOS Data Catalog, and quickly creating a presentation playlist on the fly. The SOS Remote app uses Wi-Fi Internet access or Bluetooth to connect to the SOS computer.

NOTE

The SOS Remote App can also run on an iPhone or iPod Touch, however, development for those devices stopped in 2015 and use of those devices is deprecated. The iPad app contains all features and is therefore the preferred method for controlling SOS. The iPhone and iPod Touch only contain a subset of features and is used for a basic SOS presentation (see the [iPhone section in the Appendix](#)). The rest of this manual assumes you will be using the iPad.

Tips and tricks to create content for SOS

Juan Pablo Hurtado - Visualization Lead



NOAA
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3:33 PM
8/23/2023

5

Before you start

- Who is your audience?
- What do you want the audience to understand?
- How do you want to deliver it?

Tools of the trade

For GIS data:



Tools of the trade

For Images, videos, and sound:



gettyimages



Tools of the trade

For image and video editing:



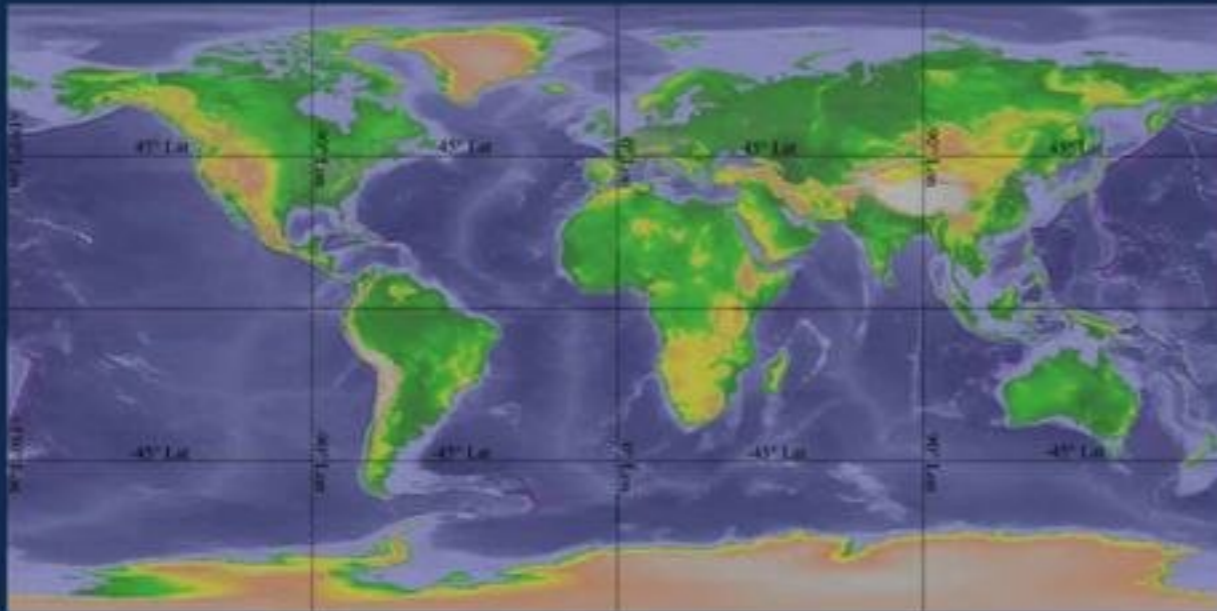
Shotcut

The other tools...



Requirement for creating content

For image and video editing:



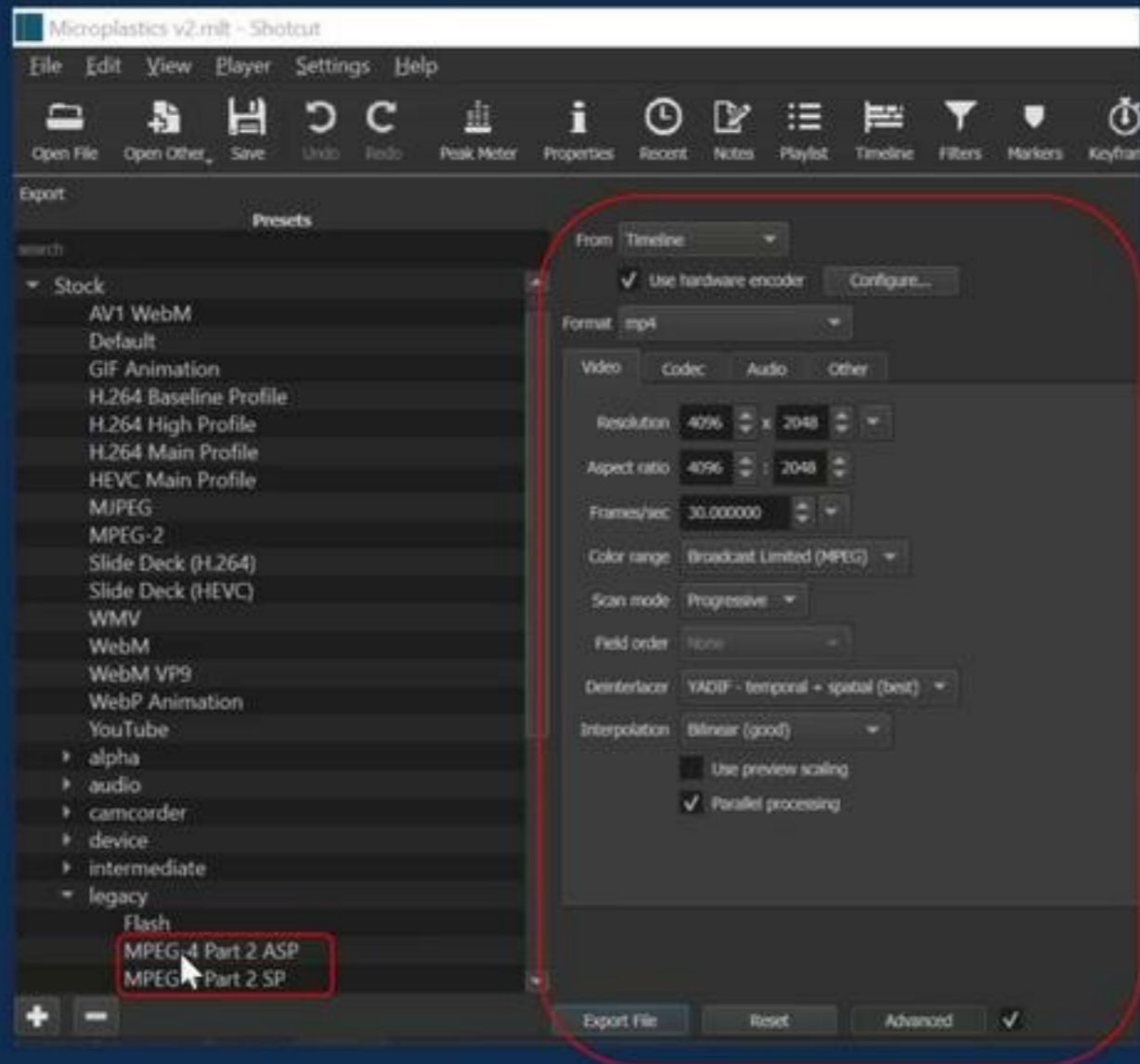
Equatorial Cylindrical Equidistant projection (2:1)

Video Codexes:

- Libxvid
- mpeg4

Avoid h.264, h.265, av1

Shotcut Shortcuts



Final Tips

- We are one email away
- Be organize with files, folders, versions, etc.
- Youtube is your friend
- Check on the sphere constantly



Questions or other tips?

juan.hurtado@noaa.gov



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