



CENTI ASTRO-SPACE ACTIVITIES

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It's close to the end of the year 2022. The 12th issue of COSMIC DIMENSIONS contains quite a bit of information including 2 videos on the night sky for December, telescope information, Artemis news and Mars updates. Changes are coming to formatting for COSMIC DIMENSIONS and in the Spring of 2023 two new newsletters will be introduced. Titles haven't been decided yet, but one will deal with STEAM (Science, Technology, Engineering, Art and Math) based activities and the other will be about exoplanets and Astrobiology. These will be offered on a subscription basis. Be on the lookout for an email regarding these. This newsletter will continue to be free. Below is a list of what is covered in this final issue for 2022. I want to take this time to wish all of you a safe and happy holiday season! Thank you for your support! Enjoy!

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WHAT'S UP IN THE NIGHT SKY FOR DECEMBER

Presented by Peter Detterline <https://www.youtube.com/watch?v=cbyHcOf82F4>

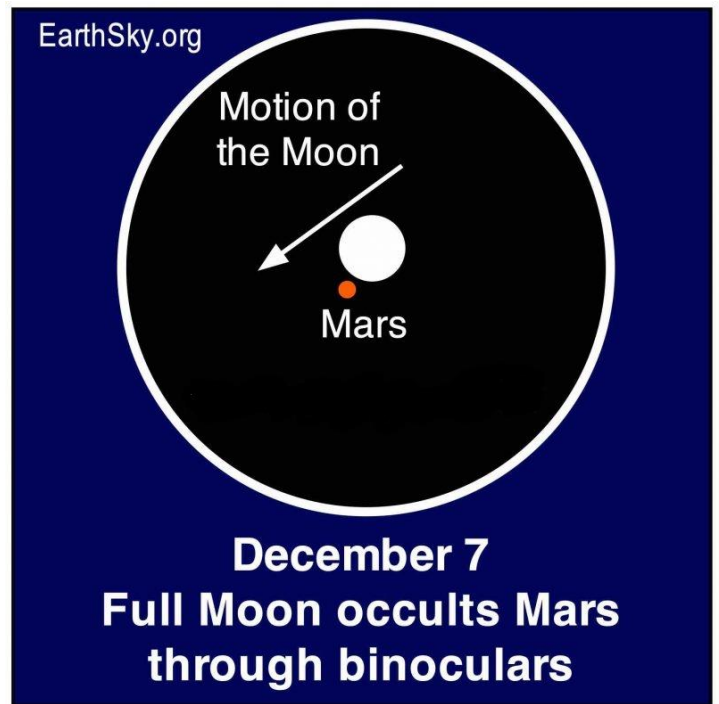
Presented by Now Next <https://www.youtube.com/watch?v=bahPCu18hEU>

MARS WILL BE ECLIPSED BY THE MOON

Mark your calendar now to catch a rare celestial disappearing act! In the evening on December 7th, Mars will be eclipsed by the Moon, visible to a good portion of the United States. This means that starting at about 6:30pm PST on the West Coast, Mars will disappear behind the Moon and reappear about an hour later from behind the limb. Look to the eastern horizon just after sunset to see the Moon and Mars close together before the occultation starts.

The further east you are, the later the show begins. From Wichita, KS, Mars disappears behind the Moon at 8:51pm CST, and from Detroit, the occultation begins at 10:19pm in the southeastern sky. Unfortunately, the east coast of the U.S. and parts of the south will not see the occultation. Viewers there will instead witness a close conjunction of the Moon and Mars.

On the night of December 7th, the Moon will be fully illuminated, and thus very bright. But in binoculars or a telescope you should still be able to clearly glimpse the tiny disc of the Red Planet as it approaches the Moon's limb. Mars, which reaches opposition on December 8th (positioned directly opposite the Sun from Earth), will itself be fairly bright (for Mars) at magnitude -1.9.



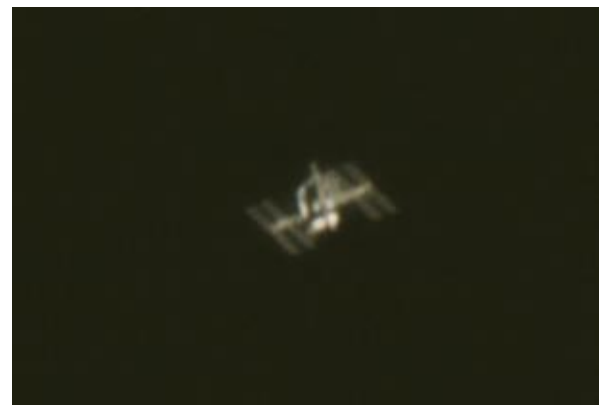
HOW TO SEE THE INTERNATIONAL SPACE STATION FROM YOUR BACKYARD

Lots of things change in the night sky. Stars rise and set during the night; constellations come and go as the seasons pass; planets waltz along the ecliptic, visiting the zodiacal constellations on their nonstop sightseeing tour of the heavens; and shooting stars zip across the sky. Sometimes, a display of the fabled aurora paints the northern sky with searchlight beams of scarlet and swaying curtains of highlighter-pen green.

But all these things only happen occasionally. You can't be guaranteed to see each of them every night.

However, there is one thing you can be guaranteed to see moving in the sky every night, no matter where you live on the planet: satellites. To read more click on the link

https://astronomy.com/news/2022/11/how-to-see-the-international-space-station-from-your-backyard?utm_source=acs&utm



ISS captured 10/08/19 by
Amateur Astronomer
Source: Reddit

TELESCOPES INFORMATION

THE BEST TELESCOPES FOR BEGINNERS WHO WANT TO VIEW PLANETS, GALAXIES, AND MORE

If you're new to observing, you don't need to buy the most expensive telescope — just the one you'll use the most.

By [Phil Harrington](#) | Published: Tuesday, June 7, 2022

Maybe you have had a casual interest in astronomy for years, looking up at the night sky every chance you get. Or maybe you've just recently become interested in the wonders hanging high above our heads. Either way, you've decided to take the next step and get your first telescope. Thumbing through Astronomy's pages, you see many that are intriguing. But at the same time, you're baffled. What kind should you get? How much do you really have to spend? Which is best for you?



These are all important questions that you need to answer before purchasing a telescope, whether it's your first scope or 10th. This overview will help shed some light. Click on the link to read more: [:https://astronomy.com/magazine/product-reviews/2022/06/telescope-for-beginners](https://astronomy.com/magazine/product-reviews/2022/06/telescope-for-beginners)

BEST TELESCOPES FOR STARGAZERS IN LIGHT-POLLUTED CITIES

Don't let bright lights prevent you from exploring cosmic sights.

By [Phil Harrington](#) | Published: Tuesday, August 16, 2022

Many astronomy enthusiasts live under the veil of light pollution, either from local sources like poorly aimed lights on neighboring houses or the enormous light domes enveloping large cities. It can be quite discouraging at first.

But it doesn't mean you can't be an active observer. Anyone can enjoy wonderful views every clear evening without venturing far from home. You just need to know what telescope is best for you and your location.

When it comes to buying a telescope, most people immediately consider their budget. No one wants to spend beyond their means. But for those who live in a city, there are a few other matters to ponder, as well. The most important considerations are ease of use and storage. Unless a telescope is convenient to use, it will quickly become consigned to the closet. Many a stargazer's enthusiasm has turned to apathy upon the harsh realization that hauling out and setting up a telescope can be a daunting task. Click on the link to read more:

https://astronomy.com/magazine/news/2022/08/the-best-scopes-for-city-dwellers?utm_source=acs&utm

[dwellers?utm_source=acs&utm](https://astronomy.com/magazine/news/2022/08/the-best-scopes-for-city-dwellers?utm_source=acs&utm)



City light pollution largely washes out the stars above Calgary, Alberta. But with the right equipment, you can still get lost in the sky. Alan Dyer

ASTROSPACE JOKES of the MONTH



SOURCES: Liles' Family Christmas Humor



Wanna-Joke

SPACE QUOTE of the MONTH

The universe is not required to be in perfect harmony with human ambition. -- **Carl Sagan**

ARTEMIS 1'S ORION SPACECRAFT SEES EARTH SETTING BEHIND MOON (VIDEO)

A mesmerizing new video shows Earth setting behind our moon as a spacecraft flies in the vicinity.

[Artemis 1](#), the first flight of NASA's [Artemis program](#), launched [early Wednesday morning](#) (Nov. 16). All milestones after launch atop the huge [Space Launch System](#) rocket have been checked off so far, including a [crucial engine burn](#) of the uncrewed [Orion](#) spacecraft at the [moon](#) on Monday (Nov. 21).

NASA carried the engine burn live and also livestreamed footage of Orion flying near the moon when a signal from the capsule was available. Click on the link to read more:

<https://www.space.com/artemis-1-orion-spacecraft-earth-setting-behind-moon>



Image credit: NASA

NASA ARTEMIS I – ORION SPACECRAFT SURPASSES APOLLO 13 RECORD DISTANCE FROM EARTH

By NASA NOVEMBER 27, 2022

On day 11 of the Artemis I mission, Orion continues its journey beyond the Moon after [entering a distant retrograde orbit](#) on [Friday, November 25](#), at 3:52 p.m. CST. Orion will remain in this orbit for six days before exiting lunar orbit to put the spacecraft on a trajectory back to Earth for a Sunday, December 11, splashdown in the Pacific Ocean.

At 7:42 a.m. on Saturday, November 26, Orion surpassed the distance record for a mission with a spacecraft designed to carry humans to deep space and back to Earth. The record was set during the Apollo 13 mission at 248,655 miles (400,171 km) from our home planet. At its maximum distance from the Moon, Orion will be more than 270,000 miles (435,000 km) from Earth Monday, November 28. To read more click on the link: <https://scitechdaily.com/nasa-artemis-i-orion-spacecraft-surpasses-apollo-13-record-distance-from-earth/>



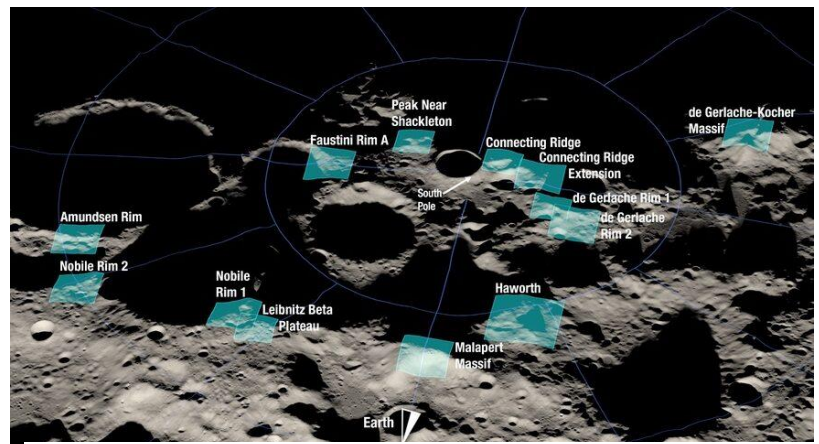
Artist Image of Artemis 1

NASA SELECTS 13 POTENTIAL LUNAR LANDING SITES FOR ARTEMIS 3

by [Jeff Foust](#) — August 19, 2022

NASA has selected 13 regions around the south pole of the moon that it is considering for the first crewed landing of the Artemis program later this decade.

The [13 locations released by NASA](#) Aug. 19 reach include multiple sites that could host landings by SpaceX's Starship vehicle serving as the lunar lander for the Artemis 3 mission that will carry the first NASA astronauts to the surface of the moon since Apollo 17 a half-century ago. For more information Click on the link: <https://spacenews.com/nasa-selects-potential-lunar-landing-sites-for-artemis-3/>



A map of the south polar region of the moon showing 13 landing regions NASA is considering for Artemis 3. Credit: NASA

FAMOUS ASTRONAUT

Doctor Ronald E. McNair

Doctor Ronald E. McNair (October 21, 1950 - January 28, 1986) was a NASA astronaut and physicist who died along with the entire crew of seven in an explosion seconds after the launch of the space shuttle Challenger on January 28, 1986. Two years before the Challenger disaster, he had flown as a mission specialist on Challenger, becoming the second Black American to fly in space.

Born in Lake City, South Carolina, on October 21, 1950, McNair experienced racism at an early age. In 1959, he refused to leave the segregated Lake City Public Library after being told that he could not check out books because of



his race. After his mother and the police were called, he was allowed to borrow books from the library, now named The Dr. Ronald E. McNair Life History Center. In 1967, he graduated from Carver High School as valedictorian. He received a bachelor's degree in engineering physics from the North Carolina Agricultural and Technical State University in 1971, and a Ph.D. in physics from the Massachusetts Institute of Technology in 1976.

In 1978, McNair, along with Guion Stewart Bluford and Frederick Gregory, was selected by NASA as the first Black American astronauts. In January 1985, he was assigned to the crew of the STS-51L mission of the space shuttle Challenger along with Judith Resnik, public school teacher Christa McAuliffe, and four other astronauts. Challenger lifted off from Cape Canaveral, Florida, on January 28, 1986, but a mere 73 seconds into its flight, the shuttle exploded, killing all seven astronauts and putting the U.S. crewed spaceflight program on hold for months.

Source: ThoughtCo.

SPACE PIC OF THE MONTH - ARTEMIS 1 LAUNCH



IMAGE CREDITS:

NASA TV

Paul Hennesy / Anadolu Agency via Getty Images

CURIOSITY ROVER CELEBRATES 10 YEARS OF MARS EXPLORATION

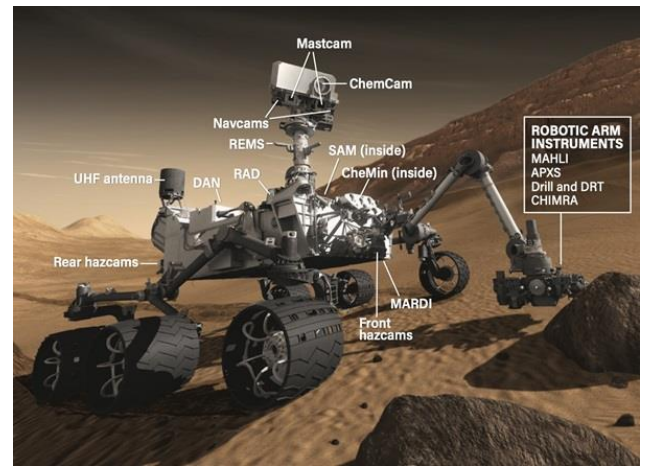
By Ben Evans | Published: Friday, August 5, 2022

Mars is a world entirely populated by robots: Orbiters and landers from a half-dozen space agencies scout its wafer-thin atmosphere and stark surface to unveil a surprisingly active past. On the ground, a hardy six-wheeled rover named Curiosity observed its 10th anniversary on the Red Planet this summer. Dust-streaked and running on punctured wheels, it continues to explore a desiccated landscape of wind-chiseled mesas, isolated buttes, and swirling sands for relics of a warmer, wetter, perhaps habitable Mars.

The idea of life on the Red Planet has long exerted an irresistible pull, from the canals imagined by Percival Lowell to the monstrous otherworldly tripods of H.G. Wells to the classic lyrics of David Bowie. But while life-forms would find it difficult to thrive on this radiation-drenched wasteland, the infant Mars 3.5 billion years ago was unlike today's grizzled, middle-aged world. Girdled by a thick carbon dioxide atmosphere and with free-flowing water on its surface, conditions then may have permitted life to take root.

Today, our quest to find hints of that life continues — not with observations from earthbound telescopes, but with on-the-ground reconnaissance from an ever-growing lineage of robotic explorers. To read more click on the link:

https://astronomy.com/magazine/news/2022/08/curiosity-celebrates-10-years-on-mars?utm_source=acs&utm



Excluding its hazcams and navcams (but including the Mastcam), Curiosity carries 10 instruments to explore the martian environment. The rover's robotic arm also sports a drill and a scoop.

NASA AND ESA ARE PLANNING TO RETURN MARS SAMPLES TO EARTH BY 2033.



The agencies [announced the week July 27th](#) that their Mars Sample Return campaign has been simplified thanks to the impressive performance of the Perseverance rover. A sample retrieval lander will arrive on Mars in 2028, but the plans no longer require a new rover to fetch samples and return them to the lander. Instead, Perseverance will shuttle the samples, with the help of two sample recovery helicopters that will accompany the lander. *Pictured: An illustration of the team of robots that will be involved in Mars Sample Return. Image credit: NASA/JPL-Caltech.*

UNDERSTANDING THE PSYCHOLOGICAL HAZARDS OF SPACEFLIGHT ON THE SPACE STATION

In addition to research into the physical health of astronauts, scientists also use the International Space Station and low-Earth orbit to investigate the psychological and behavioral impacts of long-duration missions in space.

[Isolation](#) and distance from Earth present unique challenges when choosing a crew for missions to the Moon and Mars. The farther and longer we travel in these restricted environments, To learn more click on the link: https://www.nasa.gov/mission_pages/station/research/benefits/understanding-psychological-hazards-of-spaceflight

IF WE SUCCESSFULLY LAND ON MARS, COULD WE LIVE THERE?

Landing is one thing. Thriving is another.

By Megan Ray Nichols | Published: Wednesday, May 3, 2017

It seems like everyone has Mars on the mind these days. NASA wants to send humans to the red planet by 2030, and SpaceX wants to get there even sooner, with plans to have people there by 2024.

Mars is a favorite theme in Hollywood, with movies like *The Martian* and this year's *Life* exploring what we might find once we finally reach our celestial neighbor, but most of them aren't addressing the biggest questions — once we get there, how will we survive long-term? To read more click the link: https://astronomy.com/news/2017/05/could-we-live-on-mars?utm_source=acs&utm_l.com

NASA



INTERNATIONAL SCIENCE and ENGINEERING FAIRS (ISEF)

Mary Eileen Wood, Founding Director, Terra American Abroad and
Terra International Students STEM Fairs at Terra Science and Education

This was shared by one of my LinkedIn connections, Mary Eileen Wood. I thought this would be of interest to educators doing STEM/STEAM programming.

Students in EVERY country have access to ISEF!

Educators and STEM professionals - you know middle and high school students. Help them find their ISEF fair* and apply today at <https://lnkd.in/ePD34RYH>. (*Regeneron International Science and Engineering Fair) If you are outside the U.S. and find no ISEF affiliate listed for the country in which you live, encourage the youth you know to apply today for TISSF, their virtual STEM fair! taasf-tissf.zfairs.com/

>> Who can come to TISSF? Students in grades 5-12

>> What can they submit? Projects or topic presentations in ALL categories of STEM

>> How do they participate? They register, submit safety and project files online for first-round judging, then have live virtual interviews for second round.

AND IF THEIRS IS ONE OF THE FIRST THREE PROJECTS FROM YOUR COUNTRY TO COMPLETE REGISTRATION, THE HANCOX FUND WILL PAY 90% OF THEIR FAIR FEES! Message me for info about an angel's offer to cover the balance 😊.

[#project](#) [#educators](#) [#science](#) [#stemeducation](#) [#ISEF](#) [#engineering](#) [#engineeringeducation](#) [#scienceteacher](#) [#schoolprincipal](#) [#studentresearch](#)

SPACE STATION BENEFITS

Below are 3 videos giving a brief overview of benefits from the International Space Station

15 Benefits of Space Station Research

<https://www.youtube.com/watch?v=o5DpMYDJ22o>

International Space Station Benefits for Humanity 2022

<https://www.youtube.com/watch?v=lomdsbwYPrI>

Space 24/7/365: Space Station Benefits

<https://www.youtube.com/watch?v=D1rhoFwYZ4>

INSPIRATIONAL QUOTE of the MONTH

“I didn’t fail the test. I just found 100 ways to do it wrong.” -- Benjamin Franklin

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