

Preparing for the 2024 Total Solar Eclipse

Dan Schneiderman - Eclipse Partnership Coordinator @ RMSC





THE TOTAL SOLAR ECLIPSE IS LESS THAN 7 MONTHS!

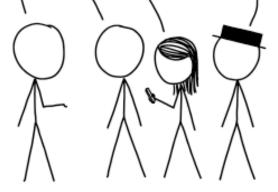
206 DAYS AWAY

...AND THEN AFTER THE ONE IN 2024, THERE'S ANOTHER ON AUGUST 12, 2045.

> WE'RE IN! WE CAN INVITE OUR KIDS, ASSUMING WE HAVE ANY.

> > I'LL CREATE AN EVENT. DO YOU THINK WE'LL STILL BE USING GOOGLE CALENDAR IN 2045?

> > > 50RRY, I'D LOVE TO MAKE IT, BUT I HAVE A THING THAT DAY.



IT'S WEIRD MAKING PLANS FOR ECLIPSES.



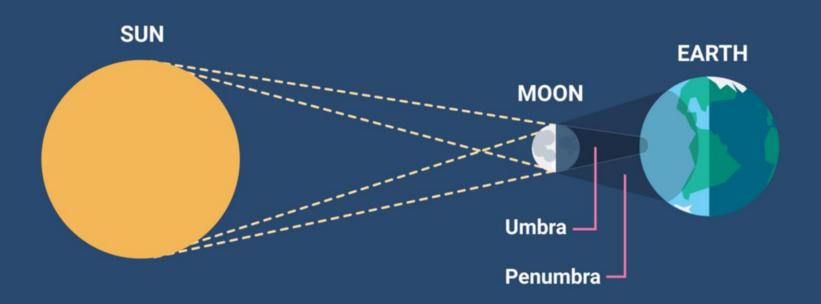




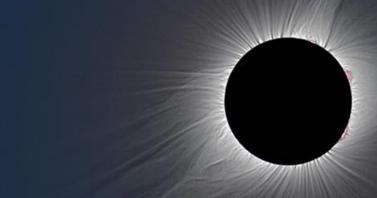
Science Time!

Eclipse Basics









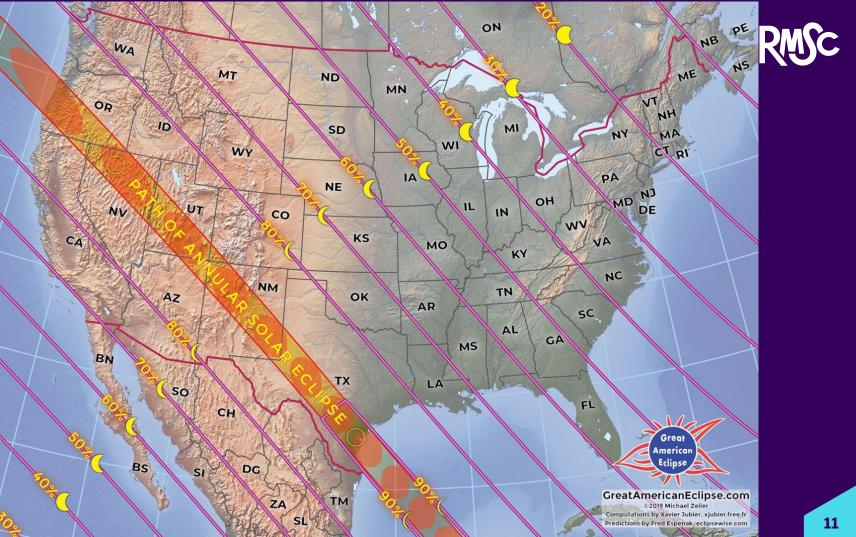
Types of Solar Eclipses Partial Annular Total



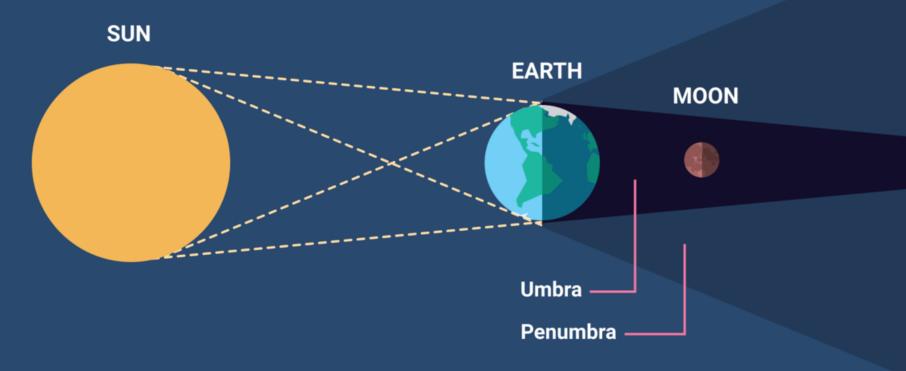








Lunar Eclipse



Lunar Eclipses

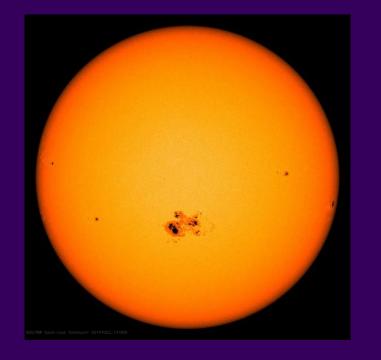


- A total lunar eclipse takes place when the Earth comes between the Sun and the Moon and its shadow covers the Moon.
- Eclipse watchers can see the Moon turn red when the eclipse reaches totality.
- Only happens during a full moon
- Last Lunar Eclipse in Rochester
 - November 7th-8th
- Next Lunar Eclipse
 - March 14th, 2025











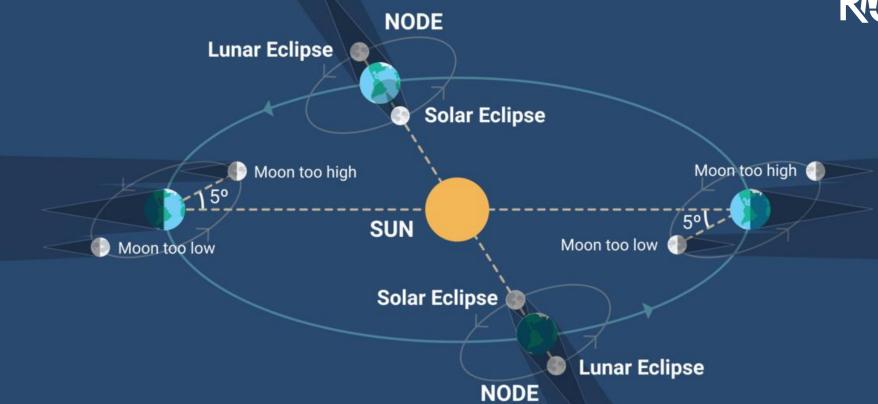


Why don't we see a Total Solar Eclipse more Often?



Eclipses Happen Approx. 18-24 Months





Phases of the Eclipse







Second Contact
The Moon covers
the entire disc of
the Sun. Total
eclipse begins.



Totality
Max phase of a
Total Solar
Eclipse. The Sun
is completely
covered.



Third Contact

Moon starts

moving away.

Parts of the Sun's

disc reappears.



Fourth Contact
Moon stops
covering the Sun.
The Eclipse ends.





- Moon blocking out the sun!
- 360 degree sunset
 - Deep dusk
- Planets
 - Jupiter & Venus should be easy to spot
 - Saturn and Mars
- Brightest of Stars visible
- Diamond Ring Effect
- Baily's Beads





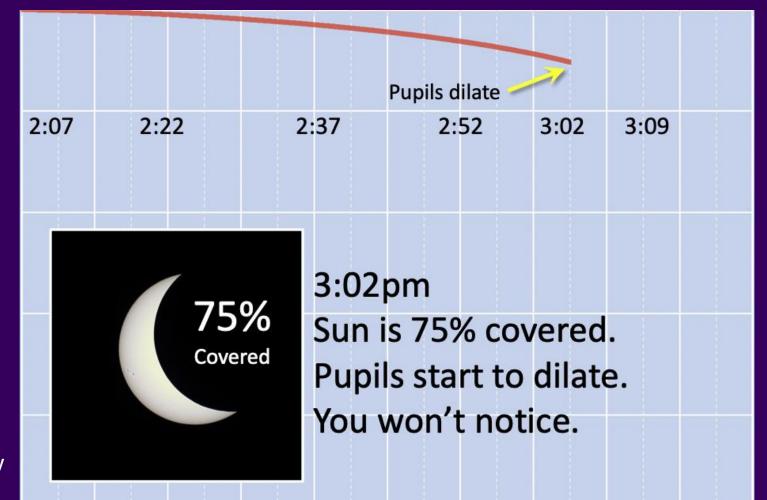
Diamond Ring Effect

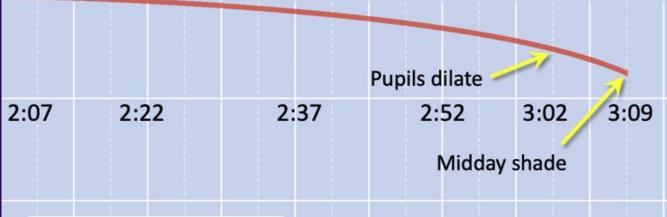


Bailey's Beads



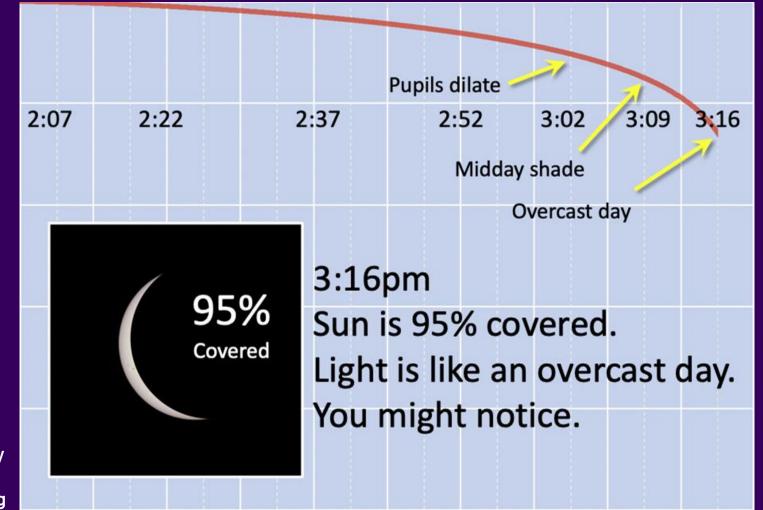
Rick Fienberg, AAS Reinhold Wittich, AAS

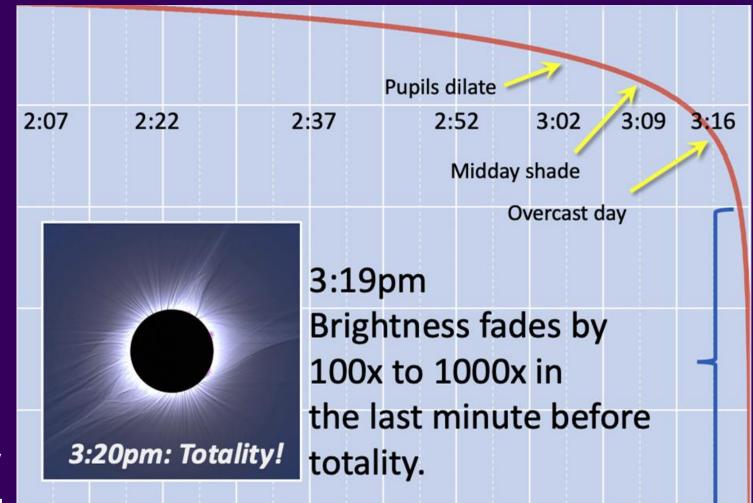






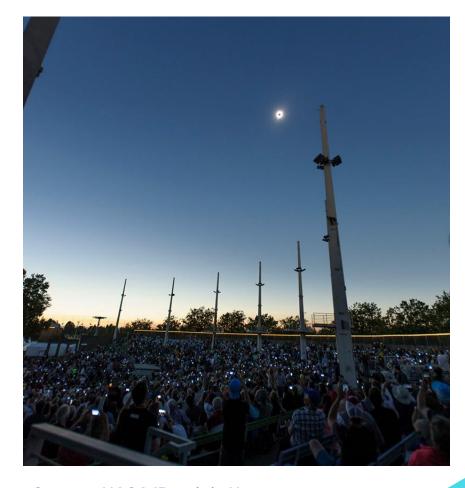
3:09pm Sun is 85% covered. Light is like midday shade. You won't notice.



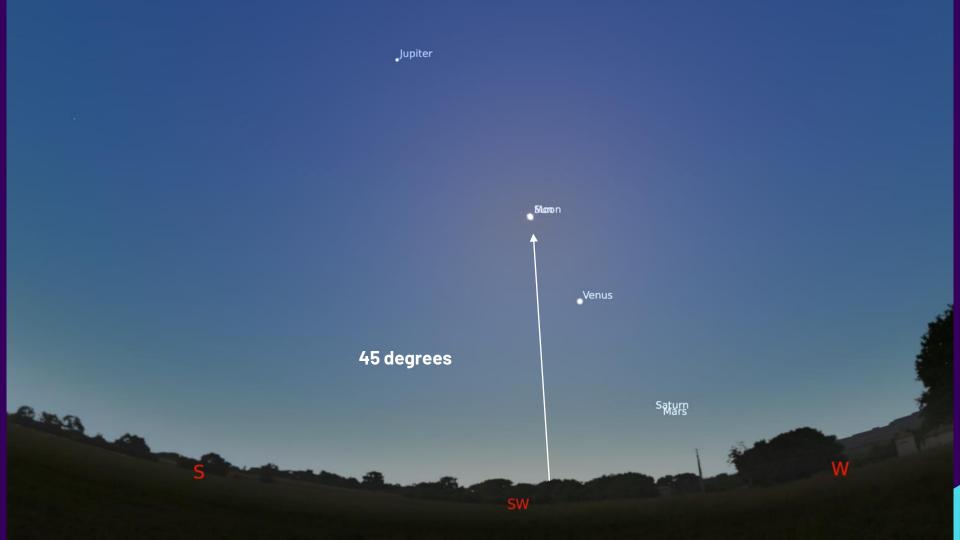


What Will You Observe on Earth

- Temperature drops ~10 degrees F
- Animal and plant behavior acts if it was nightfall
 - Birds back to nests
- Sharpening of shadows
- Shadow Bands
 - thin, wavy lines of alternating light and dark that can be seen moving and immediately before and after totality
 - refraction by Earth's atmospheric turbulence
- Eerily still
- Sense of Wonder and Awe



Source: NASA/Dominic Hart

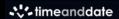




99.9% Coverage of the Sun is NOT Totality









99.39% Covered



What Happens if it is Cloudy?



What Happens if it is Cloudy?

It will still get dark!









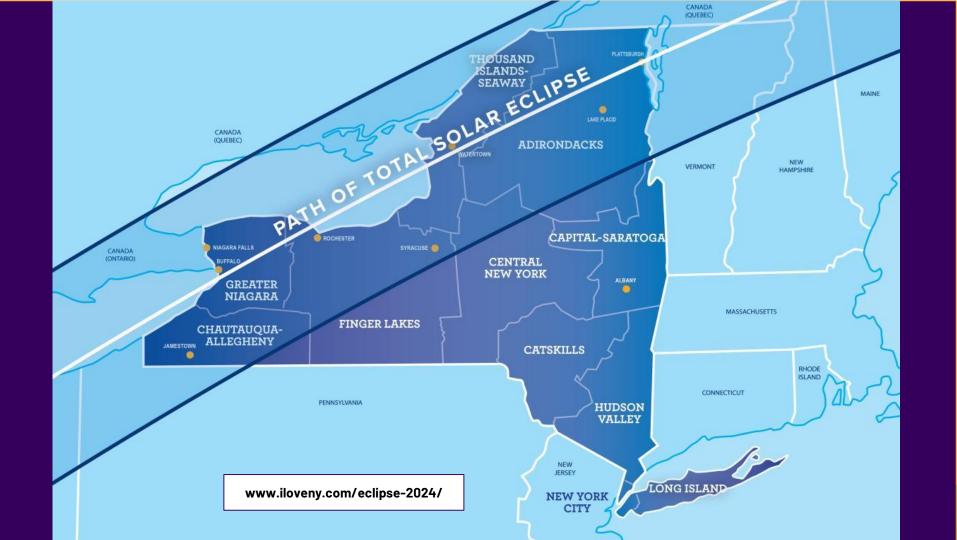


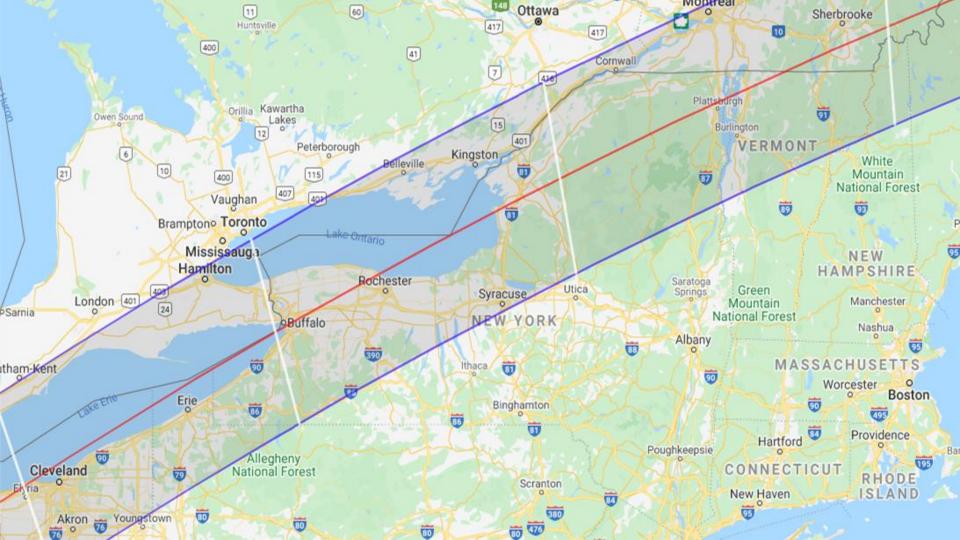


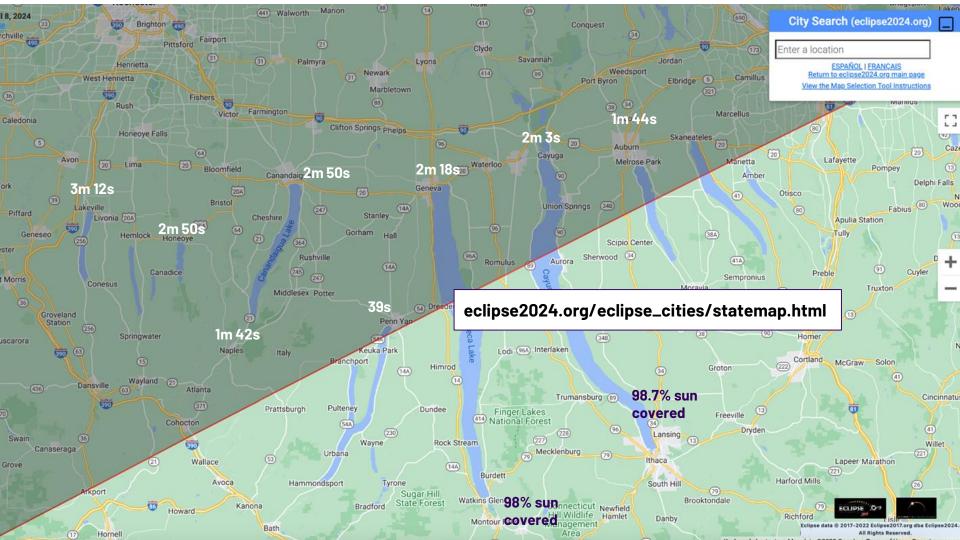
Maps & 2024!













April 8, 2024 - Total Eclipse of the Sun in Canandaigua!

Begins: 2:07pm*

Totality: 3:20:50-3:23:41 pm*

(2 minutes 51 seconds)

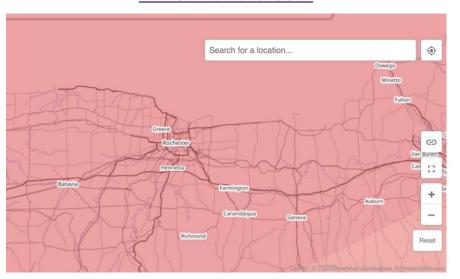
Ends: 4:33pm*

*Zip 14424

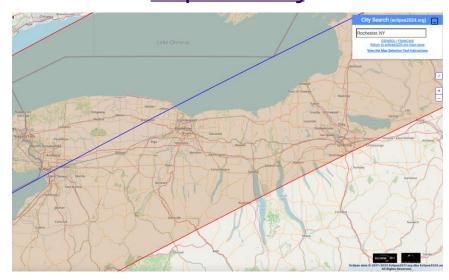


How to Find Length of Totality - Interactive Maps

TimeAndDate.com



Eclipse2024.org







1806 Total Solar Eclipse - Included Rochester June 16th, 1806

Last Total Solar Eclipse in Rochester & NYS January 24, 1925

Last Total Solar Eclipse in United States August 21, 2017

69.72% coverage of Sun



1994 Annular Eclipse May 10th, 1994

89.07% coverage of Sun

Heavily remembered in Rochester

2021 Partial Eclipse

June 10th, 2021

78.80% coverage of Sun



Next Total Solar Eclipse in US

August 12, 2045

(21 years from 2024 Eclipse)

50.34% of the Sun Covered

Next Total Solar Eclipse in NYS

May 1, 2079

(55 years from 2024 Eclipse)



Next Total Solar Eclipse in Rochester

October 26, 2144

(120 years from 2024 Eclipse)

Totality will only be 46 seconds



EXPECTING CONSERVATIVELY 375K-500K VISITORS TO GREATER ROCHESTER REGION

4 MILLION NYS RESIDENTS IN PATH

Why Is It Important



Science

- Spark a passion for science, STEAM, and astronomy
- Chance to study sun's corona from Earth

Tourism

 Past total solar eclipses in other cities have drawn hundreds of thousands, if not millions, of people. We expect the same turnout for NYS

Economy

- Potential to bring hundreds of millions of dollars of revenue to the area through eclipse-driven tourism and programming.
- Industries including restaurants, media, and retail will all reap the benefits of an increased consumer base.
- \$200 million expected.

Culture

 The eclipse will touch every part of our lives from music, art, TV, movies, current events, news, podcasts, and more!

Cultural and Spiritual

 For some cultures, eclipses can play a big part of their history and customs

Uniting All of Us

- Positive shared experienced after we all shared a negative experience
- Think of the last time everyone experienced something positive
- Different for everyone

Schools

- April 8th, 2024 is the Monday after what is typically Spring Break
- Don't want kids to miss experience due to being on bus
- Worried about kids getting stuck after totality
- Due to Task force efforts, school has been canceled that day for most of the schools in Greater Rochester Region
 - Local Spring Break will now lead into (and include) eclipse Monday

NATION NOW

What will the solar eclipse mean for drivers? A coast-to-coast traffic nightmare

Ashley May USA TODAY

Published 3:45 p.m. ET Aug. 18, 2017 | Updated 3:53 p.m. ET Aug. 18, 2017





Solar eclipse could be tricky for drivers

The Federal Highway Administration is calling the event one of the largest driver distractions in years. Video provided by Newsy Newslook



NO KID SHOULD BE LEFT INSIDE!

Ways to Talk About Eclipse



- Moon block the sun from perspective of Earth
- Celestial Dance
- Personal perspective
 - Spiritual
 - Can feel like it's just the sun, moon, earth, and yourself during the eclipse
- Once-in-a-lifetime to observe it from our backyard
- If a baby was born on the day of the 2024 Total Solar Eclipse, their grandkid gandkid would experience the next Total Solar Eclipse in Rochester
- Positive Shared Experience
- Everyone under the sun is a stakeholder
 - Everyone under the moon too
- Not just about space, but about experiencing beauty



How To Prepare

Safety



Eye Safety

You MUST wear Solar viewing Glasses ("Eclipse glasses") to directly view the Sun and most of the eclipse.

- Sun glasses do NOT work.
- Never look directly at the sun!
- There are other methods to observe the eclipse while not looking at the sun (pinhole projectors, shadows)
- ISO 12312-2:2015
- Don't look through a viewfinder on a camera
- Counterfeit glasses from Amazon were problematic in 2017 and already for 2024



2017 Total Solar Eclipse, AAS

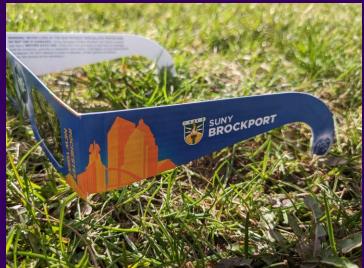




Except during the total phase of a total solar eclipse, the Sun is dangerously bright. At all times during an annular or partial solar eclipse, or when no eclipse is occurring at all, view the Sun only through special-purpose solar filters that comply with the transmission requirements of the ISO 12312-2 standard.











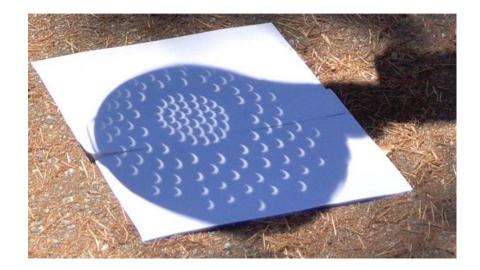


It is safe and extraordinary to view an eclipse using proper techniques like:

- Pinhole viewers
- Colanders
- Ritz Crackers
- Shadows from Trees
- Projecting onto a surface
- Solar viewing glasses

Ordering Glasses?

- Solar Eclipse Activities for Libraries (SEAL)
- www.rainbowsymphony.com
- www.thousandoaksoptical.com
- www.eclipseglasses.com





Created by
Mike Adriaansen of
New York State Office
of Parks, Recreation, &
Historic Preservation



Other safety considerations



- Mass gathering/crowds
- Closed streets and bridges (event related)
- Construction/Lane Closures
- Planned emergency routes for Police, Fire, EMS
- Unsafe driver behavior
 - Distracted driving
 - People stopping in travel lanes
- Pulling over in non designated areas

- Overloaded cell towers impact on emergency communications
 - Use of COWs (Cell on Wheels)
- Weather/environmental related issues
 - Wind, heat, cold
 - Flooding
 - Mud related issues (cars and/or people stuck)
- Misinformation will occur!



SUNGLASSES DON'T PROTECT YOU DURING AN ECLIPSE!

If you see someone using them, please tell them (kindly)



Filters go on the END OF THE TELESCOPE/BINOCULARS - NOT AT THE EYEPIECE





- What happens if it is cloudy? It still happens no matter the weather.
- Where can I get glasses? RMSC, places listed on RochesterEclipse2024.org, & AAS trusted sites
- What day of the week will it take place? Monday
- What is the best place to view the eclipse? Just about anywhere in the 9-county region.
- Will it be pitch dark? Nope. More like an hour after sunset. Think dusk or a 360 sunset.
- Are we in totality? Yes
- Didn't we just have a total solar eclipse a few years ago? 2017. Rochester was only partial.
- Can I see planets? Yes! Jupiter and Venus should be easy to see.
- When was the last eclipse? 2017 in the US. 1925 for Rochester.
- Do I have to worry about my dog/cat/pet looking up? Nope. Animals don't usually look at the sun.
- When people drive home, should they be wearing their eclipse glasses? No. Only wear them when looking directly at the sun (except during totality).
- How to take a photo? How about with a camera? With solar filters. Recommend not taking a
 photo if this is your first eclipse.

Other Things You Will Hear a Lot Of



- Total Eclipse of the Heart get used to it
- Fantastic stories on where people were during 2017
- Rent my house/AirBNB
- Concerns about traffic
- Some remembrance of the 1994 Annular Eclipse
- Excitement
 - Going to be beautiful!
- Doubt
 - How many people will attend
 - That it is worth seeing



Tips for Run Your Own Eclipse Viewing Event!

- Have Solar Viewing Glasses available
- Turn off your automatic lights (building, parking lot, etc)
- Hands on-activities
 - Create your own pinhole viewer
 - Moon phase calendar
 - String art
 - Button Making
- Telescope with solar filter for viewing
- "Expert" to answer questions about the eclipse

- Facilities
- Speakers related to space
- Area dedicated to those photographing the eclipse
- Projectors/TVs to watch livestream of eclipse locations before Rochester
- Backup plans for multiple weather possibilities
- Space themed music playlist
- Timekeeper to tell people when to take glasses off and put back on for totality

Think about the experience you personally want!

Remember that what you are doing is creating a temporary community. Your audience will remember that feeling for just as long as they remember the eclipse.

Try to make your event as fun as possible for the people attending who aren't interested in the eclipse.



Sun/Moon/Earth themed items

Food and Beverage

- Moon Pies
- Sunny-D
- Oreos (recreate eclipse phases)
- Starburst
- Milky Way Bars
- Wine, Beer, Whisky, Kids drinks

Patches

Posters

Hats

Patches

Jackets

Lean into the puns!

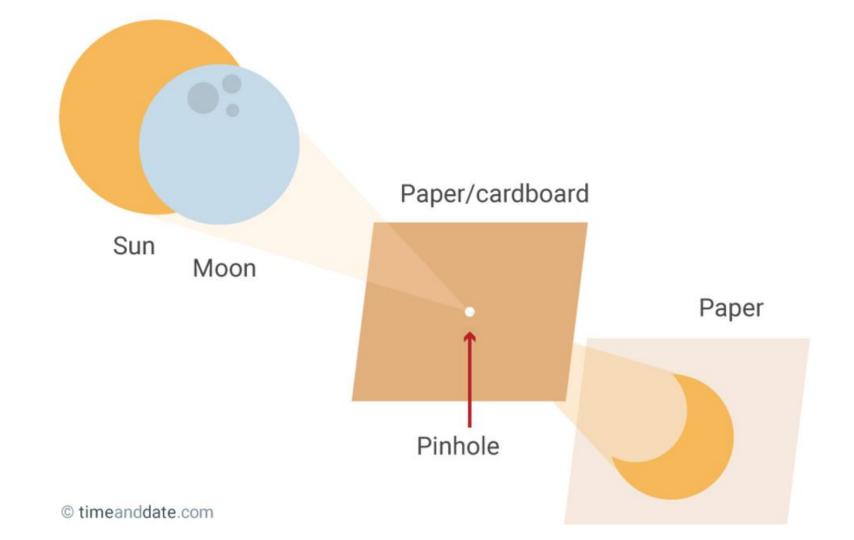








ACTIVITIES





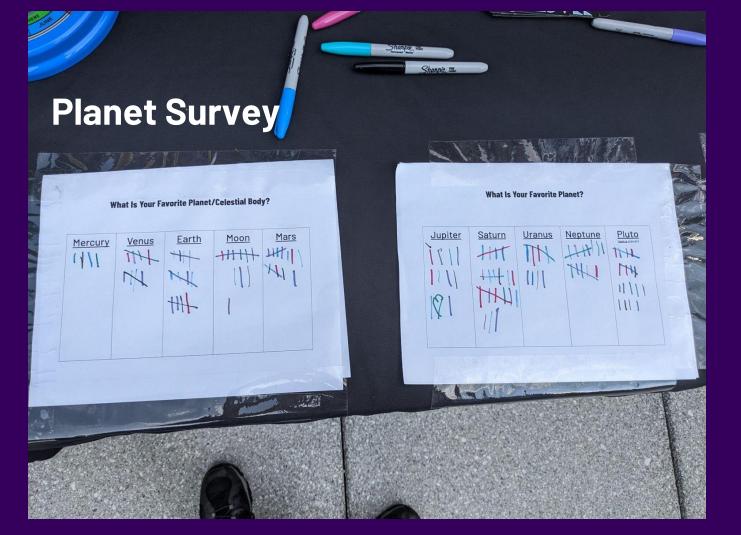






Eclipse Chalk Art









RMSC

Solar Viewing
*Solar Filter Required



SEND A POSTCARD TO SPACE

Earth is finite. To protect our gem of a planet and enable a future of abundance and growth, Earth needs space. Write or draw your vision on a postcard for what you think the future of life in space will look like—or any other message you'd like to send to space. Send your postcard to Club for the Future, we'll launch it to space and back on a New Shepard rocket, and return it to you stamped "Flown to Space." Send us as many postcards as you'd like—we'll fly them all.



HOW MANY WAYS CAN YOU EXPLAIN THE RELATIONSHIP BETWEEN THE SUN, MOON & EARTH?

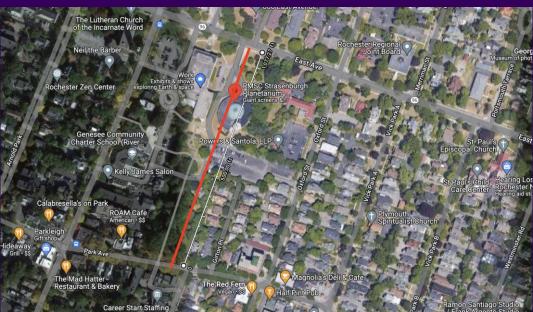


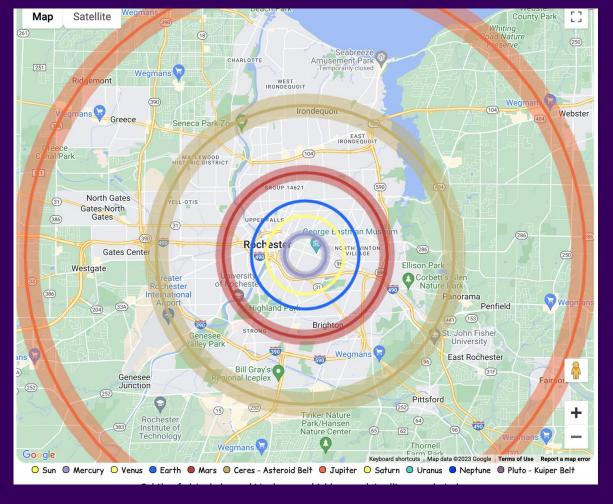




10ft Inflatable Sun 1 inch Earth 1/4 inch Moon RMSC

Sun to Earth: 1074ft Earth to Moon: 3ft







Return to StarNET home page

Solar Eclipse Activities for Libraries (SEAL)

Two solar eclipses are coming to North America! An annular eclipse occurs on Saturday, October 14, 2023, and a total eclipse occurs on Monday, April 8, 2024.

It is time for librarians to prepare their patrons for the eclipses

With funding from the Gordon and Betty Moore Foundation, the Space Science Institute, through its Solar Eclipse Activities for Libraries (SEAL) program is distributing five-million solar-viewing glasses to 10,000 libraries, plus providing information and activities to share with library patrons. In addition, workshops for librarians are being held across the country to ensure library patrons can safely enjoy these spectacular celestial events.

Below are statistics showing how well we are doing and a map of participating libraries. If you scroll further down, you can see how you can be involved or get the latest information and activities regarding the eclipses.







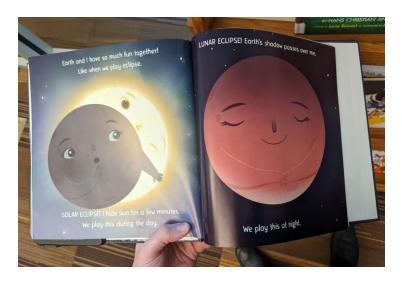
- NISENET
 - https://www.nisenet.org/solareclipse
- NASA
 - https://solarsystem.nasa.gov/eclipses/202 4/apr-8-total/overview/
- American Astronomical Society
 - https://eclipse.aas.org/
- Astronomical Society of the Pacific
 - https://astrosociety.org/educationoutreach/amateur-astronomers/eclipseambassadors/program.html
- Time And Date
 - https://www.timeanddate.com/eclipse/ma p/2024-april-8
- Instructables
 - www.instructables.com







- "Totality: The Great American Eclipses of 2017 and 2024" - Mark Littmann & Fred Espenak
- "Sun Moon Earth: The History of Solar Eclipses from Omens of Doom to Einstein and Exoplanets" - Tyler Nordgren
- "American Eclipse" David Baron
- "A Connecticut Yankee in King Arthur's Court" Mark
 Twain
- "Nightfall" Isaac Asimov
- "Moon! Earth's Best Friend" Stacy McAnulty
- "ABCs of Space" Chris Ferrie and Julia Kregenow



"Moon! Earth's Best Friend" - Stacy McAnulty





TV

- The Simpsons several times
- Sesame Street
- The Owl House
- Avatar: The Last Airbender
- Craig of the Creek
- Bill Nye

YouTube

- Smarter Every Day
- NASA
- Science Communicators

Music

- Total Eclipse of the Heart
- NASA has playlists on Spotify



Marge vs. the Monorail - Season 4, Episode 12 of the Simpsons

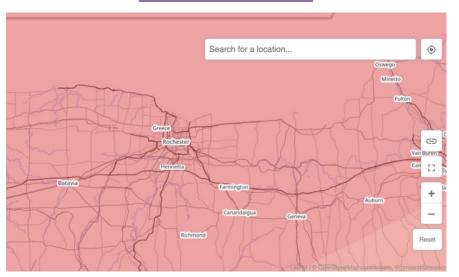


TIPS FOR SCOUTING VIEWING LOCATIONS

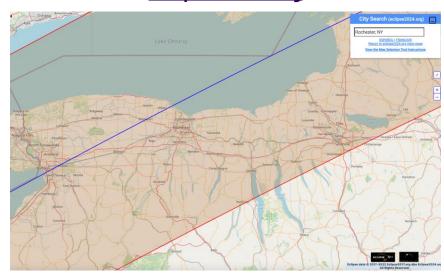




TimeAndDate.com



Eclipse2024.org





Tips for Scouting Eclipse Viewing Locations

- Look South/South West about 45 degrees up
- Plan around sightlines:
 - Trees, buildings, construction equipment
 - Consider children and people sitting or using wheelchairs
 - Ability to get up and move
 - Accessibility (physical, emotional, social)
 - Facilities (bathrooms, food, parking, light pollution, areas for activities & photographers)



DON'T LOOK DIRECTLY AT THE SUN!

AR APPS



Android

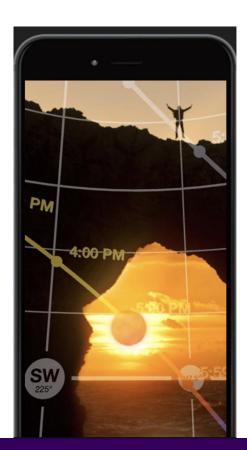
 Sun Locator Pro – you can set the time, and date, and get an augmented reality view

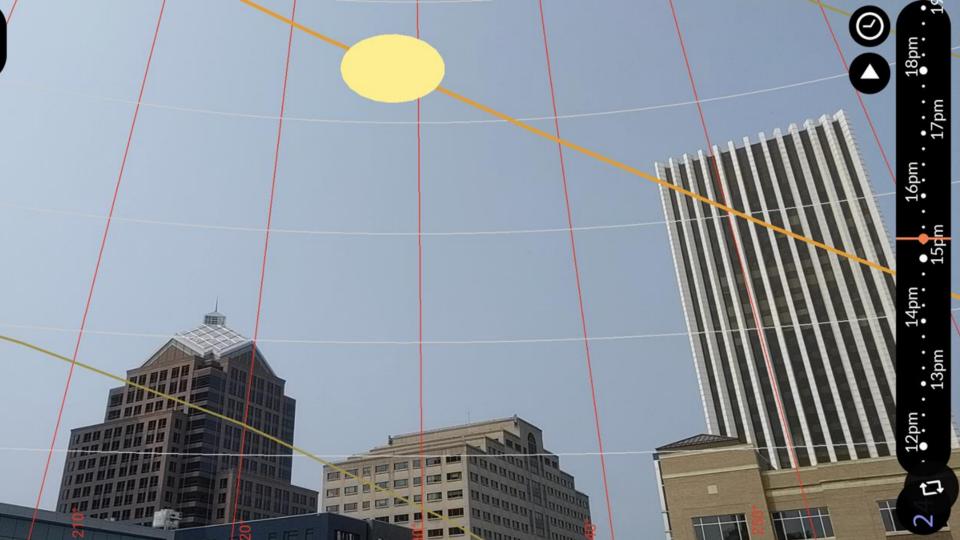
Apple

 Solar Watch – with an app upgrade, you can set the date and get an augmented reality view

Both

PhotoPills - augmented reality app with additional map functions









- Stargazing evenings
- Concerts with space music
- Glasses distribution events
- Fundraisers
- Eclipse themed tasting events
- Art contests
- Info sessions
- Movie nights (movies or tv shows that include eclipses in them)



Eclipse Swag

- Sun/Moon/Earth themed items
- Food
 - Moon Pies
 - Sunny-D
 - Oreos (recreate eclipse phases)
 - Starburst
 - Milky Way Bars
- Eclipse themed drinks
 - Wine, Beer, Whisky
- Swag
 - Patches
 - Posters
 - Hats
 - Stickers
 - Jackets







MERCH THINGS TO CONSIDER

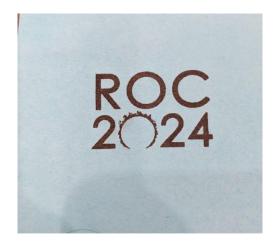


- Lean into the puns!
 - Can be space themed overall
- Include:
 - Total Solar Eclipse
 - YOUR LOCATION
 - April 8th, 2024
- Design
 - Play with sun and moon
 - Don't forget Earth
 - Don't mix up phases of the eclipse and phases of the moon VERY Different
- Timing Make sure to get the timing/date/length correct
- Clothing Plan for both cold and warm temperatures
- Who is your audience
- Where are you selling your product
 - In person or online
 - What events to sell at
 - Save some for weekend before eclipse









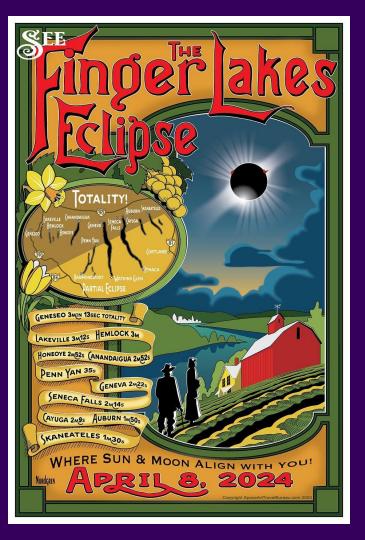




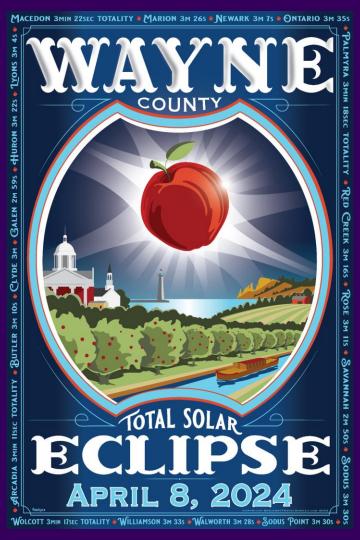
Rochester's Eclipse Poster

Created by Tyler Nordgren Ithaca Resident www.tylernordgren.com















rochestereclipse2024.org



iloveny.com/eclipse



buffaloeclipse.org



visitfingerlakes.com/eclipse-2024/



visitlivco.com/livcosol/







Led by a core group 4 organizations:

RMSC, Genesee Transportation Council, Visit Rochester, and Kids Out and About

- Libraries
- Cultural organizations
- Wineries, Breweries, Distilleries
- Parks & Recreation (State, local)
- Restaurants
- Municipalities and Government orgs
- Artists
- Community Groups
- Colleges & Universities
- Event Organizers
- Service organizations



Over 400 active stakeholders and growing

• 1954	I LOVE NY	Rochester Red Wings	EMS, Fire, Police So	Nickerson LLC NYC Death of Facility and a stall Company time.	The Humane Society of Rochester The National Community
• (585) Magazine	Imaginee Photography	Rochester Sister Cities Committee	ES & ES Enterprises LLC	NYS Dept of Environmental Conservation	The Nature Conservancy
21st Century Arts Inc., WOC Art	• Insi8	Roclife LLC	Eutierria Wellness	NYSCATE	The Penthouse at One East Avenue
Collaborative	Irondequoit HS	ROCthecitywithHope	Fairport OCED	Ontario County IDA	The Strong
• 540 West Main	Jay Advertising	Rolling Meadows Designs	Fairport Partnership	Optimax	ThinkOut
Abandon Brewing	Kids Out and About	RRPC and NY Photonics Cluster	 Finger Lakes Community College 	• REI	Tipping Point Communications
Airigami	Laughing Gull Chocolates	Sager Beer Works	 Finger Lakes Instrumentation 	• RG&E	Tommyrotter Distillery
• Al Sigl	Leclair Communications LLC	Salinas Restaurant / NOX	Finger Lakes Regional STEM Hub	RMSC	 Town of York Historical Society
Allendale Columbia	Letchworth Gateway Villages	Schick Enterprises	Finger Lakes Tourism Alliance	RMSC Board	Uber Eats
Aquinas Institute	Lollypop Farm, Humane Society of Greater	Scout and Cellar & Doc Popcorn	Finger Lakes Visitor's Connection	RMSC Council	United Way
ASRAS	Rochester	• Scouts	FIRST Robotics – Penfield	Roberts Wesleyan College	University of Rochester
Badfish Consulting / TEDx Rochester	Long Acre Farms	Seneca Park Zoo	Five By Five Music	• Roc 2025	University of Rochester – Buildings &
Baker August Consulting	Longacre Farms Management	Shawn Dunwoody	Floreano Convention Center	ROC Brewing Co.	Grounds
BE Innovations, LLC Birnbaum Companies	MagnusApollo Design Maker Faire Rochester	Shawn Gee Socha Consulting	Flower City Arts Center	Roc City Coalition	University of Rochester – Institute of
Blue Cross Arena	Martz-Kohl Observatory	Spencerport Central Schools	Friends of Ganondagan	RocGrowth	Optics
BOCES 4 Science	MCC Optics	St. John Fisher	ů,		
Break the Ice Media	McQuaid Jesuit	St. John Fisher College	Ganondagan	Rochester A-List / ROConnoisseur	University of Rochester Medical Center
Bristol Mountain	Memorial Art Gallery	Stamp Paints	Genesee Country Village & Museum	Rochester Academy of Science –	UR Medicine Golisano Children's Hospital
Brockport Central Schools Sperintendent	Mendon Public Library	Stamper Technology	Genesee County & GLOW Workforce	Astronomy Section	Vanishing Sun
Buffalo Museum of Science	Meowchickenfish	Stokoe Farms	Development Board	Rochester Accessible Adventures	VeRacity VRcade
C&S Companies / NYS Fair	Monroe Community College	Summitt Federal Credit Union	Genesee Transportation Council	Rochester Brainery	Vertical Insite
Canandaigua Airport	Monroe County	SUNY Brockport	 Genesee Valley Greenway State Park 	Rochester City Ballet	Visit Finger Lakes
Casalarga	Monroe County	SUNY Empire State College	George Eastman Museum	 Rochester City School District 	Visit Rochester
Catalyst Consulting	Monroe County – Greater Rochester Int'l	SUNY Geneseo	Geva Theatre Center	 Rochester Contemporary Art Center 	Watkins Glen Chamber of Commerce
CCE Monroe County 4-H	Airport	SUNY Geneseo – Center for Integrative	Golisano Autism Center / Autism Up	Rochester Film Festival	Wayne County Tourism
Central Library of Rochester & Monroe	Monroe County Department of	Learning	GRASA – Greater Rochester After School	Rochester Institute of Technology	Webster School District
County	Environmental Services	SUNY Geneseo – Math	Alliance	Rochester Institute of Technology –	Western NY Astronomy FB Group
City of Rochester	Monroe County Library & Rochester Public	SUNY Geneseo – School of Business	Greater Rochester Chamber of Commerce	Photography Department	Whitworth Ferguson Planetarium
 City of Rochester / Sister Cities 	Library	SUNY Research Foundation	Greater Rochester Enterprise	Rochester Institute of Technology – Delta	Wickham Farms
 Common Ground Health 	Monroe County Parks	 Teaching Artists of Rochester 	Greater Southern Tier BOCES	Environmental	WICSD
 Corn Hill Navigation / The Sam Patch 	 Monroe County Sherrifs Office 	Teen Empowerment	Greece Central School District	Rochester Institute of Technology –	Willow Domestic Violence Center/ Finger
 Courtyard Rochester Downtown 	NASA Goddard Space Flight Center	Tennis Club of Rochester	Helen Barrett Montgomery School #50	Museum Studies	Lakes Community College
Delta Airlines	NASA/ADNET	Terra Science Fair	9 ,		WXXI
 Dream Finders, Inc. 	National Weather Service	The Autism Nature Trail at Letchworth	Humphrey Nature Center at Letchworth	Rochester Institute of Technology –	
Dresden PR	Nature Conservancy, Central & Western	State Park	State Park	Saunders College of Business	Wyoming County Chamber of Commerce
• DS&MG	New York Chapter	The Greater Rochester Area Partnership		Rochester Latino Theatre Company	& Tourism
Eastman Community Music School	Nazareth College	for the Elderly (GRAPE)		Rochester Philharmonic Orchestra	• XLR8
Empire Space	New York State Brewers Association	The Harley School		Rochester Public Library	Yale School of Management
				 Rochester Public Market 	



NEXT MEETING SEPT 21, 2023, 4PM IN-PERSON & ZOOM

Zoom: bit.ly/ROCEclipseSept23

In Person: bit.ly/R0CEclipseSept23InPerson

RMSc















AstroFringe: A Celestial Stargazing Experience with RMSC September 22nd & 23rd @ Parcel 5

rochesterfringe.com/tickets-and-shows/astrofringe

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Questions?

Contact:

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