

SPECTRUM

Northern Cross Science Foundation Newsletter

June 2021



Plunkett Observatory open for member use

The Plunkett Observatory at Harrington Beach State Park is now open for membership viewing sessions. Observatory director Dan Bert made the announcement in an email to members on May 21. Although Plunkett will not yet be open for public events, availability for members it was welcome news to those use the observatory's 20-inch reflector and five-inch refractor for viewing and astrophotography.

The observatory was closed in early March 2020 after the Wisconsin DNR placed restrictions on public access to parks due to the pandemic.

Upon the announcement, Gene and Charlotte DuPree, Rick Kazmierski, and Mike Borchert got together for a spring cleaning. Over a year's worth of dust, dead bugs and brush growth had accumulated. "We are really ready to go," said Borchert.

Left: Rick Kazmierski and Gene DuPree clean up the observatory which had been idle for 15 months. **Above:** When it was last used in February 2020, deep snow covered the grounds. Photos by Ernie Mastroianni (above) and Mike Borchert

May General Meeting notes

The NCSF May General Meeting, virtual once again, was headlined by guest speaker Anne Holland, who is the community engagement manager for the [Space Science Institute](#) in Boulder, Colorado. Holland, like NCSF vice president Joyce Jentges, is a [Solar System Ambassador](#). She has undergraduate degrees in astrophysics and writing from the University of Hawaii, and a masters in space studies from the University of North Dakota.

Her presentation, titled Messengers from Space, covered wide-ranging topics such as the Solar System's origins, the Oort Cloud, the Kuiper Belt, and why our beloved Pluto is not a planet. The talk was well received by the more than 20 members in attendance, who posed many questions during the presentation and hoped see her speak again.

She explained how comets might have been the originators of earth's oceans, discussed how the stuff from which we are made came from a nearby supernova

explosion. Gravity, one of her many topics, was a main force in the formation of the solar system.

She touched on the difference between asteroids and dwarf planets (yes, Pluto is a dwarf planet) and presented a graphic that clearly shows how Pluto is more like its fellow dwarves than the eight real planets of our solar system. Pluto is not even the largest: Eris, at 1,445 miles in diameter, barely edges out Pluto at 1,430 miles.

- See page 3

June program: Life cycles of stars and black holes

Continuing our speaker series for June is [Andy Heidelberg](#). He'll discuss the life cycles of stars and black holes. Andy has a degree in metallurgical engineering and has held various engineering and supply chain positions for roughly 30 years before retiring a few years ago.

He's been a Solar System Ambassador for the last four years. He lives in Boise with his wife and daughter.

In the winter you can find him along the [Boise River Greenbelt](#) where he views hawks and eagles and in the summer hiking somewhere in the West.

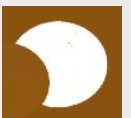
- Joyce Jentges

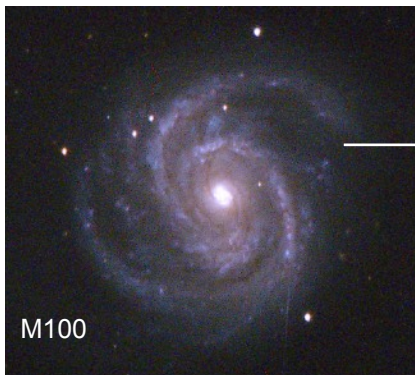


A slide from the June talk

Solar Eclipse Sunrise

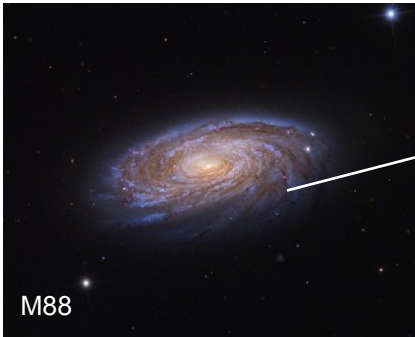
From the Milwaukee area, the sun will be partially eclipsed at sunrise on Thursday, June 10. The event is the trailing end of an annular solar eclipse, visible only from northern polar regions. Read more on Page 6.





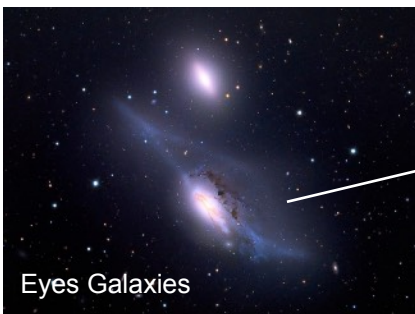
M100

Ernie Mastroianni



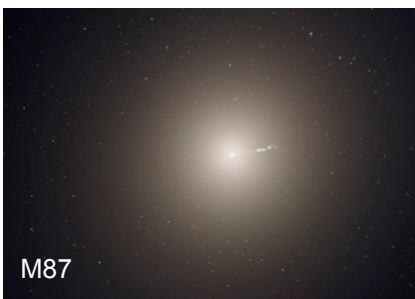
M88

A. Block/MtLemmonSkyCenter/CC3.0



Eyes Galaxies

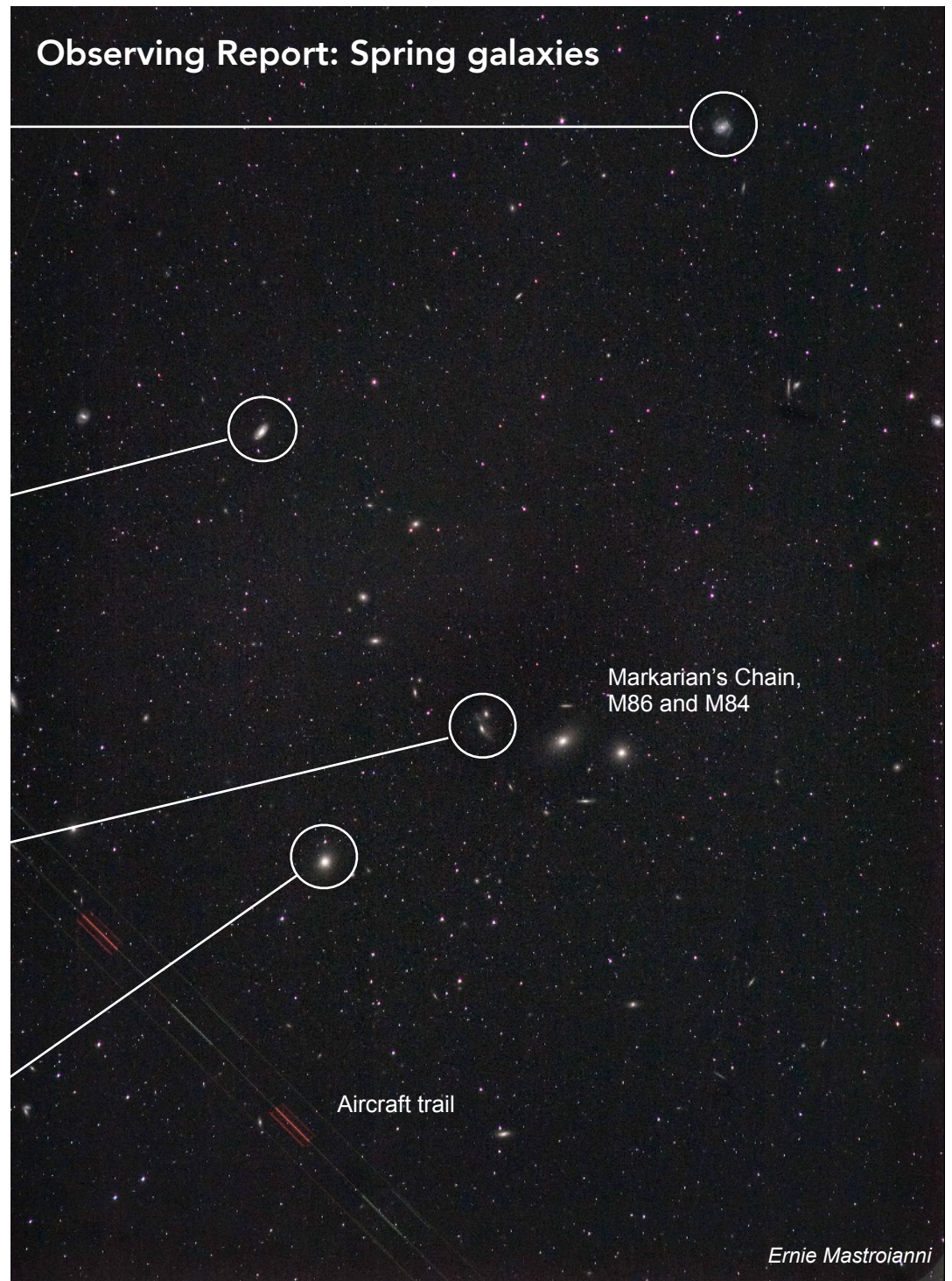
Joseph D. Shulman/CC4.0



M87

NASA/STScI

Observing Report: Spring galaxies

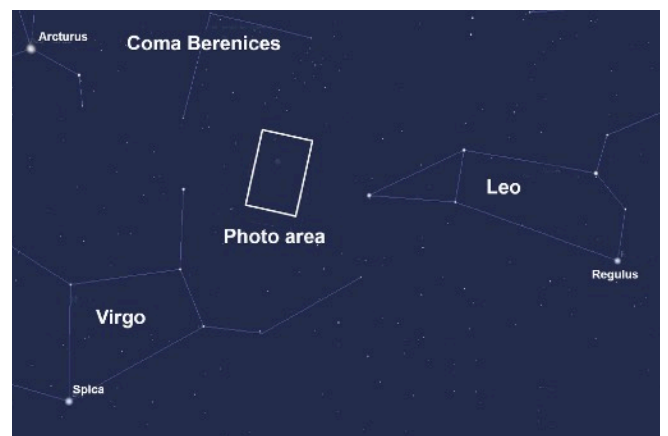


Seeking out densely-clustered galaxies between Virgo, Leo, and Coma Berenices is a challenging goal for late spring. By my count, 17 Messier galaxies reside here. About 50 galaxies at 11th magnitude or brighter are within a 15x10 degree field. Nearly all are within reach of a six-inch telescope under a dark sky.

At Harrington Beach on May 12, I pointed my 9.25-inch Celestron to [Markarian's Chain](#), an arcing string of galaxies that extends north and east from the bright elliptical galaxies M86 and M84. I could easily see 12 galaxies spanning three low-power fields. Nearby were M88 and M87. On that same night, I took 32 minutes worth of exposures in that same area with a 300mm lens, covering about 7 by 4.5 degrees (above).

When I studied the high-resolution version of the image, I counted more than 90 galaxies down to 15th magnitude. A few of the brightest are circled, paired with detailed photos from larger telescopes.

- Ernie Mastroianni



Success for China's Mars rover

In an impressive first-time feat for the China National Space Administration (CNSA), its [Tianwen-1 spacecraft touched down](#) on Mars May 15 and later released a small rover, named Zhurong.

China's space program is making rapid gains, becoming only the second nation to successfully land a rover on Mars.

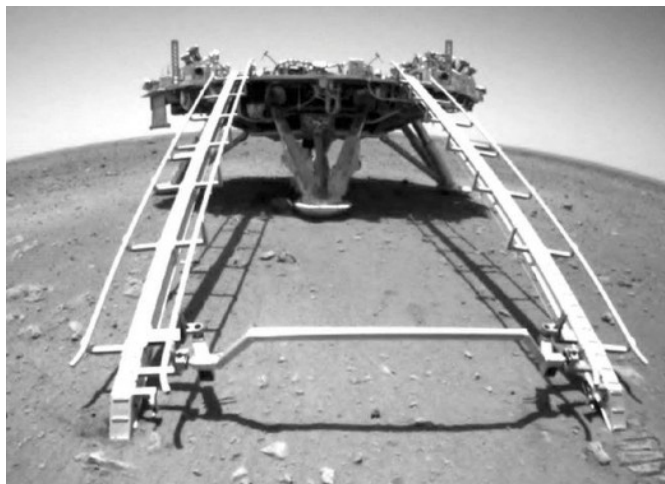
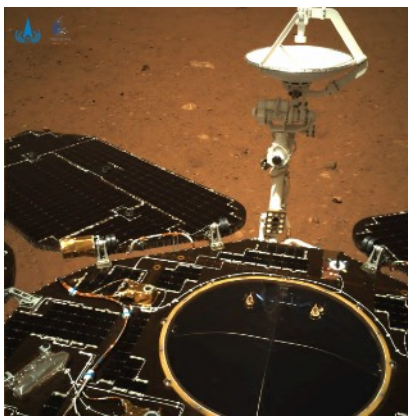
The Soviet Union attempts in 1971 ended in failure, though Mars 3 did achieve a soft landing, but went silent after just two minutes.

The Chinese mission closely mimicked the successful NASA

technique for Curiosity and Perseverance: a descent into the Martian atmosphere slowed by a heat shield, further deceleration by parachute, and ending with a rocket-assisted soft landing. China has also started planning for a sample-return mission to Mars, something no nation has yet achieved.

-Ernie Mastroianni

CNSA photos



May General Meeting notes

- from page 1

She explained meteors and meteorites. Meteors are what you see streaking across the sky. If they survive the plunge to earth, they become meteorites. Holland also told us how to find your own meteorites with a coffee filter and a magnet. Meteorites are constantly reaching earth by the ton, but mostly as tiny particles of dust or sand-like grains. To collect some, place a coffee filter at the bottom of a downspout. After a rain, particles that fall from the roof are washed into the filter. Using a magnet, you can pull out the metal particles, which are most likely iron meteorites. Although most meteorites are non-magnetic stone, there are still plenty of iron meteorites to see.

She also discussed the somewhat scary [Potentially Hazardous Asteroids](#) (PHAs), how hazardous they really are, and if they could be deflected from a collision with earth. No known PHA is on a collision course for earth ([Apophis](#) will come close in 2029). But if an earth-bound asteroid is found, Holland said

that if that collision is less than 10 years away, not much could be done. To learn more, Holland directed members to the website [killerasteroids.org](#).

During the business meeting, president Jeff Setzer said the deadline for submitting 2021 NCSF dues had passed. He also explained that the observatory is still closed to public.

He also said that the Astronomical League's annual in-person convention, slated for Albuquerque, had been canceled but will instead be a free virtual meeting to be held August 19-21. You can register at this link: <https://www.astroleague.org/content/register-alcon-21-virtual>.

Our club will host the 2022 NCRAL convention in Port Washington. Setzer reports that most of the 2020 convention preparations will carry over to 2022. Prices stayed just about the same, and the speakers lined up for 2020 are being contacted to see if they can be part of the 2022 meeting. The dates will be May 13-14.

Treasurer Gene DuPree reported \$12,221.78 in the club's account.

- Ernie Mastroianni

Looking ahead

June 3, Thursday
General Meeting
Online via Zoom

Wisconsin Observers Weekend

Pre-WOW June 7-10
WOW June 10 - 13, 2021
Hartman Creek State Park, Wis.
Contact Charlotte and Gene DuPree for more information.
262-675-0941
grdupree@charter.net
<http://www.new-star.org/index.php?Itemid=82>

Pike River Starfest

July 7-11, Amberg, Wis.
Contact Gerry Kocken
gerryk@kockenwi.com

Nebraska Star Party

August 1 - 6, 2021
Merritt Reservoir Snake Campground
<https://www.nebraskastarparty.org/>

Northwoods Starfest

August 6-8 (pending COVID conditions)
Hobbs Observatory, Fall Creek, Wis.
<https://www.cvastro.org/northwoods-starfest/nwsf-information/>

ALCON Astronomical League

Convention:
August 19-21
Virtual, online only
Register:
<https://www.astroleague.org/content/register-alcon-21-virtual>

Sheboygan Swap-n-Sell

October 23, 2021
Aviation Heritage Center,
Sheboygan Airport

NCRAL convention

May 13-14, 2022
Port Washington
Hosted by the Northern Cross Science Foundation

General Meeting

Post-pandemic
7:00 p.m. Astronomy 101
7:30 p.m. Main Program
Location:
GSC Technology Center
W189 N11161 Kleinmann Dr.
Germantown, WI

Astronomy and spaceflight links

Any comprehensive list of online astronomy links could fill dozens of pages, and as such, this list is selective and is subject to change. Many are well known to members, others might be new. Please email me with any more suggestions that you feel would be useful to NCSF members, and let me know if any links are no longer working. - *Ernie Mastroianni, editor*

Astronomy clubs, newsletters and websites

NCSF: <https://ncsf.info>
 Astronomical League: <https://www.astroleague.org/>
The Reflector magazine: <https://www.astroleague.org/reflector>
 Milwaukee Astronomical Society:
<http://milwaukeeastro.org/index.asp>
 North Central region of the AL: <https://ncral.wordpress.com/>
 NCRA newsletter archive:
<https://ncral.wordpress.com/newsletter-archive/>
 US list of astronomy clubs:
<https://www.astroleague.org/astronomy-clubs-usa-state>

Astronomy gear, vendors and online sellers

<https://www.bhphotovideo.com/>
<https://www.highpointscientific.com/>
<https://optcorp.com>
<https://www.telescope.com/>

Astrophotographers

Astrobin (a paid site for astrophotography uploads):
<https://welcome.astrobin.com/>
 Rogelio Bernal Andreo <http://www.deepskycolors.com>
 Chad Andrist <https://www.astrobin.com/users/SparkyHT/>
 Bob Franke <http://bf-astro.com/>
 Harrington Beach Imagers Group (Ernie Mastroianni and Tom Schmidtkunz)
https://www.astrobin.com/users/Harrington_Beach_Imagers_Group/
 Trevor Jones <https://astrobackyard.com/>
 Rick Kazmierski <http://skyhawkobservatory.com>
 Jerry Lodriguss <http://www.astropix.com/index.html>
 Gabe Shaughnessy: <https://www.astrobin.com/users/AstroGabe/>
 Babak Tafreshi <https://babaktafreshi.com/>

Classifieds

<https://astromart.com/>
<https://www.cloudynights.com/>

Clear sky forecasts

Astrospheric <https://www.astrospheric.com/>
 Clear Dark Sky <https://www.cleardarksky.com/csk/>
 Clear Outside <https://clearoutside.com/forecast/50.7/-3.52>

Digital star atlases

Cartes du Ciel <https://www.ap-i.net/skychart/en/start>
 Stellarium <https://stellarium.org/>
 Sky Safari <https://skysafariastromy.com/>

Magazines and online astronomy news

Sky & Telescope <https://skyandtelescope.org/>
Astronomy <https://astronomy.com/>
Astronomy Now <https://astronomynow.com/>
Skynews <https://skynews.ca/>
The Reflector <https://www.astroleague.org/reflector>
Sky at Night <https://www.skyatnightmagazine.com/>
 Astronomy Picture of the Day
<https://apod.nasa.gov/apod/astropix.html>



The massive Space Launch System (SLS) core stage is moved into to Kennedy Space Center's Vehicle Assembly Building on April 29, 2021. The four main engines were salvaged from the Space Shuttle program. NASA photo at <https://www.flickr.com/photos/nasakennedy/>

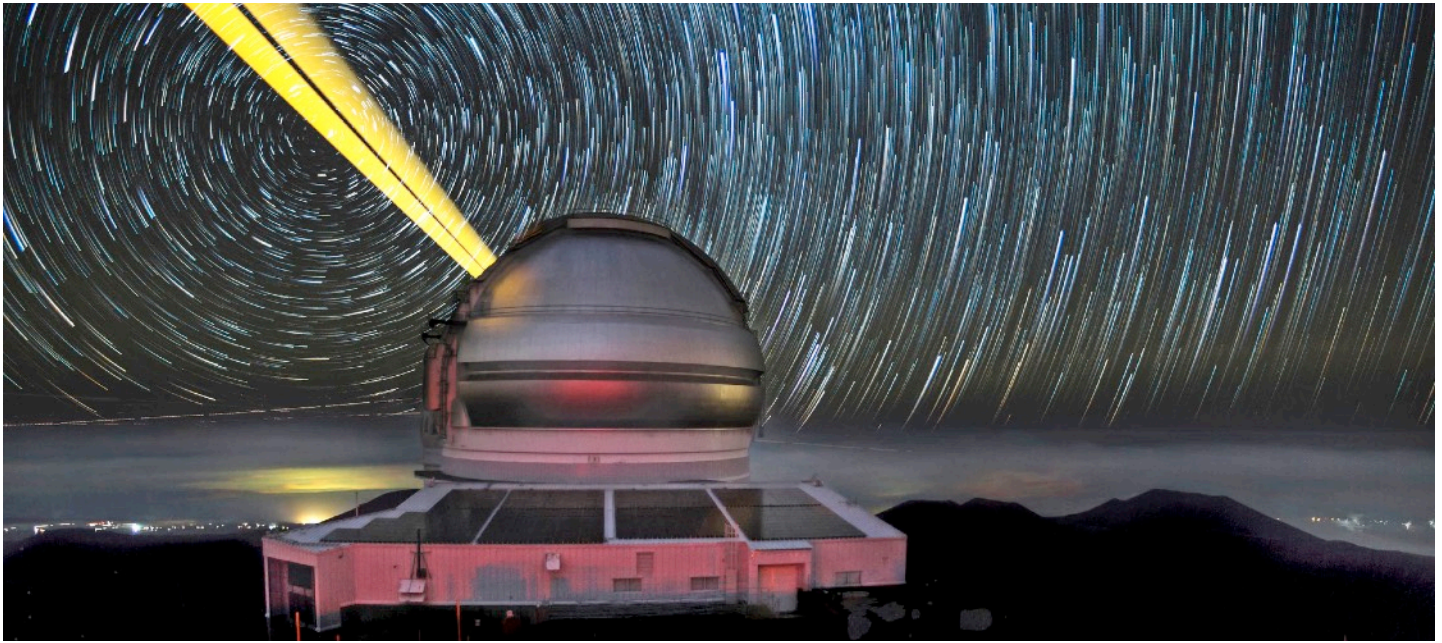
NASA images and missions

Hubble telescope <https://hubblesite.org/>
 NASA JPL Curiosity <https://www.jpl.nasa.gov/missions/mars-science-laboratory-curiosity-rover-msl>
 NASA JPL Juno at Jupiter <https://www.jpl.nasa.gov/missions/juno>
 NASA JPL Mars 2020 <https://www.jpl.nasa.gov/missions/mars-2020-perseverance-rover>
 NASA Johnson Space Center on Flickr
<https://www.flickr.com/photos/nasa2explore/>
 NASA Images
<https://www.nasa.gov/multimedia/imagegallery/index.html>
<https://images.nasa.gov/>
 NASA International Space Station
https://www.nasa.gov/mission_pages/station/main/index.html
 NASA Kennedy on Flickr
<https://www.flickr.com/photos/nasakennedy/>
 NASA Project Apollo Hasselblad scans:
<https://www.flickr.com/photos/projectapolloarchive/albums>

NASA Research Centers

Ames Research Center <https://www.nasa.gov/ames>
 Armstrong Flight Research Center
<https://www.nasa.gov/centers/armstrong/home/index.html>
 Jet Propulsion Laboratory
<https://www.nasa.gov/centers/jpl/home/index.html>
 White Sands https://www.nasa.gov/centers/wstf/index_new.html
 Johnson Space Center
<https://www.nasa.gov/centers/johnson/home/index.html>
 Marshall Space Flight Center
<https://www.nasa.gov/centers/marshall/home/index.html>
 Michoud Assembly Facility
<https://www.nasa.gov/centers/marshall/michoud/index.html>

Astronomy and spaceflight links



A laser guide-star beam emerges from the Gemini North dome on Mauna Kea, Hawaii. Gemini North photo from <http://www.gemini.edu/>

NASA Research Centers (continued)

Stennis Space Center
<https://www.nasa.gov/centers/stennis/home/index.html>
 Glenn Research Center
<https://www.nasa.gov/centers/glenn/home/index.html>
 Plum Brook Station <https://www.nasa.gov/centers/glenn/about/testfacilities/index.html>
 Katherine Johnson IV&V facility
<https://www.nasa.gov/centers/ivv/home/index.html>
 Goddard Space Flight Center <https://www.nasa.gov/goddard>
 Mary W. Jackson NASA headquarters
<https://www.nasa.gov/centers/hq/home/index.html>
 Wallops Flight Facility
<https://www.nasa.gov/centers/wallops/home>
 Langley Research Center <https://www.nasa.gov/langley>
 Kennedy Space Center
<https://www.nasa.gov/centers/kennedy/home/index.html>

Observatories

UW Astronomy <http://www.astro.wisc.edu/>
 Gemini <http://www.gemini.edu/>
 WM Keck <http://www.keckobservatory.org/>
 European Southern Observatory <https://www.eso.org/public/>
 ESO images <https://www.eso.org/public/images/>
 National Optical Astronomy Observatory
https://www.noao.edu/image_gallery/
 National Radio Astronomy Observatory <https://public.nrao.edu/>
 Lowell Observatory: <https://lowell.edu/>

Observing

Clear Skies Observing Guides <https://clearskies.eu/csog/>
 Current comets: <http://www.aerith.net/comet/weekly/current.html>
 Fred Espanek's eclipse guide <http://mreclipse.com>
 Upcoming and seasonal events <https://in-the-sky.org/>
 ISS transits transit-finder.com

Outreach organizations

Planetary Society <https://www.planetary.org/>
 Night Sky Network from JPL/NASA <https://nightsky.jpl.nasa.gov>
 Citizen science participation <https://cosmoquest.org>

NASA Solar System Ambassadors <https://solarsystem.nasa.gov/solar-system-ambassadors/events/>

Sky calendars

<https://skyandtelescope.org/observing/sky-at-a-glance/>
<https://astronomy.com/observing>
 Upcoming and seasonal events <https://in-the-sky.org/>

Spaceflight news, blogs, commercial and foreign space agencies

Earth and Sky: <https://earthsky.org/>
 NASA blogs: <https://blogs.nasa.gov>
 NASA Spaceflight <https://www.nasaspaceflight.com/>
 NASA Watch <http://www.nasawatch.com>
 Spaceflight Now <https://spaceflightnow.com/>
 Spaceflight Insider: <https://www.spaceflightinsider.com/>
 Space News: <https://spacenews.com/>
 Space Weather <https://spaceweather.com/>
 Space Journal of Asgardia (a borderless nation of space enthusiasts) <https://room.eu.com/>
 Universe Today <https://www.universetoday.com/>

Spaceflight: commercial and foreign space agencies

Blue Origin <https://www.blueorigin.com/>
 Boeing <https://www.boeing.com/space/>
 China National Space Agency : <http://www.cnsa.gov.cn/english/>
 European Space Agency <http://www.esa.int/>
 India space agency: <https://www.isro.gov.in/>
 Lockheed Martin Space
<https://www.lockheedmartin.com/en-us/capabilities/space.html>
 Roscosmos (Russian space agency): <http://en.roscosmos.ru/>
 Sierra Nevada Corp. <https://www.sncorp.com/space-systems/>
 SpaceQ Canada <https://spaceq.ca/>
 SpaceX: <https://www.spacex.com/>
 United Launch Alliance <https://www.ulalaunch.com/>

Board of Directors, 2020**President - Jeff Setzer**

1418 Trillium CT
West Bend, WI 53095
262-338-8614
astrosetz@hotmail.com

Vice President -**Joyce Jentges**

336 N Main Street, Apt.3
Cedar Grove, WI 53013
262 483- 4270
joycejentges@hotmail.com

Secretary - Kevin Bert

2292 Ridgewood Road
Grafton, WI 53024
262-674-0610
kevin.bert@hotmail.com

Treasurer - Gene DuPree

6219 Jay St.
West Bend, WI 53095
262-675-0941
grdupree@charter.net

**Observatory Director -
Dan Bert**

1517 Green Valley Rd.
Grafton, WI 53024
262-357-1973
dbert64@gmail.com

Mike Borchert

3656 Willow Creek Rd.
Colgate, WI 53017
262-628-4098
gmborchert@gmail.com

Rick Kazmierski

5327 Cascade Dr.
West Bend, WI 53095
262-305-1895
rickerkaz@charter.net



NCSF is a member of the [North-Central Region of the Astronomical League.](#)



NCSF supports the [International Dark Sky Association](#)

Imaging Report: M81 and M82

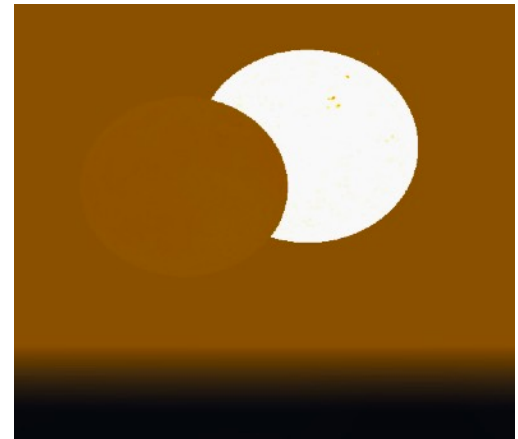
Rick Kazmierski captured this image of M81 and M82 with a 105mm William Optics APO refractor this past month. It is a stacked composite of 30 exposures of 2 minutes each, taken from his observatory with a QHY168C color camera. Of particular note is how it captured the red streaks of M82's active nucleus.

Partial eclipse at sunrise

The morning of Thursday, June 10, will present an unusual spectacle and photo opportunity: a partially eclipsed sun at sunrise. If conditions are right, the many miles of atmosphere could act as a natural solar filter. But please have eclipse glasses and solar filters handy. On a very clear and transparent day, the sun may be too bright for direct viewing even at sunrise.

Sunrise in Milwaukee on that day is 5:12 am. The sun's azimuth at sunrise is 58 degrees and 39 minutes, or almost 32 degrees north of due east. Keep that angle in mind when viewing or photographing the eclipse with some foreground landmark, such as a lighthouse or boats in a harbor.

- Ernie Mastroianni



A frame from the Stellarium star atlas shows how the partially-eclipsed sun will appear at sunrise. The eclipse ends at 5:41 am.

SPECTRUM newsletter

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<https://ncsf.info>

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Slack: ncsfastro.slack.com

Editor: Ernie Mastroianni
5821 N. Santa Monica
Whitefish Bay, Wis 53217
ernie.mastroianni@gmail.com

