

SPECTRUM

Northern Cross Science Foundation Newsletter

September/October 2021



NASA technicians examine the fully-deployed primary mirror of NASA's James Webb Space Telescope during testing at the Goddard Space Flight Center in Greenbelt, Maryland in 2017. The 18-segmented gold mirror is designed to capture infrared light from the first galaxies that formed in the early universe. NASA photo

NCSF Webb telescope event to be held in Port Washington prior to launch

By Joyce Jentges

Mark October 27, 2021 on your calendar! NCSF will be participating in a James Webb Space Telescope official event sponsored by the Space Science Telescope Institute. The event will be at the W J Niederkorn Library in Port Washington and will run from 3-8 pm. About 500 similar events are taking place nationwide.

Plans for speakers are still tentative, but Jeff Setzer will be speaking about the Library Telescope and I will be speaking about the James Webb Space Telescope. We'll have a photo booth and a table with hands-on items. We will be able to use the locked display case in the library from October 15 to November 15. The theme will be telescopes and NCSF. What I am looking for is items for the display case. Small telescopes of various types, photos of the observatory (inside and out), the model of the Panaruskys telescope. Historical photos/items of NCSF would be of interest. Perhaps a photo of the old observatory?

I also need one or two volunteers at the display table to be able to hand out a make and take project from our surplus of Night Sky Network materials. I will be looking at the materials and trying to decide which would be appropriate.

Please contact me if you are interested or with any questions regarding this event, or if you are able to assist with any displays. My [email address](#) is also listed in the newsletter and is probably the easiest way to reach me.

From NASA: The James Webb Space Telescope (sometimes called JWST or Webb) is a large infrared telescope with an [approximately 6.5 meter](#) primary mirror. For comparison, Hubble's primary mirror is 2.4 meters across. The Webb telescope will be launched on an Ariane 5 rocket from French Guiana no earlier than Oct. 31.

Webb will be the premier observatory of the next decade, serving thousands of astronomers worldwide.

Webb was formerly known as the "Next Generation Space Telescope" (NGST); it was renamed in Sept. 2002 after a former NASA administrator, [James Webb](#).

No October SPECTRUM

There will be no SPECTRUM issue for October, due to my travel schedule in September and October. You'll see the newsletter return in November. - Ernie Mastroianni, editor

September and October General Meeting programs

The September 2 General Meeting program, about NASA's [Artemis 1](#) mission, is by NASA Solar System Ambassador [Adam Brizendine](#). Artemis 1 will be an uncrewed flight test and the first of at least three [Artemis missions](#) that will launch atop NASA's Space Launch System, the world's most powerful rocket. Atop the stack will be the Orion spacecraft, which will fly

280,000 miles from Earth, thousands of miles beyond the Moon, during its three-week mission.

The October 7 meeting will feature a talk on the James Webb Space Telescope by Joyce Jentges. Learn more about this telescope and why it is not a replacement for the Hubble Space Telescope. - Joyce Jentges

Observing report: Public and private viewing in August

On August 1, Mike Borchert and I reserved the Plunkett Observatory for a private viewing and photography session. I believe it was the first time since February of 2020 that the observatory's five-inch refractor was used for astrophotography.

Borchert chose the M51 Whirlpool Galaxy as his target, using his personal QHY 168C astrocamera to make a couple hours worth of sub-frames for his final image. I used the Panarusk telescope with its newly-cleaned 20-inch mirror to find out how deeply it would reveal dim galaxies and deep sky objects.

We were fortunate to have a moonless night. The atmosphere was relatively smoke-free.

Tooling up for astrophotography was time-consuming, though, with a telescope and mount unused for more than a year. But after an hour or so, Borchert was methodically making subframes that resulted in this final photo.

Meanwhile, with just my eye connected to the big scope, I warmed up by viewing some of the classic summer treats. After lingering on M57, I moved over to Minkowski 1-64 (featured in last month's newsletter), a tiny ringed planetary also in Lyra. At 80x, I could not see the 13th magnitude object. Perhaps due its small size (just 20 arc-seconds) it could be mistaken for a star. Boosting the power to 140x brought it in clearly.



At top: Mike Borchert observes Jupiter through the 20-inch while computer and scope gather M51 images in the background. Ernie Mastroianni and Mike Borchert photos

I moved on to the galaxy NGC 7331 and its dimmer companions, known as the Deer Lick Group. I could clearly see just one extra galaxy, NGC 7335 at 13.5 magnitude. Just a moon-width away is the well-known Stephan's Quintet, a small and closely-clustered set of galaxies in Pegasus, the brightest of which is just 13th magnitude. I could not resolve all five, but saw just one fairly bright glow that looked more like an edge-on galaxy. Heading to southern Pegasus, I tried my eye on the Pegasus I cluster.

The bright pair of elliptical galaxies, NGC 7626 and NGC 7619, were easy at 11th magnitude.

From there, I could track down several other dimmer NGC galaxies down to about 14th magnitude, including NGC 7617, which hovers close by the pair. But other close-by galaxies are small, an arc-minute or less. I concluded that more time and more study at a later date would reveal more.

Finally, I photographed Saturn through the 20-inch, while balancing my laptop on top of the ladder near the eyepiece. It was a hazardous challenge. Seeing was not good and the final image is above. Mike and I closed the roof at about 2:30 am.

- Ernie Mastroianni



Observing report: Large crowd, repeat visitors at August public viewing night at Harrington

By Robert Powell

On Saturday, August 14, the public viewing event was attended by 55 visitors. The waxing crescent moon provided great views at 85 power, until nightfall permitted the viewing of DSOs. The skies were cloudless and wildfire smoke was less obvious than in recent days. About once every 30 minutes, we'd see a long-traveling meteor with smoke trails. A good show was enjoyed by all.

The crowd comprised people aged 4 to 70, include a mom and her 4 boys that I remembered visiting from ten years ago! Targets included M57, M27, M13, M92 (a crowd favorite, it turned out), Jupiter with its transiting Great Red Spot, and a "meh"-looking Saturn. Saturn's altitude was too low, and atmospheric conditions were too poor to provide views clear enough to see even the Cassini Division. Many visitors were treated to the naked eye sight of M31, which was followed by a telescope view of it.

Among the visitors was a mom and her four boys, who visited 9 years ago. Their voices are heard in this Facebook video (from July 2012), from the 00:15 mark to the 00:45 mark. <https://www.facebook.com/robert.m.powell/videos/2317482113148>.

August General Meeting report

The August 5 General Meeting was held via Zoom, and much discussion focused on the upcoming Webb telescope launch and nationwide programs sponsored by the Space Telescope Science Institute. Joyce Jentges will headline the event at the Port Washington Library. See the page one story for more details.

There was no treasurers report this month due to the absence of Gene DuPree, who was on the road to the Northwoods Starfest. See the photos page 4.

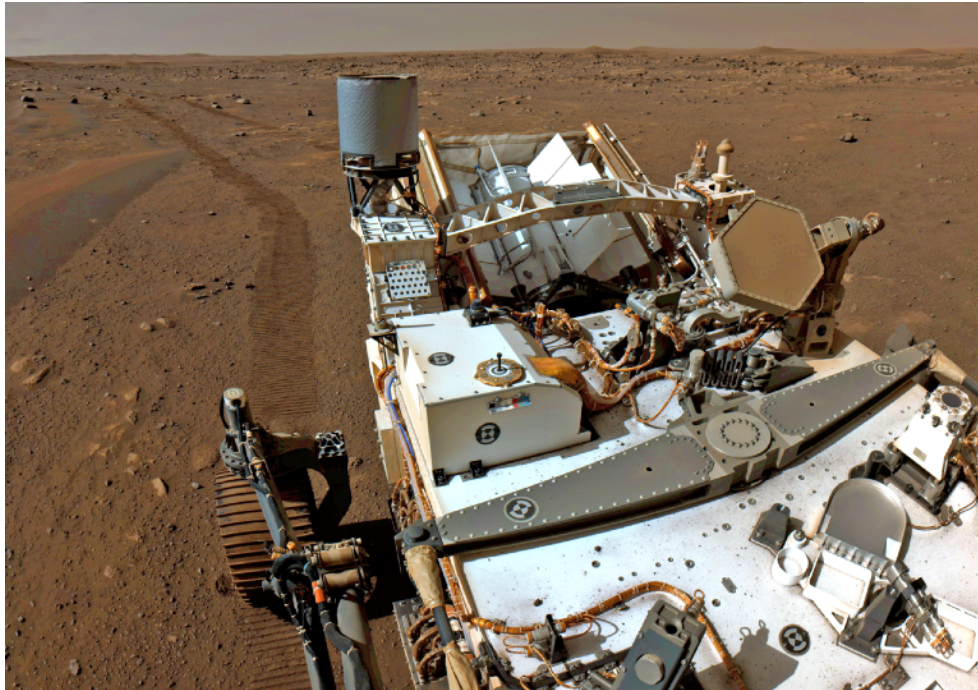
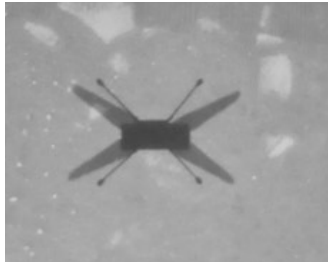
Also discussed was the upcoming October WOW event to be held at Hartman Creek State Park in Waupaca. See the next page for more details. Jeff Setzer again stressed the importance of volunteers to staff the public events held at the Plunkett Observatory at Harrington Beach State Park. One person cannot effectively manage two telescopes and crowds which can be quite large at times. Training sessions to certify telescope operators are held from time to time. Contact observatory director [Dan Bert](#) or any club officer.

For the general meeting, Solar System ambassador Andrew Salata spoke about exoplanets, methods of finding them and future plans for better search methods and spacecraft.

-Ernie Mastroianni

Mars update: Perseverance and Ingenuity

This black-and-white image was taken by the navigation camera aboard NASA's Ingenuity helicopter during its third flight, on April 25, 2021.



NASA's Perseverance Mars rover looks back toward its tracks on July 1, 2021 (the 130th sol, or Martian day, of its mission), after driving autonomously 358 feet (109 meters) – its longest autonomous drive to date. NASA photos

Perseverance has been on Mars now for just over 6 months. What an eventful 6 months it has been! In a half-year, Perseverance has taken well over 120,000 pictures. All of the instruments on the rover are working correctly. Just several weeks ago, Perseverance attempted to take its first sample of Martian soil. The sample tube came up empty and NASA scientists have discovered that the sample was too soft and crumbled before it could get into the sample tube. In the next few weeks, they will be attempting a 2nd sample near a rocky ridge close to where the rover is.

Ingenuity has been an overwhelming success! Engineers weren't even sure if it would make 1 flight, but it recently took its 12th flight! The helicopter has moved past the goal of the first 6 flights, and is now acting as a scout for Perseverance. Just a week or 2 ago, it discovered sand dunes that would be very hazardous for a rover to go through.

You can follow the progress of the rover and helicopter on mars.nasa.gov/mars2020/. This website has all of the pictures both Perseverance and Ingenuity have taken, progress updates and blogs, and you can track exactly where both of them are on Mars. - Joyce Jentges

Autumn WOW star party

NCSF President Jeff Setzer has organized an autumn version of the Wisconsin Observers Weekend, to be held at Hartman Creek State Park in Waupaca on Oct. 1-3. Group sites 1 and 2 have been reserved for NCSF members and the cost, \$87 for each site, will be split by those who will attend. Interest has already been noted from the Kazmierskis, the DuPrees and the Zellners. Astronomical twilights ends at 8 pm that weekend, so there will be lots of observing time. The Moon doesn't come up until nearly 3 a.m.

Contact [Setzer](https://www.facebook.com/setzerj) for more details.

Looking ahead

Sept 2, and Oct. 7, Thursday General Meetings

7:30 pm, online via Zoom

Sept 4, Saturday Reuss Ice Age Center

N2875 WI-67, Campbellsport, WI

7:30 pm to 11 pm

Auditorium program at 7:30

Telescope viewing at 8:45

Sept. 11, Saturday Pike Lake telescope viewing

Kettle Moraine State Forest

Pike Lake Unit

3544 Kettle Moraine Rd, Hartford

1 pm to 11 pm

Safe solar viewing until 5 pm,

night sky after 7 pm

Sept. 10 and 11, 7 pm Harrington Beach State Park

Public viewing at Plunkett Observatory

Volunteers needed, contact [Dan Bert](mailto:danbert@plunkettobservatory.com)

Sept. 29, Wednesday, 8 pm Binocular star party

Harrington Beach (member event)

Oct. 1-3 Autumn WOW

Hartman Creek State Park

N2480 Hartman Creek Rd, Waupaca

Oct. 8 and 9, 7 pm Harrington Beach State Park

Public viewing at Plunkett Observatory

Volunteers needed, contact [Dan Bert](mailto:danbert@plunkettobservatory.com)

Oct. 9, 7 pm Pike Lake telescope viewing

Kettle Moraine State Forest

Pike Lake Unit

3544 Kettle Moraine Rd, Hartford

Oct. 16 International Observe the Moon Night

A NASA program to encourage lunar viewing and education

<https://moon.nasa.gov/observe-the-moon-night/about/overview/>

October 23, 2021 Sheboygan Swap-n-Sell

Aviation Heritage Center,
Sheboygan Airport

May 13-14, 2022 NCRAL convention

Port Washington

Hosted by the Northern Cross
Science Foundation



Jupiter and moons Europa, Io and Ganymede, just before midnight from my Whitefish Bay back yard on August 18, close to the planet's opposition. Europa and its shadow transit from left, Io and Ganymede go behind Jupiter at right. The pictures cover a 36-minute span. Shot with my Celestron 925, a ZWO ASI290 camera, and eyepiece projection at f/27. - Ernie Mastroianni



Scenes from the Northwoods Starfest in Fall Creek, Wis.

NCSF members including Jeff Setzer, Joyce Jentges, Rick Kazmierski, and Gene and Charlotte DuPree traveled across the state to the Hobbs Observatory site of the annual Northwoods Starfest, held Aug. 6-8 at Beaver Creek Reserve near Eau Claire. At left, Setzer prepares his gear for the first night of stargazing. "We did have one observable night at Northwoods Starfest", said Setzer in a Slack post. Below is his new Nexus DSC Pro on his Tele Vue 85 setup in the Starfest field. Photos by Joyce Jentges and Jeff Setzer



From Gene and Charlotte DuPree: "Even with the smoke there was some viewing until midnight snacks. After that the fog was starting. It started raining around 8am on Saturday. Several times it looked like the Sun was going to come out, but it never did. It rained heavy in the afternoon and we guessed about three inches in three hours. The rain did stop around 10am on Sunday."

Below left: Water pools in the observing field. Below right: Newspaper columnist and blogger Bob King, aka Astro Bob, speaks. Photos by Gene and Charlotte DuPree and Joyce Jentges



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>



Northrop Grumman's Cygnus space freighter awaits capture with the Canadarm2 robotic arm operated by astronaut Megan McArthur. The International Space Station was above the Atlantic Ocean over Brazil at the time of this photograph on August 12.

From the link <https://www.flickr.com/photos/nasa2explore/>

NASA images and missions

James Webb telescope https://www.nasa.gov/mission_pages/webb/main/index.html
 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>

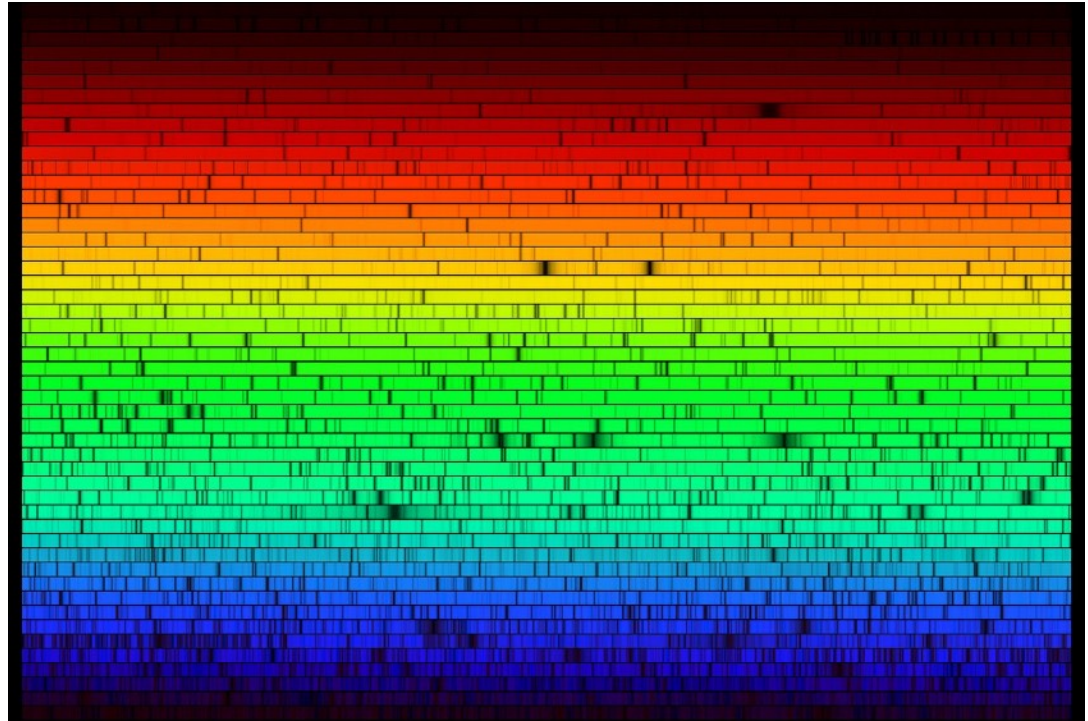
NASA Research Centers

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>

The Sun's Spectrum

A high-resolution composite illustration shows the spectrum of our Sun, created at the McMath-Pierce Solar Facility at the National Solar Observatory on Kitt Peak, near Tucson, Arizona. It shows wavelengths increasing from left to right along each strip, and from bottom to top. Each of the 50 slices covers 60 angstroms for a complete spectrum across the visual range from 4000 to 7000 angstroms.

The dark lines are Fraunhofer lines, caused by selective absorption of the Sun's radiation at specific wavelengths by the various elements existing as gases in the solar atmosphere.
Credit: N.A.Sharp, NOAO/NSO/
Kitt Peak FTS/AURA/NSF
<https://noirlab.edu/public/images/noao-sun/>



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 Españek's eclipse guide: <http://mreclipse.com>

Upcoming and seasonal events: <https://in-the-sky.org/>

ISS transits: transit-finder.com

CCD calculator: <https://new-astronomy-ccdcalc.software.informer.com/>

Tonight's Sky localized <https://telescopius.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.roskosmos.ru/>

Sierra Nevada Corp. <https://www.sncorp.com/space-systems/>

SpaceX: <https://www.spacex.com/>

United Launch Alliance <https://www.ulalaunch.com/>

Virgin Galactic: <https://www.virgingalactic.com/>

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



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

**Imaging Report:
Capturing a Perseid**

By Rick Kazmierski

The Friday night speaker at Northwoods Starfest this past month was AstroBob, aka Bob King. He gave a great talk about the Perseid meteor shower on August 11 to 12. Part of the lecture included tricks to photograph meteors. I have never successfully imaged a meteor so decided to give it a try.

With a 90 degree bracket from another tripod, I was able to turn my parallelogram binocular mount into a parallelogram camera mount. Much easier to use! (bottom photo).

One of the tricks Bob recommended was wrapping chemical hand warmers around the lens to ward off dew. In four hours on a night with 70 percent humidity, the lens never dewed up!

Using my Canon Rebel DSLR camera with a remote timer attached set for unlimited exposures, I took 544 images at 25 seconds each between midnight and 4:00 am on August 12th. I used an 11mm lens at F3.5 and ISO 800.

When I reviewed the images that morning, four images contained meteors. Included is the best one (top photo), cropped for effect.

A closer look at the meteor revealed four stages before it burned out. It began with a soft entry, brightened to a lengthy burn, faded, and then flared into a final bright flash of glory!

To me it resembles a spear flying across the sky, perhaps released by Perseus himself.

**SPECTRUM newsletter**

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