SPECTRUM

Northern Cross Science Foundation Newsletter *November 2020*

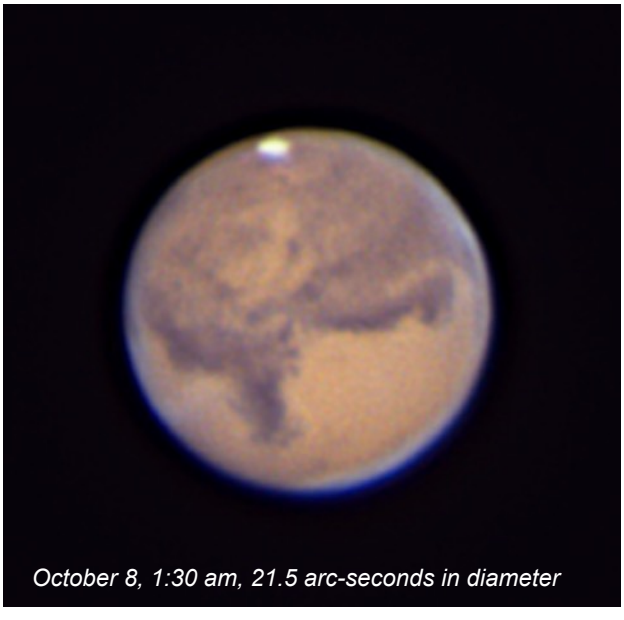
Twenty Years of Living and Research on the International Space Station

November's General Meeting program covers the decades of continuous habitation of the International Space Station, a multi-billion dollar effort led by the United States, which began during the Space Shuttle era and continues to this day. NCSF vice president Joyce Jentges' presentation will touch on its history, notable milestones, and several near disasters. Tune in this Thursday at 7:30 via Zoom.

Above, 2018: *The ISS as seen by approaching astronauts.*
Right, 1998: *The Zarya (left) and Unity modules are seen after Unity was lifted from the Space Shuttle Endeavour's cargo bay and connected to Zarya. Continuous occupation began in November, 2000. NASA photos*

Mars dazzles during favorable opposition

The Red Planet rides high during its favorable autumn opposition well into November. No dust storms obscure its surface markings, which are clearly visible even with modest telescopes. While its closest approach has past and its apparent size is shrinking, the planet is still well placed for evening observing. It will span 20 arc-seconds on Nov. 1, and 14.8 seconds at month's end. This photo, taken with a 9.25-inch Celestron, shows the India-shaped Syrtis Major and the southern polar cap. See pages two and four for more stories from members.
- Ernie Mastroianni photo



October 8, 1:30 am, 21.5 arc-seconds in diameter

November 5, Thursday
General Meeting
Online via Zoom
7:30 pm

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

Please email editor Ernie Mastroianni with dates and times of any upcoming NCSF events:
ernie.mastroianni@gmail.com

NCSF members view Mars and more

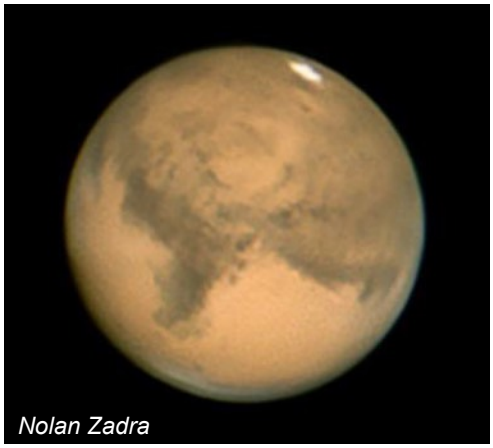
From Nolan Zadra

You probably have all seen that very bright orange "star" prominently overhead the last couple months. It is, of course, the planet Mars and it was recently the closest it will be to Earth until 2035.

To the right are my results of imaging through the Milwaukee Astronomical Society 12 1/2 inch F9.5 reflecting telescope. This is a BIG telescope - the eyepiece is over 10 feet above the floor. Each of these images were comprised of the best 10 to 20% of a stream of 15,000 images. I used a planetary camera and stacked the frames in Autostakkert, initial sharpening in Registax and final processing in Photoshop.

Observing Report

The top image shows the most prominent feature of Mars, Syrtis Major. Also, in the second photo, the whitish area left of center is the Tharsis volcano region, nearly 3000 miles in size! And then to the left of that is a very small white spot - the famous volcano Olympus Mons - the tallest volcano in our Solar System - nearly 13 miles tall - two and a half times taller than Mount Everest!



Nolan Zadra

Nolan Zadra

From Jim Hahn:

On the night of October 7, I took my homebuilt 8" f/6 Newtonian out to my backyard on the south side of Milwaukee for a look at Mars. I used an 8.8mm Meade Ultra-Wide Angle eyepiece at 140X, and my 10.5mm TeleVue Plossl with a 2X Barlow at 234X. In moments of good seeing, I glimpsed the southern polar cap. Syrtis Major was facing Earth and was clearly visible. A red filter seemed to enhance the contrast a bit.

While I was enjoying views of Mars, Saturn, and Jupiter that evening, I took time occasionally to scan the northwestern part of Cetus with 10X50 binoculars. According to *Sky & Telescope*, there was a chance of seeing a geostationary satellite flare.

I memorized patterns of 5th to 8th magnitude stars in that region and for about an hour I searched for a “star”out of place. I put away the scope around 10:30 and resumed my search one last time, and -- voila! -- there was a point of light out of place. It was bright, too, probably 3rd magnitude, and visible to the naked eye, but faded within 4 or 5 minutes.

In the nerdish euphoria of the moment, I forgot to watch for the effect of the stars wheeling across the sky in the background relative to the geostationary satellite. There's always next March!

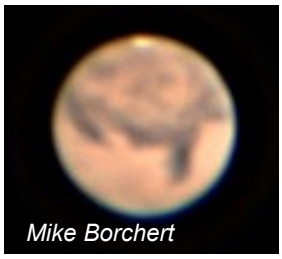
From Mike Borchert

I decided to purchase a telescope this year, and one goal I had was to view the planets come fall. There have been many challenges and learning experiences along the way. During the frustrating times, I remember it’s the journey, not the destination.

This is my first “GOTO” scope, and as such, I had the ability to focus in on Jupiter, Pluto, Saturn, Neptune, and Mars in one night. I passed on Pluto, but got a real thrill seeing Neptune for the first time. My wife, Gayle asked how I knew that tiny dot was Neptune? I just knew.

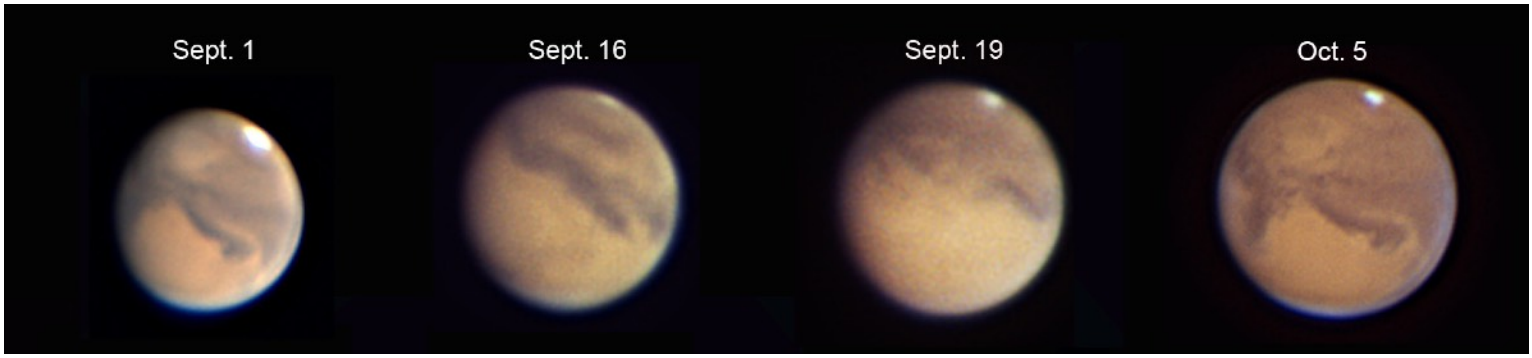
It did have a bluish tint to it, and I was using a GOTO scope after all.

Mars came through as promised. My previous scopes have always failed to show the polar cap. With my small CCD camera, I was able to capture a few thousand frames of video, process it through a software called LYNKEOS, and come up with at least a memory and a photo.



Mike Borchert

You drag and drop all the video into an area on the software, then choose to use the best percentage of images to combine into one final image. One of our club members has taught me that astronomy will teach humility and patience. In hindsight, it is good to have those not so good nights. You learn and practice for when the spectacular night comes along.



***From Ernie Mastroianni**: I photographed Mars on five nights between Sept. 1 and Oct. 8. Focusing was tough. One night, thick smoke from the western wildfires dimmed Mars by at least a magnitude. On the steady nights, heavy dew soaked everything. Bad seeing plagued another night. But practice makes incremental improvements, so by Oct. 5, I was seeing better results. All were shot with a Celestron 9.25.*

Success for asteroid sample retrieval

On an oddly-shaped asteroid about 200 million miles away from earth, a US spacecraft gently touched down on Oct. 20, snatched a few ounces of loose rubble into a saucer-shaped foot, and lifted slowly away after just six seconds on the surface. If all goes well, the mission, called OSIRIS-REx, will bring some of the solar system's oldest rocks back to earth, arriving on September 24, 2023. After a surprise leak of some of the material, the OSIRIS team quickly commanded the spacecraft to stow the regolith into the Sample Return Capsule, which has a heat shield and parachutes designed to drop the sample to earth intact.

NASA Nuggets

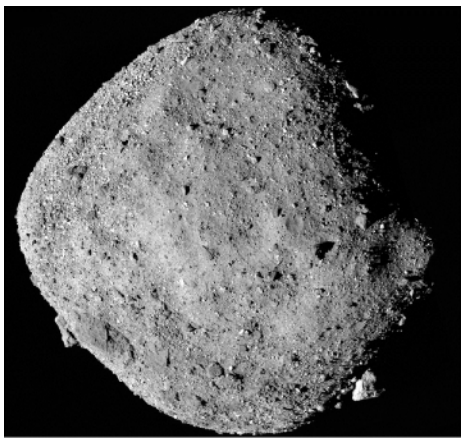
Astronomers think the ancient asteroid, named Bennu, dates to the solar systems's earliest days. It's a dark carbonaceous asteroid with chemicals and rocks unchanged from their formation 4.5 billion years ago. Such an ancient and pristine sample will be a treasure trove of information about the solar system's creation for researchers. Organic chemicals may also be among the return sample, offering clues to life's earliest building blocks.

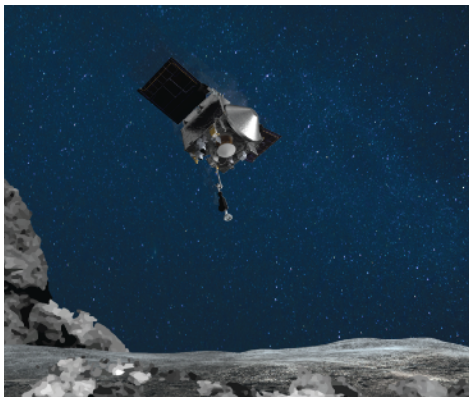
Bennu, which is about half a kilometer in diameter, was discovered in 1999 by NASA's Lincoln Near Earth Asteroid Research team. Its passes just 4 million miles from Earth every six years and is classified as a potentially hazardous object. Researchers say it has a 1 in 2,700 chance of striking Earth between 2175 and 2199.

The mission is run by NASA's Goddard Space Flight Center, the University of Arizona and Lockheed Martin.

- *Ernie Mastroianni*

Links:
https://www.asteroidmission.org/
https://www.nasa.gov/osiris-rex





From top: *The asteroid Bennu;*
An Illustration shows how OSIRIS-REx touches down on the asteroid;
The actual moment when the sampler pad touched down on Bennu's surface, scattering rocks and dirt everywhere.
Photos by Goddard Space Flight Center and the University of Arizona

NASA's Commercial Crew program update

The SpaceX Crew-1 Mission has a launch date! After being postponed several times, the launch is now set for November 14th at 7:49 pm EST. This Dragon capsule will launch 4 astronauts to the International Space Station for a 6-month stay. The astronauts are Michael Hopkins, Victor Glover, Shannon Walker, and JAXA astronaut Soichi Noguchi. They will become part of the Expedition 64 crew, who recently got to the space station on a Soyuz rocket in October. NASA Live will have televised coverage of the launch, docking and welcome ceremony. - *Joyce Jengtes*

Looking ahead

December 3, Thursday
General Holiday Meeting
Online via Zoom
7:30 pm

NEAF
Northeast Astronomy Forum
April 10 and 11, 2021
The twice-canceled conference will try for the third time. Rockland Community College, Suffern, NY
https://www.neafexpo.com

NCRAL convention
May 7-8, 2021
St Norbert College Bemis Center, De Pere, Wis.
Hosted by the Neville Public Museum Astronomical Society
See the NCRAL autumn 2020 newsletter, page 3

Pre-WOW
June 4-9 2021
Hartmann Creek State Park
IMPORTANT NOTE:
If anyone is thinking of attending Pre-WOW, June 4-9 2021, please let us know. We will release the early weekend dates if no one interested in camping. You would not have to come for all of the pre-dates. You can camp and leave anytime during if you cannot attend WOW on June 10 - 13. Contact: 262-675-0941 or grdupree@charter.net
- *Gene and Charlotte DuPree*

Wisconsin Observers Weekend
June 10 - 13, 2021
Hartmann Creek State Park
http://www.new-star.org/index.php?Itemid=82

Nebraska Star Party
August 1 - 6, 2021
Merritt Reservoir Snake Campground
https://www.nebraskastarparty.org/

from page 1

NCSF is a member of the North-Central Region of the Astronomical League.

NCSF supports the International Dark Sky Association

Meeting notes

General Meeting

The October General Meeting was held on the first of the month. Treasurer Gene DuPree reported $11,823.54 in the club account.

Jeff Setzer presented the main program on Astrospheric, an advanced weather forecasting website and app targeted to North American stargazers. It graphically forecasts cloud cover, transparency, seeing, wind speed and temperature two nights ahead. It also provides estimated cloud cover for the following week. It shows dew point, sunrise, sunset, moonrise, moonset and space station visibility and incorporates animated satellite views of cloud cover for any location that the viewer selects in North America.

No new business was reported.

Board meeting

The NCSF board met on October 15 and set the business agenda for the November and December meetings. November's meeting will nominate one board member to fill the spot of the current board member whose 3-year term is up. The nominees then will be voted on during the December meeting. The Board members will vote on positions within the club.

Planning continues for the December Holiday Meeting. Anyone with an idea, please get in touch with the board. No news was reported for the Plunkett Observatory, or from the Astronomical League Correspondents (ALCor). The board also noted a new member, Steve Sweeney.

- Ernie Mastroianni and Mike Borchert

Binocular night , October 17

Another cloudy October day. The Astrospheric app was showing 49% cloudy sky, and zero transparency. After talking to Joyce, we decided to give it a try anyway. Of course the clouds did not go away. We had already discussed that the observatory needed to be checked before winter set in. We did a little clean up and general maintenance. After an hour of chitchatting we were on the way home.

- *Charlotte Dupree*

Observing Report

Mars Opposition

I had been watching Mars for awhile. I could see the features getting better on every night. The surface features were excellent in the 18' Obsession reflector. We had a friend over one night, and after talking to Joyce, who was at Harrington beach, I started using different filters. The yellow brought out the best of the dark areas, and knocked down the brightness of the surface.

- Gene DuPree

SPECTRUM newsletter

Published monthly by the Northern Cross Science Foundation, Inc. (NCSF), a nonprofit amateur astronomy organization based in southeastern Wisconsin.
https://ncsf.info

NCSF On Facebook
Members:
https://www.facebook.com/groups/284397465372797/

Public:
https://www.facebook.com/NCSFAstronomy/

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