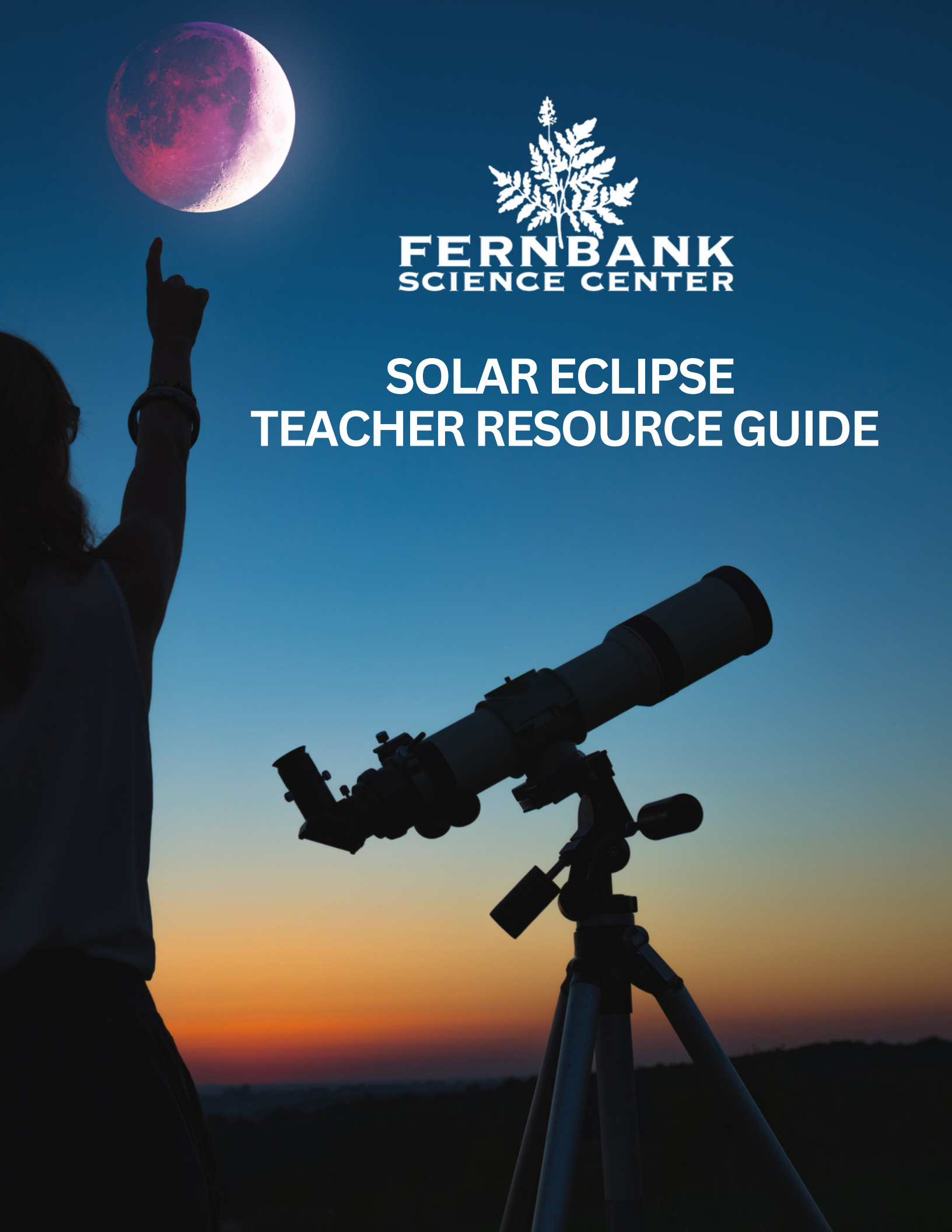


FERNBANK
SCIENCE CENTER

SOLAR ECLIPSE TEACHER RESOURCE GUIDE

Welcome to the Fernbank Science Center Teacher Resource Guide for the upcoming celestial events of the annular and total solar eclipses on October 14, 2023, and April 8, 2024, respectively. These awe-inspiring astronomical phenomena offer a unique and captivating learning opportunity for educators and students.

This document has been curated to provide you with an array of educational materials and tools designed to enhance your teaching experience during these rare celestial occurrences. This document has variety of resources intended to support teaching and learning of solar eclipses.

We hope you find this collection of materials informative and inspiring as you prepare to share the magic of the cosmos with your eager learners.

GUIDE TO THE

ANNULAR SOLAR ECLIPSE

ON OCTOBER 14, 2023

FERNBANK SCIENCE CENTER

WHAT'S HAPPENING?

On Saturday, October 14th, an annular solar eclipse will cross North, Central, and South America.

WHAT CAN WE SEE?

While the annular phase of the solar eclipse is not visible in Atlanta, we can observe it as a partial solar eclipse since the moon will obscure the Sun by up to 50%. The degree of obscuration varies based on location.

Atlanta, GA
50%
New York, NY
23%
Los Angeles, CA
70%
San Antonio, TX
90%

WHEN TO OBSERVE?

We can follow the partial eclipse over a period of about 2 hours.

11:43 am partial eclipse begins

1:12 pm maximum eclipse

2:45 pm partial eclipse ends

Please join us on October 14th to view the partial eclipse!

WILL IT GET DARK?

No. During a solar eclipse, the Moon moves in front of the Sun and obscures it partially (partial eclipse) or completely (total eclipse). It only gets completely dark during a total solar eclipse.

WHERE CAN I SEE IT?

The Sun is high in the sky at the beginning of the eclipse. Find a place where you have a clear view of the Sun. You're observe at Fernbank Science Center!

HOW DO I SEE IT?

It is never safe to look directly at the Sun, even during a solar eclipse. Therefore, you will need a pair of solar eclipse glasses, a solar eclipse viewer, or a telescope equipped with a special solar filter. FSC will be giving out free viewers on October 14th!

NOTE: Regular sun glasses are NOT safe for viewing the sun, no matter how dark they are.

WHEN WILL THE NEXT SOLAR ECIPSE TAKE PLACE IN THE U.S.?

On April 8, 2024, a total solar eclipse will cross North America, passing over Mexico, the United States, and Canada.

GUIDE TO THE

TOTAL SOLAR ECLIPSE

ON APRIL 8, 2024

FERNBANK SCIENCE CENTER

WHAT IS A SOLOR ECLIPSE?

On Monday, April 8th, a total solar eclipse will cross North America - Mexico, the United States, and Canada.

WHAT CAN WE SEE?

The Atlanta area is not in the “path of totality” for the upcoming solar eclipse. However, we can observe a partial solar eclipse since the moon will obscure the Sun by up to 82%. The Moon covers a large portion of the Sun, so it will be spectacular!

Atlanta, GA
82%
New York, NY
90%
Los Angeles, CA
50%
San Antonio, TX
100%

WILL IT GET DARK?

Not completely. During a total solar eclipse, the Moon moves in front of the Sun and obscures it completely. However, it only gets completely dark during a total solar eclipse where the sun is obscured by 100%. In Atlanta, since the sun will be obscured by 82%, the sky will not be completely dark.

WHERE CAN I SEE IT?

The Sun is high in the sky at the beginning of the eclipse. Find a place where you have a clear view of the Sun.

HOW DO I SEE IT?

It is never safe to look directly at the Sun, even during a solar eclipse. Therefore, you will need a pair of solar eclipse glasses, a solar eclipse viewer, or a telescope equipped with a special solar filter.

NOTE: Regular sun glasses are NOT safe for viewing the sun, no matter how dark they are.

WHEN TO OBSERVE?

We can follow the partial eclipse over a period of about 2.5 hours.

1:45 pm partial eclipse begins

3:04 pm maximum eclipse

4:21 pm partial eclipse ends

WHEN WILL THE NEXT TOTAL SOLAR ECLIPSE TAKE PLACE IN THE U.S.?

The next total solar eclipse that will be visible from the contiguous United States will be in about 20 years - Aug. 23, 2044.

Bring STEAM to your classroom with NASA's Eclipse Art!

"The greatest scientists are artists as well." ~Albert Einstein

Experiencing a solar eclipse is great example of where art and science meet! To celebrate the fusion of art and science, NASA creatives will be sharing eclipse-inspired artwork in anticipation of the two solar eclipses that will cross the United States on October 14th and April 8th. The first four pieces in the series are below. Use the QR codes to learn more about the artist and download the poster.

Tyler Nordgren

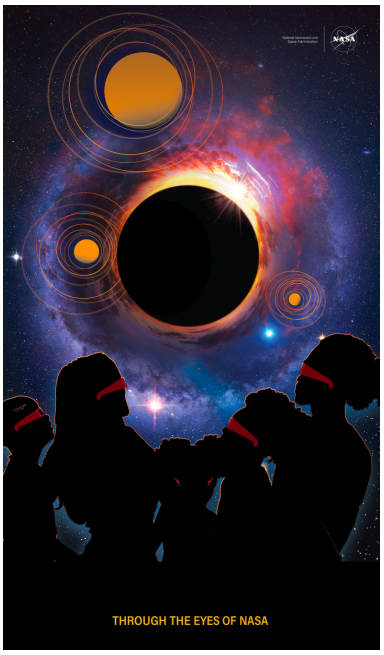
Astronomer and Artist

"I spent a lot of years driving around the American Southwest, visiting many of the state and national parks that will be in the path of this upcoming eclipse. This view captures the feeling of a number of those places I loved so much. I chose the color palette and typestyle to reflect that midcentury moment when so many families were first hitting the road in the 1950s, visiting these places for the first time themselves. To me, the eclipse above and landscape below represent a spectacular world waiting to be discovered anew."

Click here to learn more about Tyler Nordgren and download the poster here!

Kristen Perrin

Senior Multimedia Graphic Specialist



"I felt as though the 2023 annular eclipse should be familiar, inspiring, and welcoming to all demographics, depicting the spectacular dynamics of the event being enjoyed by all. The three circles with multiple rings around them add a solar and planetary figurative dimension to the piece. The circles evoke the Moon, Sun, and planets in our solar system, while the rings in turn represent orbital paths as well as the 'ring' created during the annular eclipse.

Oftentimes there is not enough cultural representation when solar or celestial events take place. Monumental events such as these are not discussed outright in urban communities — but that does not devalue the occurrence. I felt it was important to choose persons that represent a more modern and diverse audience to provide visual inclusion within the design of the poster. This event impacts the world in which we live in and should be shared and enjoyed by all."

Click here to learn more about Kristen Perrin and download the poster here!

Gena Duberstein

Producer and Graphic Designer

"During the 2017 total solar eclipse, my parents sent me a picture of themselves, smiling in eclipse glasses and sitting on their front stoop with their dog. It was such a goofy, happy picture, I wanted to capture that same spirit for the poster. I have a dog of my own now – a goofy, happy American foxhound mix – and he proved to be the perfect model for the total eclipse poster, which will be released ahead of the April 8, 2024, total solar eclipse. For the upcoming annular eclipse in October, I played with a similar design but referenced my parents' tuxedo cat. There's no denying an eclipse can be an awe-inspiring event, but it can be just plain fun too!"

Click here to learn more about Gena Duberstein and download the poster here!

Also available as a coloring sheet!

Michael Lentz

Art Director and Artist

"When given the task of creating an eclipse piece, I was intrigued by how different landscapes could change the feel of this celestial event. I worked up a few different environments, but my personal love for forests and mountains led me to the setting I chose. As for style, I was inspired by the simplicity and elegance of Japanese woodblock prints or Ukiyo-e, which translates to 'pictures of the floating world' – a phrase I found fitting for an eclipse."

Click here to learn more about Michael Lentz and download the poster here!

National Aeronautics and Space Administration

NASA

ANNULAR ECLIPSE 10.14.23

KEEP LOOKING UP

ECLIPSE WEB RESOURCES

Ward's Understanding Solar Eclipses Infographic
This infographic explains the three types of solar eclipses: partial, annular, and total.
https://wardsworld.wardsci.com/i/1504877-wards-eclipse-poster-2023/0?

Interactive Solar Eclipse Map - October 14, 2023
Use this map to determine the visibility of the annular solar eclipse on October 14, 2023. Select any location to see the local type, date, and time of the eclipse.
https://www.timeanddate.com/eclipse/map/2023-october-14

Interactive Solar Eclipse Map - April 8, 2024
Use this map to determine the visibility of the total solar eclipse on April 8, 2024. Select any location to see the local type, date, and time of the eclipse.
https://www.timeanddate.com/eclipse/map/2024-april-8

My NASA Data
Interactive activity that takes students through the basic mechanics of a solar eclipse, using a NASA Space Place Eclipse Poster and an interactive Google Slide deck - "Observing the Sun During a Total Solar Eclipse". Great for the April 8th total solar eclipse.
https://mynasadata.larc.nasa.gov/interactive-models/observing-sun-during-total-solar-eclipse

NASA 3D visualization of the 2023 Annular Eclipse
This cool 3D visualization is built with real science data and allows you to view the eclipse from earth, or from space!
https://science.nasa.gov/eclipses/future-eclipses/eclipse-2023/

PBS Video Resources - Solar Eclipses Explained
This is a collection of five videos and visualizations that help students learn about the mechanics of solar and lunar eclipses.
https://gpb.pbslearningmedia.org/resource/buac18-sci-ess-eclipsesexplain/eclipses-explained/

NSTA Eclipse Resources
Comprehensive collection of eclipse-related activities, teachers guides, admin guides, etc. *https://www.nsta.org/eclipse*

Eclipse Book List for Teachers, Librarians, and Families
Comprehensive list of eclipse-related books and articles for all grade levels.
https://eclipse.aas.org/resources/books-articles

NASA Space Place Solar Resources for Educators and Parents
A collection of videos, games, crafts, and activities related to the Sun.
https://spaceplace.nasa.gov/menu/sun/

ECLIPSE ACTIVITIES

Eclipse Chalk Art

https://www.starnetlibraries.org/2020/wp-content/uploads/2022/06/EclipseChalkCoronaJHfinal.pdf
Create your own picture of a solar eclipse with chalk and paper!
Target Grade Levels: K-5

NISENET UV Bracelets

https://www.nisenet.org/catalog/programs/exploring_properties_uv_bracelets
Learners use ultraviolet light to change the color of beads that contain photochromic (color-changing) dye.
Target Grade Levels: K-5

NASA JPL Eclipse 'A Pi in the Sky' Math Challenge

In this math challenge, students are given a chance to take part in recent discoveries and upcoming celestial events, all while using math and pi just like NASA scientists and engineers. Students use the mathematical constant pi to measure the approximate size of the shadow that will fall on Earth during a total solar eclipse.
Student Handout: https://www.jpl.nasa.gov/edu/pdfs/piday2023_eclipse_handout.pdf
Teacher Key: https://www.jpl.nasa.gov/edu/pdfs/piday2023_eclipse_handout_answer.pdf
Target Grade Levels: 6-12

DIY Pinhole Projector

https://www.theverge.com/2017/8/9/16109520/how-to-diy-pinhole-projector-solar-eclipse-cardboard-paper-budget-safe
In this activity, students build a DIY pinhole projector to view the solar eclipse.
Target Grade Levels: K-5

NASA Eclipses and Citizen Science Project

https://science.nasa.gov/eclipses/citizen-science/
NASA's citizen science projects related to the Sun.
Target Grade Levels: 6-12

NASA JPL - Measuring Solar Energy During an Eclipse

https://www.jpl.nasa.gov/edu/teach/activity/measuring-solar-energy-during-an-eclipse/
Students find the Sun's location in the sky for different points in time during an eclipse and then use mobile devices to measure lux before and during the eclipse to examine the impact a solar eclipse has on the energy received at Earth's surface.
Target Grade Level: 4-7

cK-12 Interactive Solar Eclipse Middle School Lesson

https://flexbooks.ck12.org/cbook/ck-12-middle-school-earth-science-flexbook-2.0/section/3.9/primary/lesson/solar-eclipses-ms-es/?referrer=search#

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