VILLAGES STAR

Newsletter of The Villages Astronomy Club

Volume 5, Number 1
January 2024

Club Website:
http://vlgastroclub.org/
Facebook:
https://www.facebook.com/groups/vlgastroclub/

Club Officers & Directors

President	Mark Graybill
Vice President	Ken Katta
Secretary	Randy Gilbert
Treasurer	Linda Meng

Newsletter Contact
saundby@gmail.com
(please include TVAstro in subject line)

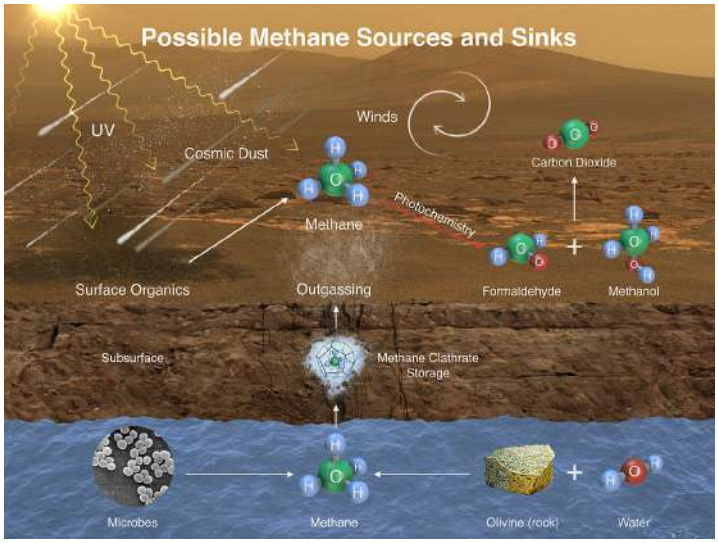
UPCOMING EVENTS

Telescope Workshop, January 2nd, 6pm
Our monthly Telescope Workshop will be held at the Picnic Pavilion at Truman Rec Center, 2507 Canal Street, at the Picnic Pavilion. Bring your new telescopes or other equipment to show off, find assistance in assembly or use, and learn about accessories that will make them easier to use!

Exec Directors' Meeting, January 5th, 11am
All members are welcome, join us at Fishhawk Recreation Center, 2318 Buttonwood Run, from 11a to 12p as we plan 2024's events and meetings including February's SSN, The Villages Outdoor Expo and April's eclipse.

General Meeting, January 16th, 2023:
The Chemistry of Life in the Universe by Pauline Schwartz

Learn about the chemisty of the universe and how life has risen from it here, as well as how it may rise elsewhere in the cosmos. Pauline gave a prior version of this talk at one of our Zoom meetings, and now presents an updated version that is sure to grip the attention and interest of our club!



Methane Sources and Sinks on Mars
NASA Image

Space Academy and Telescope Workshop Date Changes for 2024

Space Academy and Telescope Workshops are moving to **first Mondays** in Feb 2024.

Dates we will be meeting are:
Feb 5th, Mar 4th, Apr 1st, May 6th, Jun 3rd, Jul 1st, Aug 5th, Sep 2nd, Oct 7th, Dec 2nd.

Starting time for Space Academy is 6:30pm. Telescope Workshop starting times will follow sunset through the year.

Both events are at Truman Recreation Center, 2507 Canal Street.

January 20th, 5pm:
Fruitland Park Astronomy Group

The Fruitland Park Astronomy Group meets for an evening of observing and talk on the

third Saturday of the month every month, conditions allowing. The meeting is at the Cales Soccer Field in Fruitland Park at 300 Shiloh Road (at the corner of Shiloh Road and Dixie Avenue, north of the Fruitland Park water tower.) Village Astronomy Club members and the public are welcome. Gate opens at 5pm, solar observers can catch the sun while it's up, and astro observers can set up in daylight.

Scopes can be set up directly off of tailgates onto pavement, or taken further into the park along paved walks, away from the road to avoid nearby lights. Power is available.

Nova-C/EagleCAM Launch January 20-23rd

The launch window for the Intuitive Machines Nova-C lunar landing robotic vehicle is from the 20th through the 23rd for this month. In past month, range scheduling and payload preparedness issues have bumped the launch date later in the calendar. If the date holds, then Nova-C will launch in this time frame aboard a SpaceX Falcon 9 rocket.

Among the payloads aboard Nova-C is the EagleCAM, whose development team from Embry Riddle Aeronautical University visited us at one of our club meetings in 2022. EagleCAM will be ejected from the Nova-C above the surface of the Moon, then will fall to the surface ahead of Nova-C with the intent of filming Nova-C's landing from the surface of the Moon.

If successful, it will mark the first time that a lunar landing has been captured live as it happens from a camera on the Moon. It will also mark the first use of Wi-Fi on the Moon, as the EagleCAM uses Wi-Fi to transfer its data back to the Nova-C craft.

Aside from the technical accomplishments, the imagery will contribute to our knowledge of the dynamics of the lunar soil when a rocket is landing, assisting in our preparations to return humans to the Moon aboard Artemis III.

Dame Jocelyn Bell Burnell, Embry Riddle Aeronautical University Open House, January 26th

Embry Riddle Aeronautical University will be hosting an open house on the evening of January 26th, with Dame Jocelyn Bell Burnell as the featured lecturer.

Dame Jocelyn Bell Burnell, discoverer of the first radio signals from pulsars.

Her presentation begins at 7pm followed by telescope viewing at 8pm, conditions allowing. Contact our vice president, Ken Katta, at (917) 620-1081 to arrange for rides or carpooling to this event.

For more information, visit: [Embry-Riddle Daytona Beach Observatories - Astronomy Open House]

Starry Starry Night, Feb 3rd, 6:30-8:30pm

Join us for our first star party of 2024! We will be holding our Starry Starry Night program at Truman Recreation Center, 2507 Canal Street, at the Picnic Pavilion (behind the pool from the parking lot.)

Our astronomers will be showing Saturn, Jupiter, The Great Orion Nebula, The Seven Sisters, double stars, star clusters, and many other objects in the winter sky.

Calendar: https://vlgastroclub.org/calendar/

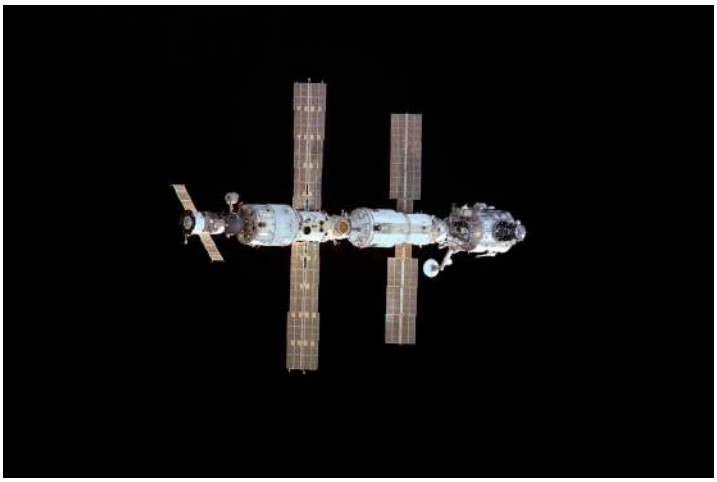
NEWS

ISS Marks 25 Years in Orbit

The International Space Station, a joint project of five space agencies and 16 nations, celebrated its 25th anniversary on December 6th, 2023. Its creation date was set by the integration of the Russian Zarya and the U.S. Unity modules were connected together by the Space Shuttle Endeavour to mark the beginning of the space station's construction on December 6th, 1998.

Initially conceived in 1993 as a fusion of the future efforts of the U.S. Freedom space station and the Russian plans for Mir-2 to follow on to their original Mir space station, a plan of participation was worked out to include not only the two primary partners, but also the Japanese and European partners in the U.S.'s Freedom space station.

The ISS accords, delineating the responsibilities and benefits to the members, have since become a model for international space exploration agreements. The Artemis Accords, which manage international participation in humanity's return to the Moon, are based on the ISS agreements.



The ISS as seen in 2000, when approached by Space Shuttle Endeavour as the first time the Shuttle arrived at an inhabited space station.

After the first two modules were connected, Endeavour stayed with the newly-created station for several days then returned to Earth. Construction on the station continued for almost two years, with 17 spaceflights, until the first long-duration mission aboard the space station was begun on November 2nd, 2000.

This mission was called Expedition 1, and it lasted for 136 days. It started the continuous human occupation of space, which continues to the present from that day. Today, Expedition 70 continues the work begun by 2000's Expedition 1.

Expedition 1 Crew: Sergei Krikalev, Bill Shepard, Yuri Gidzenko. Note the image backdrop features a version of the ISS planned, but never completed as depicted.

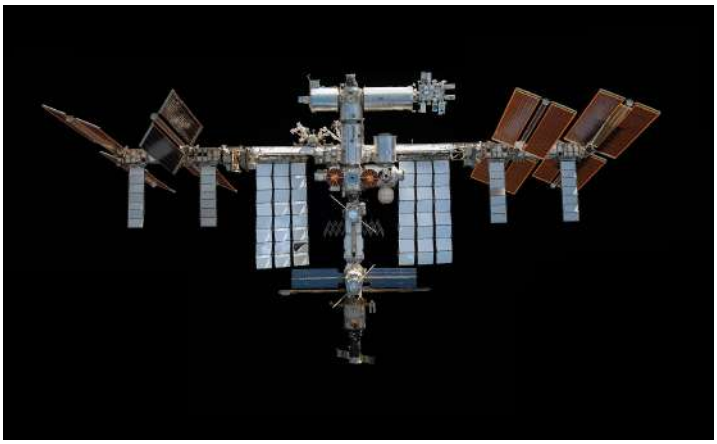
Since then the ISS has contributed significantly to many different branches of science and in many different ways. For Earth-bound applications, experiments conducted aboard the ISS have greatly improved processes for producing and purifying pharmaceuticals, expanded our techniques and understanding of physical therapy and coronary disease, and provided breakthroughs in communication technology.

For space-based applications, the ISS has helped us to understand the ability of the human body to withstand long duration spaceflights, developed processes for air and water recycling, and informed our understanding of maintenance of in-use space vehicles during long duration missions, information that will be critical as humanity reaches for Mars and plans to return to the Moon.

There is currently no set date for the end of

the Space Station, though plans are already looking ahead to a future without it. While Russia's current plans do not extend support beyond 2024, there has been no formal notice of the termination of their participation to date, and it is believed that their participation is likely to be extended to 2028 through negotiation.

Tentative plans for deorbiting some components of the station while retaining newer portions for use as part of future space stations are in work. With rapidly developing technology for spaceflight, firm plans are awaiting the understanding of what options new craft such as Starship present toward potentially returning segments of the ISS to Earth for study and as museum exhibits.



The ISS as of November 2021. The current configuration is materially the same, with the addition of upgraded solar panels atop the larger original ones.

China Launches Reusable Spaceplane

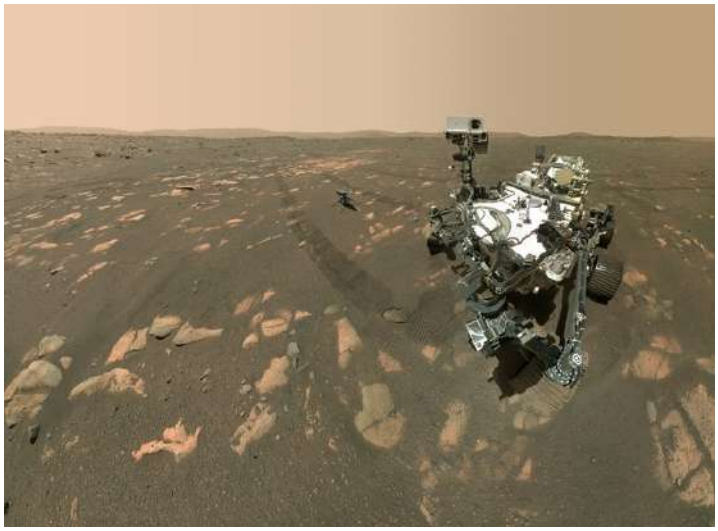
Chinese Long March 2F/T Launch

China successfully launched a secretive spaceplane mission aboard a Long March 2F rocket on December 14th. Believed to be similar in mission to the U.S. X-37B spaceplane, China has described it as a platform for developing reusable space technologies.

Space watchers have tracked the space plane to a geosynchronous orbit, where it is presently conducting its secretive mission.

Perseverance & Ingenuity at 1000 Sols

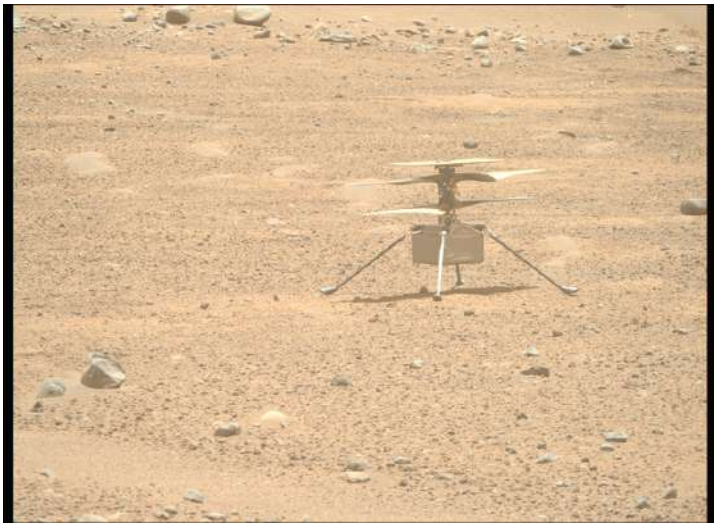
The NASA Mars rover Perseverance, and its helicopter companion Ingenuity, reached 1000 sols of operation on December 21st. Sols are Martian days, which last about 37 minutes longer than Earth days.



Perseverance Rover on Mars

The pair have been exploring the Jezero Crater on Mars, with the rover taking surface samples and the flyer scouting paths and looking for promising geography for the rover to investigate. Originally planned for only a brief period of operation on Mars, the helicopter has been a tremendous success, lasting throughout the mission so far and except for one concerning incident performing beyond anyone's wildest expectations prior to the mission.

Now at over 2 years and 10 months (Earth time) on Mars, you can find more on Perseverance's mission at the JPL website: https://www.jpl.nasa.gov/missions/mars-2020-perseverance-rover



Ingenuity, imaged by Perseverance's Mastcam on Sol 871

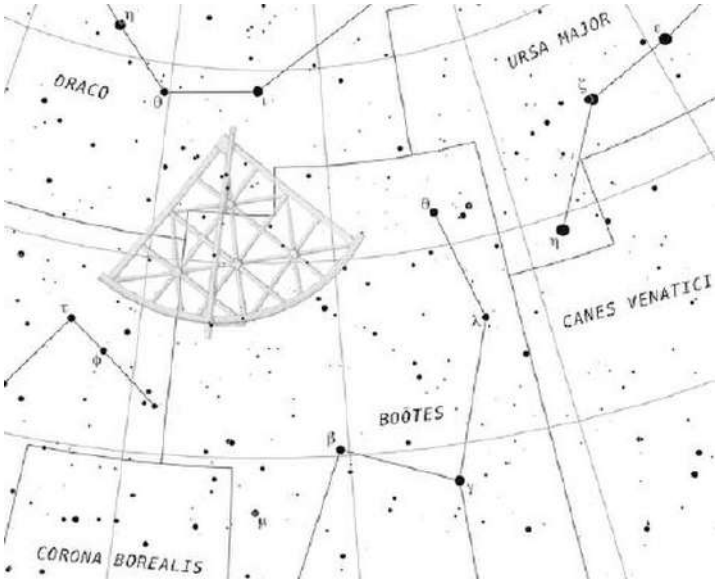
Perseverance is not only transmitting data back to Earth from its studies of Mars' surface. It is also collecting samples for a future sample return mission. 23 samples have been collected so far for return to Earth by a joint US/European sample return mission. Plans for specific dates on the return have slipped from original plans due to funding shortfalls for the mission, but plans are still in work to complete a round trip flight to Mars with the samples collected over the past 3+ years.

IN THE SKY THIS MONTH

The Moon:
Last Quarter, January 3rd
New Moon, January 11th
1st Quarter, January 17th
Full Moon, January 25th
Last Quarter, February 3rd

The **Quadrantid Meteor Shower** peaks on January 4th with its radiant point between the head of Draco and the end of the Big Dipper's handle. The Moon will not interfere significantly this year, being at last quarter.

The Quadrantids are named for a constellation that is no longer officially recognized, **Quadrans Muralis** (the Mural Quadrant.) Originally it included stars that are now part of Draco and Bootes, Johan Bode shrank the constellation a bit to avoid conflicts with other constellations when he included it in his 1801 Uranographia star atlas. It was dropped from the official list of constellations in 1922, when the IAU settled on a list of 88 official constellations. The meteor shower was named before that.



Quadrans Muralis among Modern Constellations Chart by Ultima Thulean

The meteor shower is unusual in that its peak does not last long--only about 6 hours. The center of the peak falls at 4am on January 4th, giving meteor rates of about 2 per minute. Unfortunately, the brightness of the meteors tends to be low, peaking at about magnitude 3.0.

The Moon will occult the star **Antares** on January 8th, but this event will not be visible in our area. Observers to the west of us will see the star disappear against the illuminated crescent, then reappear from behind the dark limb.

Saturn moves from mid-altitudes in the southwest to low in the west through the course of the month. It dims slightly, from magnitude 0.95 to 0.99. It will still make a fine sight, at an angular size of just under 16 arcseconds you will want to use magnification of about 100x or higher to see detail on the planet. Low powers will let you see it among its satellites. Titan is the most easily seen, at about mag. 8.7, though 3-5 other satellites can usually be seen with decent sky conditions and

patience when using a modest telescope. Using astronomy software like Stellarium you can see the current positions of the satellites relative to Saturn to identify them as you observe.

Saturn finder chart:
https://in-the-sky.org//data/object.php?id=P6

Jupiter is high and bright in the sky at sunset this month, and will continue to be a showpiece next month for our Starry Starry Night event. It shines at magnitude -2.5, and is 42 arcseconds across, allowing easy observation of its bands. Unfortunately, the Great Red Spot is more difficult to observe, though with Jupiter's short 10-hour rotation period it comes into view very often. To find the times when the GRS crosses the center of Jupiter's disk, use the transit time calculator on Sky & Telescope's website here:
Transit Times of Jupiter's Great Red Spot - Sky & Telescope

Here is a detailed guide to observing Jupiter's many features:
https://arksky.org/aso-guides/aso-observational-guides/35-observing-jupiter

Uranus is a few degrees west of Jupiter, and is at magnitude 5.7 which is just barely too dim to be seen by eye under our local conditions. It will show as an object with a green or blue color depending on sky conditions, and when seen even through binoculars or a telescope at low magnification will be obviously different from the stars around it. At mid-level powers of 75x-150x it will show a small disk, 3.7 arcsec in diameter.

Uranus finder chart:
https://in-the-sky.org//data/object.php?id=P7

Neptune shines at magnitude 7.8 this month. It takes binoculars at minimum to see it. It is in Aquarius, near the border of Pisces. It is dimmer than Uranus, but behaves similarly when observed. It appears as a strongly colored star that doesn't look like other stars in a telescope. At 2.2 arcseconds in size, it takes about 100x magnification to display a disk.

Online finder chart for Neptune:
https://in-the-sky.org//data/object.php?id=P8

Venus is a morning star right now, greeting early risers. It shines at magnitude -4.1, just a bit dimmer than it was in November.

Its phase is about 73% illuminated at mid-month, increasing through the month to the point where it becomes difficult to see that it isn't "full."

Online finder chart:
https://in-the-sky.org//data/object.php?id=P2

Mercury is in the morning sky this month, having a conjunction with the waning crescent of the Moon shortly before dawn on January 9th.
https://in-the-sky.org//data/object.php?id=P1

Mars returns to the morning sky this month shortly before sunrise. Early in the month it will be too close to the Sun for observation. It will rise earlier each day, crossing paths with Mercury shortly before dawn on January 27th as Mercury descends into the Sun's glare at the end of the month.

Online observing information for Mars:
https://in-the-sky.org//data/object.php?id=P4

More information on sky events this month:
https://in-the-sky.org/

Monkey Head Nebula NGC2165 by John Keller. Seestar 50, 60 minutes.

History of The Villages Astronomy Club

Records of our club were recently provided to us by Bruce Sinclair's sister, Bonnie. Bruce was formerly president of the club, and has recently entered memory care. He is doing well in the memory center, and considers its comfortable environment "home" now.

The records we received include event announcements, membership records, and other detailed items dating back to 1995. Also included is a brief history of the club written by Chuck Knaus, who was president of the club from 1995 to 2005. Here is that history:

> The Astronomy Club was brought into being in 1988 by Dominic Accettullo. His forte as main speaker of the meetings focused on mythological foundations of the known constellations. What an enlightened review of Greek, Roman, and mid-eastern Gods and fables. The WUT* Speaker was Ray Johnson. One or more individuals followed with pre-selected topics to conclude the monthly sessions. SSN in the beginning was viewing the cosmos from Dom's back porch.
>
> Chuck Knaus took over in Nov. 1995 and served as president for the next decade. We continued to use transparencies for our visual presentations. Village sponsored Starry Starry Nights started in 1997 with scopes set up on baseball diamonds 2 & 3 outfields. The Alachua group added a more professional group with larger variety scopes. Thanks to their Pres. at the time Mike Toomey and Dr. Howard Cohen.
>
> [*"What's Up Tonight", a regular feature on things to observe from the first decades of our club meetings. Perhaps it's time to bring this back? --Mark]

Records show that the club was originally known as the Star Gazers Club, with the name becoming the Astronomy Star Gazers Club then the Astronomy Club in the early 2000s.

Dominic and Dimitri Accettullo, Founders of The Villages Astronomy Club

I will be putting articles about and scans of this historical information on our website.

Club Calendar

Yellow marks special events hosted by The Villages Astronomy Club
Blue marks events that are not hosted by The Villages Astronomy Club, but which we recommend.
Green Marks Volunteer Events for other groups.

January 2024
Note: Space Academy/Telescope Workshop moving to 1st MONDAY in 2024!
1 No Space Academy. Telescope Workshop TBA
5 Exec Meeting, 11am Fishhawk Rec Ctr
16 General Meeting: Pauline Schwartz, Chem. of Life
6:30p, Laurel Manor Rec Ctr
20 Fruitland Park Observing (see info above.)
26 ERAU Open House (see announcement above.)

February 2024
2 Exec Meeting 11am Fishhawk Rec Ctr
3 Starry Starry Night, Truman Rec Center, 6:30-8:30p
5 Telescope Workshop 6:30pm/Space Academy 6:30pm Ken Katta Astronomy 101 Session 1
17 Fruitland Park Observing
20 General Meeting: Randy Gilbert (EAA, Electronic Astronomy), 6:30pm Laurel Manor Rec Ctr
23-24 The Villages Outdoor Expo, Everglades Rec Ctr
23 ERAU Open House

Club Calendar on the web:
https://vlgastroclub.org/calendar/