

# Eclipse Outreach and Partners to Help

**Andrew Fraknoi**

*(Fromm Institute, U. of San Francisco)*



**Who will see some kind  
of eclipse in 2023-24?**

**U.S. = 332 million**

**Canada = 37 million**

**Mexico = 129 million**

**TOTAL = 498 million**



**Astronomy Teacher Contemplating  
Eclipse Education Challenges**



**Many communities already have  
an information-distribution center**





**with help from the National Science Foundation**

**Space Science Institute, Boulder, CO**

**6 MILLION GLASSES**

**DISTRIBUTED FREE**

**THROUGH 13,000+ PUBLIC LIBRARIES**



*The STAR Library Network presents*

# **SOLAR ECLIPSES of 2023 and 2024**

A North American “Double-Header”

**A Guide for Public Libraries and  
Their Communities**



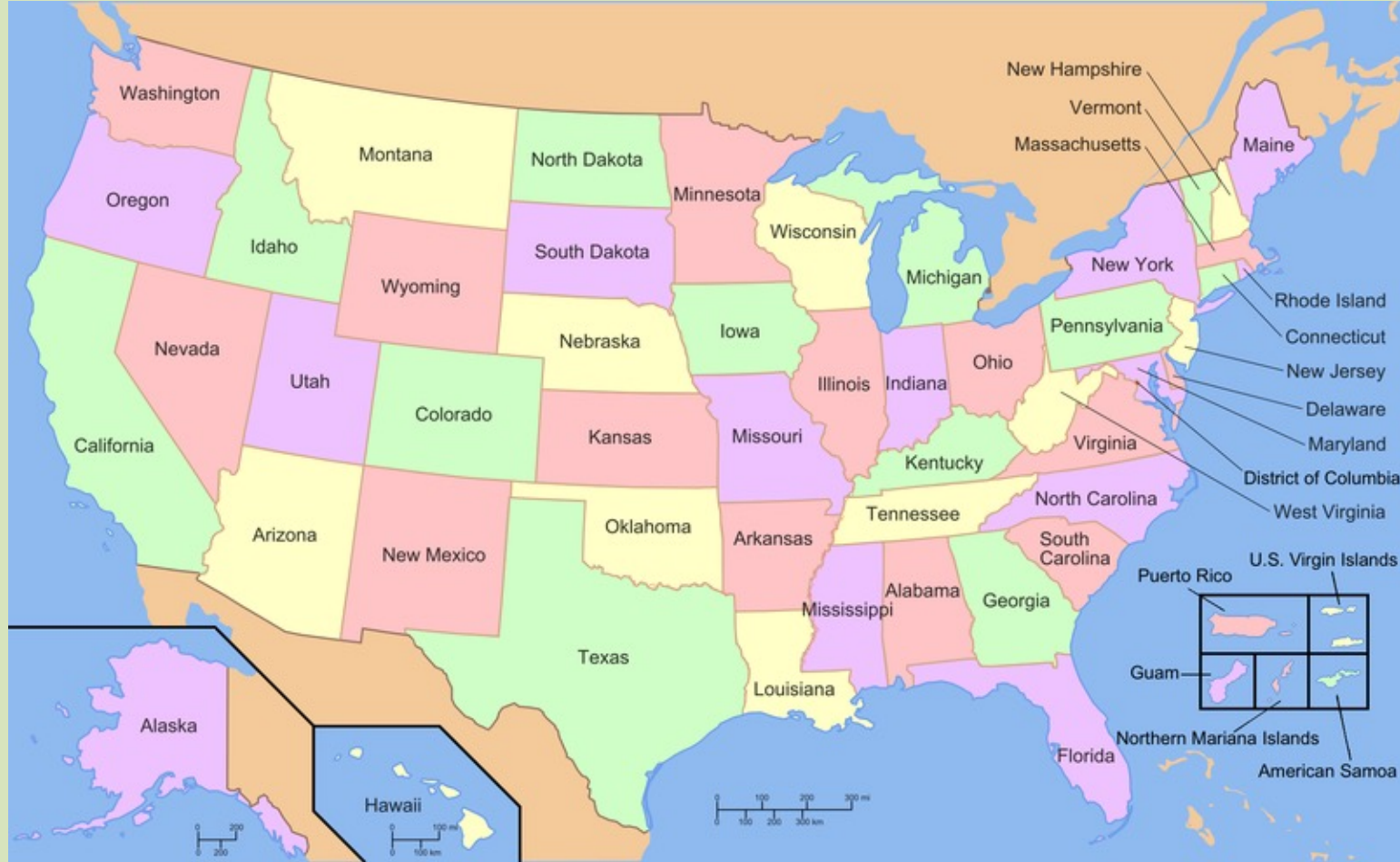
by Andrew Fraknoi (*Fromm Institute, University of San Francisco*)  
and Dennis Schatz (*Institute for Learning Innovation*)



**Booklet for  
libraries and  
their patrons**

**is at:**

**[http://bit.ly/  
eclipsesforlibraries](http://bit.ly/eclipsesforlibraries)**



**Also providing workshops and lendable kits of solar telescopes and activities to state library systems in all states and US territories:  
48 workshops for 1300 librarians so far**





**13,000 LIBRARIES!**

**WHO CAN HELP?**



**We are training several hundred “eclipse experts”  
to help libraries in their and other communities**



**THOSE WITH STUDENTS:  
HAVE STUDENTS BECOME “SECRET AGENTS” FOR ECLIPSES  
AND PROVIDE INFORMATION THROUGH  
SOCIAL MEDIA**





**PARTNER** undergraduates with amateur astronomers  
**DISCOVER** the best public engagement practices together  
**INSPIRE** underserved communities with eclipse engagement



Partner

# ECLIPSE AMBASSADORS

[eclipseambassadors.org](http://eclipseambassadors.org)



**TRAINING 500 AMBASSADOR PAIRS**



New NSF Program to Train Scientists and Teachers to Help





# Astronomy Ambassadors

**AAS** AMERICAN ASTRONOMICAL SOCIETY



**Roughly 275 early career astronomers trained to do outreach**

**<https://aas.org/education/roster-aas-astronomy-ambassadors>**



**1274 NASA Solar System Ambassadors:**

**<https://solarsystem.nasa.gov/solar-system-ambassadors/>**





While 6 million is a lot of safe-solar-viewing glasses...

It's not enough!

We all Need to Teach Other Safe Ways to Show the Sun

# What NSTA/SSI Eclipse Partners Are Doing + Resources from NSTA for Educators

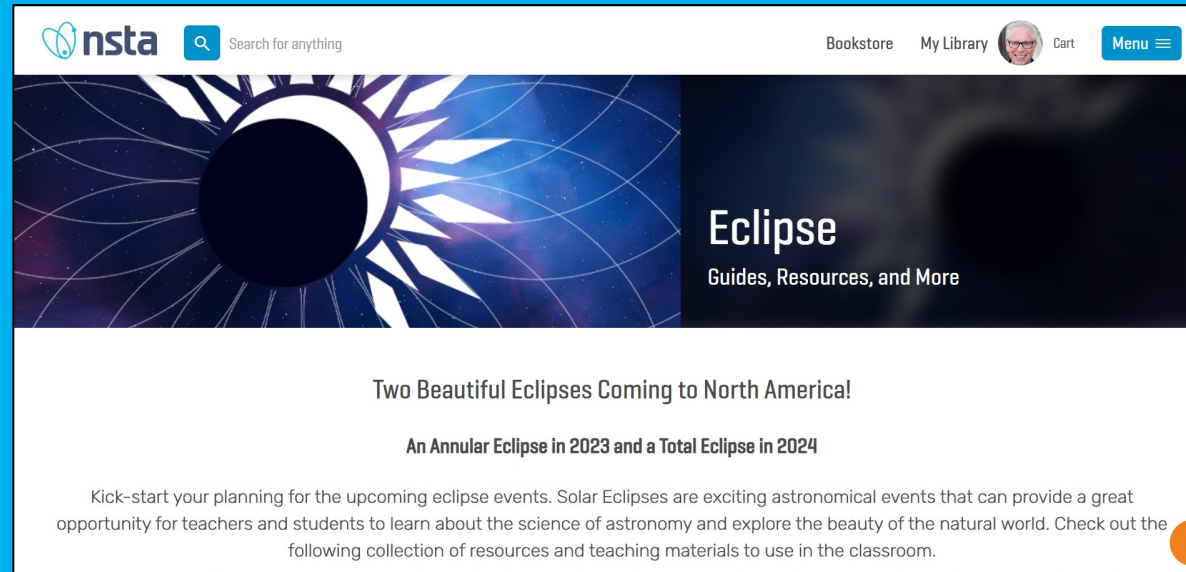


**Dennis Schatz**

**Past President, National Science Teaching Association (NSTA)**



# Examples from the 275 NSTA/SSI Solar Eclipse Partners



The screenshot shows the NSTA website header with the logo, a search bar, and navigation links for Bookstore, My Library, Cart, and Menu. The main content area features a large image of a solar eclipse with the word "Eclipse" and the subtitle "Guides, Resources, and More". Below this, a section titled "Two Beautiful Eclipses Coming to North America!" highlights "An Annular Eclipse in 2023 and a Total Eclipse in 2024". The text encourages educators to use the resources for classroom learning.

## Become a NSTA/SSI Solar Eclipse Partner

NSTA and the Space Science Institute (SSI) are looking for educators of science interested in assisting their schools, libraries, and other community organizations in getting the public ready to experience the eclipses safely. Participants receive free NSTA membership.

 Due to Overwhelming Demand,  
Link is Closed

# What We Ask NSTA/SSI Eclipse Partners to Do

1. Partner with local libraries and other community organizations to offer at least two public programs, viewing sessions, and/or other appropriate engagements during the time leading up to the 2024 total solar eclipse.

Appropriate activities should include information about:

- a) The time of the eclipse in your location and elsewhere in the U.S.
- b) Safe eclipse viewing techniques.
- c) An understanding of what causes solar eclipses.


2. Provide the information about the eclipse to other teachers in your school and district, as well as to the administrators who might have questions about how the school should organize for the total eclipse in 2024.



# Many Over Achievers

## Friends' Central School in Wynnewood, PA

[FCS Moon Shadow](#) [Home](#) [Profiles](#) [Eclipses](#) [History](#) [Photography](#) [Timeline](#) [FAQ](#) [Contact us](#)



Friends' Central  
Moonshadow Team

# Friends' Central School in Wynnewood, PA

Deborah Skapik

Pronouns: she/her



Year: Teacher

Teams: Everything??

**Bio:** DEBORAH L. SKAPIK (she/her) is the Moonshadow Team founder and director. She is a [NASA Partner Eclipse Ambassador](#). She currently teaches physics and astronomy at Friends' Central School in Wynnewood, PA and is an adjunct professor of astronomy at St. Joseph's University. She is the mom of three amazing humans (plus three cats) and wife of an incredible guy who tolerates her insatiable curiosity for the universe, her experiments with sourdough bread and her service as a Christ Servant Minister in the United Methodist Church. Deb's eclipse guide for educators, "Look UP, Below!" is available at <https://tinyurl.com/debseclipsebook>. Follow her on instagram @deb\_makes\_bread

Astrid



Year:12

Pronouns:she/they

Teams:Research, Public Speaking

**Bio:** I'm interested in research and will lead it with Quin. I want to learn more about eclipses and the scientific history behind them. I'm good with setting up tech for events.

Andrew



Year:11

Pronouns:he/him

Teams:Telescopes, Website Building, Event Planning, Photography

**Bio:** I can help with really anything, be it media creation for workshops, behind the scenes planning, working with children, tech telescope stuff, presentations, etc. Anything works for me! FAST, Linux Club, Science Core, Robotics | Tennis, Squash. I like breaking and maybe fixing really old things. I'm pressured to put up a dog or cat, but I possess of neither, but I do have a fish.

Tomato + Egg + Rice and I'll be happy for life.



# Stevenson School in Pacific Grove, CA

**Program 1** - Local Farmers Market on four successive Tuesdays from 9/19-10/3 in cooperation with local public library booth.

**Program 2** - Presentations to after school programs at two Boys & Girls Clubhouses on 9/28 and 10/4.

**Program 3** - Presentation at Monterey Public Library 10/7.

**Program 4** - Parent Presentation the night before the Annular Eclipse at our Parent Conference weekend 10/13

**Program 5** - Viewing Party during Saturday Morning Parent Conferences 10/14

**Program 6** - Local Museum "Space Camp" presentation, grades 2-6, 7/12.

**Program 7** - School Alumni Association Presentation 6/18.



## Paul Duke STEM High School, Duluth, GA

### Eclipse Event Plans

- Three-minute spiel on upcoming eclipses
- Sun spotter to project image of sun
- Eclipse modeling activity
- Printed NSTA eclipse handout
- Prepared solar viewer kits
- Solar eclipse chalk art (from STARnet)



## Paul Duke STEM High School, Duluth, GA

**School:** We will host an eclipse viewing event on October 14 as part of "The Hidden Sun Festival". We will serve our local community (all ages).

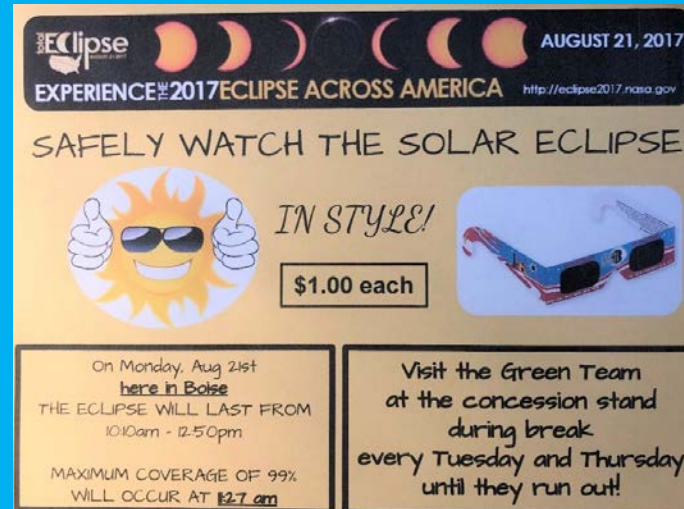
**Public Library:** Friday, September 15 - "Annular Eclipse Party" event at Norcross Public Library Branch. We will be serving students ages 6 - 11 and their guardians.

**Community Organization:** Partnered with local township (Duluth) in 3 Fridays-N-Duluth events. Hosted a tent of information called "Eclipse Information" where locals received printed flyers about the two eclipses this school year. Brought a Sunspotter to give live viewings of the sun. Provided pinhole viewer kits for attendees and engaged the youngest children in creating solar corona chalk art.

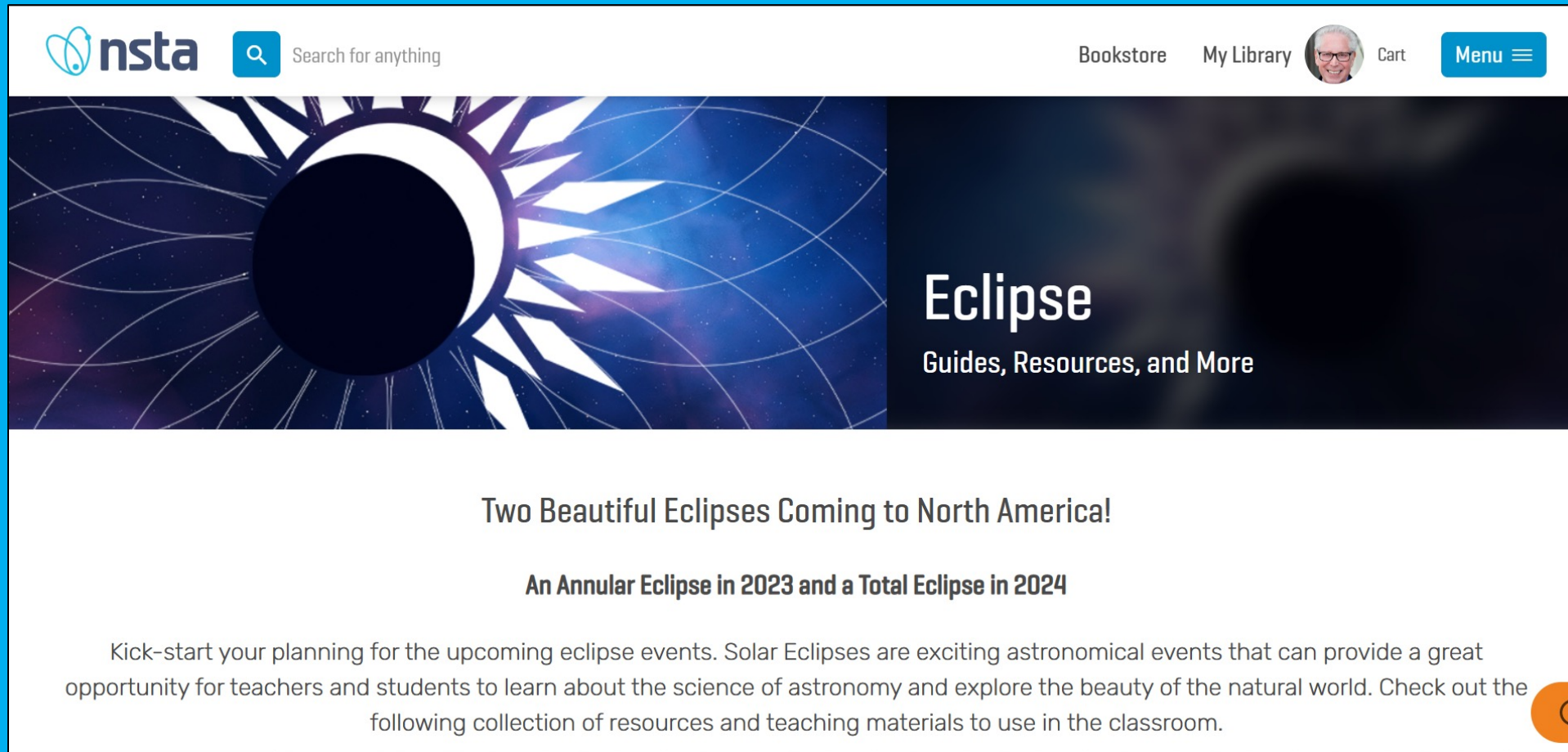


# Students Selling Glasses for a Profit to Support School Activities


A group of students and I were able to get money fronted to us to purchase (legit) eclipse viewing glasses. We sold them for \$1 and made a small profit for future projects. We taped a small flyer to each pair to help communicate the details of our viewing times. It was really fun and we easily sold out (500 pairs).



# NSTA Solar Eclipse Resource Website



**nsta** Search for anything

Bookstore My Library  Cart **Menu**

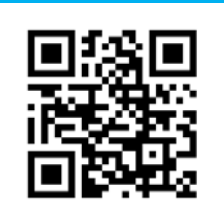
## Eclipse

Guides, Resources, and More

### Two Beautiful Eclipses Coming to North America!

**An Annular Eclipse in 2023 and a Total Eclipse in 2024**

Kick-start your planning for the upcoming eclipse events. Solar Eclipses are exciting astronomical events that can provide a great opportunity for teachers and students to learn about the science of astronomy and explore the beauty of the natural world. Check out the following collection of resources and teaching materials to use in the classroom.



<https://www.nsta.org/eclipse>

# Educator and Administrator Guides Family/Friends Handout

## The Great American Annular Eclipse of the Sun

Saturday, October 14, 2023

An Information Sheet by astronomers/educators Dennis Schatz & Andrew Fraknoi  
Distributed courtesy of the National Science Teaching Association

On Oct. 14, 2023, there will be a dramatic annular eclipse visible to people on a narrow path from Oregon going southeast to Texas (see map below). A partial eclipse of the Sun will be visible to everyone in North and Central America, with a bigger "bite" taken out of the Sun the closer you are to the path of the annular eclipse.

In this kind of eclipse, the Moon gets in front of the Sun, but it is too far away and, therefore, too small to cover it completely, leaving an annulus (or ring of fire) around the dark disk of the Moon.

We talked about the annular eclipse in class, so your child should be able to tell you more about what to expect. On the next page is the information for what will happen in our location.

The path of the annular eclipse. (Photo: Kaitlin Zuber)

Most people in North America will see a partial eclipse.  
Photo by Tomruen

Only those people in the narrow path of annularity will see the annular eclipse.  
Photo by Kevin Stank

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## NSTA SOLAR ECLIPSE GUIDE FOR EDUCATORS

### A Solar Eclipse Double-Header

October 14, 2023 and April 8, 2024

By Dennis Schatz and Andrew Fraknoi

Many people in the U.S. experienced the celestial beauty and sense of wonder of the 2017 total eclipse of the Sun. As the Moon crossed in front of the Sun, the Sun went dark, and the day suddenly turned into night. Whether you saw it or not, we have good news. Two solar eclipses are coming to North America soon—a "Double-Header"—on Saturday, October 14, 2023 (an annular—or ring-of-fire—eclipse) and Monday, April 8, 2024 (a total eclipse). Everyone not on the narrow eclipse path in North America will see a partial eclipse on both dates, where the Moon covers part of the Sun's surface.

To see the ring-of-fire during the annular eclipse, you will need to be in a 100-mile-wide path that stretches from the coast of Oregon to the southeast coast of Texas.

To see the solar corona (the Sun's faint atmosphere) during the total eclipse, you need to be in a 150-mile-wide path that starts in Mexico, enters the U.S. in Texas and moves northeast through a number of states until leaving the U.S. from New York. From there it moves on to the eastern part of Canada.

Rarely does nature offer us such wonderful teachable moments, when our students can experience key science concepts while observing a spectacular sky event first hand. This Guide gives you the key information and links to other resources you need, so that you, your students, and your community can make the most of these two eclipses.

The following clickable Table of Contents allows you to go directly to each topic.

May you have clear skies and enthusiastic learners during the two eclipses.

Dennis Schatz  
Andrew Fraknoi

FIGURE 1  
Annular Eclipse Showing Ring of Solar Surface (Ring-of-Fire) Still Visible as Moon Passes In Front of the Sun  
Photo by Kevin Ball

FIGURE 2  
Total Eclipse Showing Solar Corona as the Moon Passes In Front of the Sun and Completely Covers the Sun's Surface  
Photo by Deryn Snider during August 2017 Eclipse

## Solar Eclipse Double-Header in October 2023 and April 2024

### What School Administrators and Other Education Leaders Need to Know

Many people in the U.S. experienced the beauty and sense of wonder of the 2017 total eclipse—when the Moon crossed in front of the Sun. The Sun went dark, and the day turned into night. Now is the time to prepare for the next solar eclipses in North America—a "Double-Header" on Saturday, October 14, 2023 (an annular—or ring-of-fire—eclipse) and Monday, April 8, 2024 (a total eclipse). Rarely does nature offer us such clear teachable moments, when our students can experience key science concepts while observing a spectacular celestial event first hand.

In 2017, many administrators were unprepared when their science teachers asked to take students outside to view the eclipse. So, for the upcoming eclipses, we've prepared this document to give you the background you need to help your teachers make the two eclipses an unforgettable learning experience.

Annular eclipse showing ring of solar surface (ring-of-fire) still visible as Moon passes in front of the Sun  
Photo by Kevin Ball

Total eclipse showing solar corona as the Moon passes in front of the Sun and completely covers the Sun's surface  
Photo by Deryn Snider during August 2017 Eclipse





# Free Web Seminars

Recordings of the web seminars will be available post-event.



**Safe Solar Eclipse Viewing  
Techniques and What School  
Administrators Need to Know**  
Thursday, September 14, 2023 •  
7:30 PM ET



**A Solar Eclipse 'Double-Header':  
The Perfect Way to Engage Your  
Preservice Teachers in Capitalizing  
on These Teachable Moments**  
Thursday April 27, 2023 • 7:00 PM  
ET



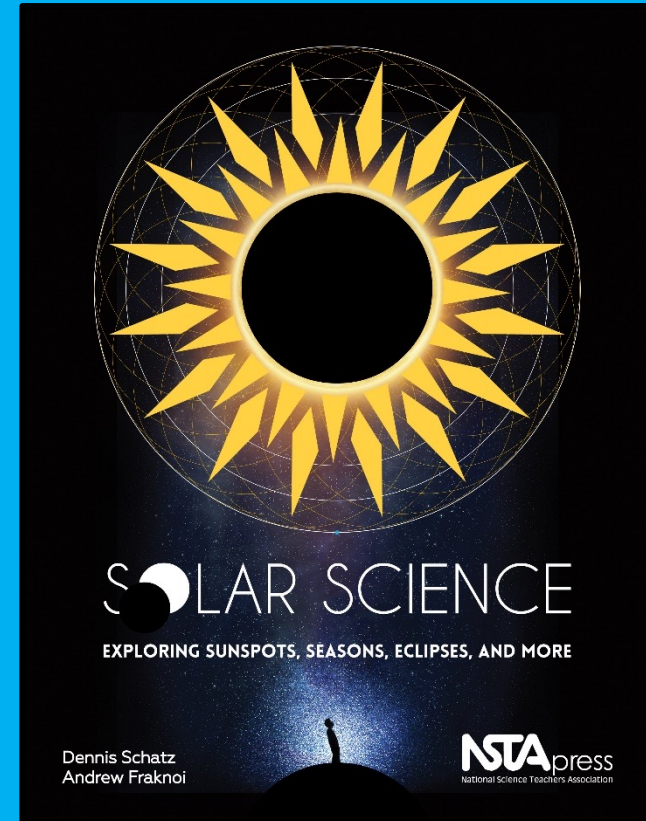
**An Eclipse 'Double-Header' is  
Coming this School Year!**  
Thursday August 31, 2023 • 7:00 PM  
ET



**Getting Ready for Two Spectacular  
Solar Eclipses in North America**  
October 20, 2022



**FOR CHILDREN**



**FOR TEACHERS**

## Journal Articles

### Science & Children • Elementary

[Preparing for the Eclipse: How to safely observe the Sun with young children](#)

### Science Scope • Middle School

July/August 2023 • Volume 46 • Issue 6

- [Hurrah for Teachable Moments](#)
- [Preparing for the Great American Eclipse of 2024](#)
- [The 2023 and 2024 Solar Eclipse Double-Header](#)
- [Transitioning from Partial to Total Understanding](#)
- [Making the Most of the Upcoming Solar Eclipse Double-Header October 14, 2023, and April 8, 2024](#)
- [Megamovie 2024: A Project to Eclipse All Others](#)

### The Science Teacher • High School

[Total\\_Eclipse: The solar eclipse this August is an ideal opportunity to practice three-dimensional science learning](#)



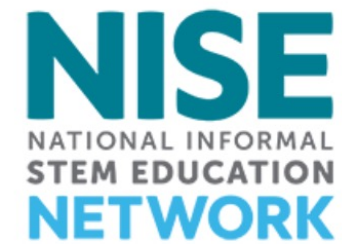


# NSTA Collection

A Collection of external links curated by NSTA with additional resources related to solar eclipses.

[View Collection](#)

See what our fellow science friends have to offer.



# Administrator Guide



## Solar Eclipse Double-Header in October 2023 and April 2024

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teachable moments, when our students can *experience* key science concepts while observing a spectacular celestial event first hand.

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Annular eclipse showing ring of solar surface (ring-of-fire) still visible as Moon passes in front of the Sun

Photo by Kevin Baird



Total eclipse showing solar corona as the Moon passes in front of the Sun and completely covers the Sun’s surface

Photo by Cary Sneider during August 2017 Eclipse



# What to Tell Administrators

It is important to inform your school administrators EARLY and OFTEN regarding your plans related to the eclipses. Share the NSTA Administrators Guide and emphasize three things:

# Eclipses are a Wonderful Learning Experience

## Daytime Moon



# Eclipses are Safe to View

Article in *Eclipse Retinopathy* in the journal *Eye* (2001)  
15,148-151 © 2001 Royal College of Ophthalmologist

Research during the 1999 solar eclipse in the United Kingdom found:

**“There were no recorded cases of permanent visual loss.”**



# Safe Eclipse-Viewing Techniques are Easy to Find and Use

