

COSMIC DIMENSIONS

July 2023
V. 2 Issue 7

A deep view of the cosmos. LEDA 2046648 is the large galaxy at the bottom.
Credit: ESA Webb / NASA / CSA / A. Martel



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Hello and welcome to the July edition of COSMIC DIMENSIONS, the newsletter that explores the mysteries of the universe. In this issue, we will dive into topics such as:

- What's up in the night sky for July
- JWST could determine habitability
- Famous Astronaut who will be part of the group of Artemis II
- Bizarre object hotter than the sun
- and more

Whether you are a curious beginner or a seasoned enthusiast, COSMIC DIMENSIONS will take you on a journey of wonder and awe. So begin to explore and enjoy the ride!

- WHAT'S UP IN THE NIGHT SKY FOR JULY
- JWST COULD DETERMINE IF NEARBY EXOPLANET IS HABITABLE
- NASA JUST RECYCLED 98% OF ALL . . .
- OUR FAVORITE SPACE CONSPIRACIES
- FAMOUS ASTRONAUT
- BUILDING BLOCK FOR LIFE
- SPACE PIC OF THE MONTH
- BIZARRE OBJECT HOTTER THAN THE SUN
- BLACK HOLE QUESTION
- INTERESTING QUOTES

WHAT'S UP IN THE NIGHT SKY FOR JULY **Presented by**

Adventure Science Center Nightwatch - Bill McClain
<https://www.youtube.com/watch?v=vbCC8d8qsvU>

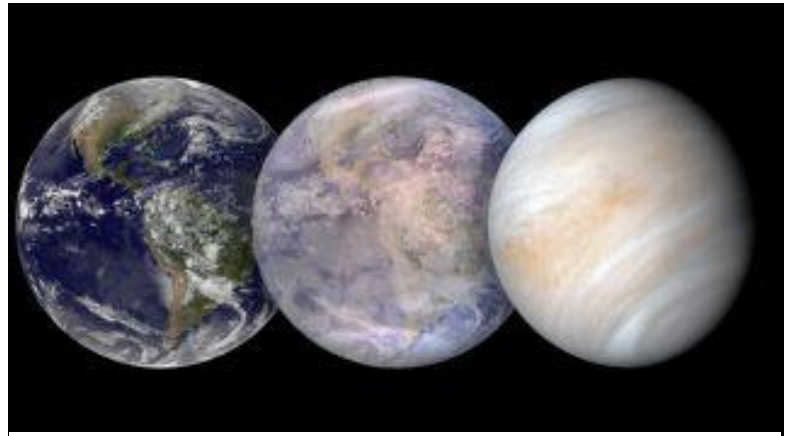
Tonight's Sky: July
<https://www.youtube.com/watch?v=ubM1j3rFeAs>

JAMES WEBB SPACE TELESCOPE COULD DETERMINE IF NEARBY EXOPLANET IS HABITABLE

By Keith Cooper June 26, 2023

A rocky exoplanet orbiting a red dwarf star 98 light-years away could hold the secret about how likely it is for planets like Earth to transform into inhospitable worlds like Venus.

The [exoplanet](#), named [LP 890-9c](#) (also known as SPECULOOS-2c), was discovered in September 2022. It has a diameter 40% greater than Earth's and orbits its star every 8.5 Earth days at a distance of just 1.7 million miles (2.8 million kilometers). The [red dwarf](#), though, is small and cool, meaning that temperatures can be clement even close to the [star](#). Indeed, LP 890-9c is located near the inner edge of the star's [habitable zone](#), which describes the distance around a star where a planet with an Earth-like atmosphere can support liquid water on its surface. Click here to read more: <https://www.space.com/nearby-exoplanet-habitable-james-webb-space-telescope>



Artist's impression showing the exoplanet LP 890-9c's potential evolution from a hot Earth to a desiccated Venus. (Image credit: Carl Sagan Institute/R. Payne)

NASA JUST RECYCLED 98% OF ALL ASTRONAUT PEE AND SWEAT ON THE ISS

By Robert Lea June 26, 2023



NASA astronaut Kayla Barron holds a filter in the Brine Processor Assembly that helps recycle astronaut urine into drinking water on the International Space Station. (Image credit: NASA)

Astronauts aboard the International Space Station have achieved a 98% water recovery rate in a breakthrough achieved by a method that might make the faint of heart slightly squeamish: they hit peak astronaut pee recycling.

The [water recycling](#) achievement is an important milestone for low-orbit space missions that aim to provide the basic needs of astronauts without resupply missions. This means recycling or regenerating things like food, air and water.

and hygiene uses like brushing teeth. The ideal goal in terms of water has been a 98% recovery of the initial water that crews take into space with them at the start of longer missions. To read more click the link: <https://www.space.com/astronaut-pee-iss-water-recycling-98-percent-milestone>

OUR FAVORITE SPACE CONSPIRACIES WILD IDEAS AND WEIRD BELIEFS

JUNE 23, 2023

This is a video podcast from This Week in Space, where hosts Rod Pyle and Tariq Malik discuss and debunk some of the wackiest space conspiracies ever, such as the moon landing hoax, the face on Mars, and the Saturn hexagon. To view click on the link:

<https://www.youtube.com/watch?v=6Eb6Vq2bOxA&t=2035s>



FAMOUS ASTRONAUT

Victor J. Glover, Jr. (Captain, U.S. Navy) NASA Astronaut



Victor J. Glover, Jr. was selected as an astronaut in 2013 while serving as a Legislative Fellow in the United States Senate. He most recently served as pilot and second-in-command on the Crew-1 SpaceX Crew Dragon, named Resilience, which landed May 2, 2021. It is the first post-certification mission of SpaceX's Crew Dragon spacecraft – the second crewed flight for that vehicle – and a long duration mission aboard the International Space Station. He also served as Flight Engineer on the International Space Station for Expedition 64. Glover has been assigned as Pilot of NASA's Artemis II mission.

The California native holds a Bachelor of Science in General Engineering, a Master of Science in Flight Test Engineering, a Master of Science in Systems Engineering and a Master of Military Operational Art and Science. Glover is a Naval Aviator and was a test pilot in the F/A-18 Hornet, Super Hornet and EA-18G Growler. He and his family have been stationed in many locations in the United States and Japan and he has deployed in combat and peacetime. Click on the link to read

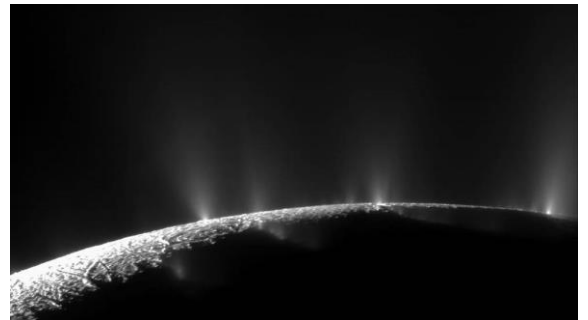
more: <https://www.nasa.gov/astronauts/biographies/victor-j-glover/biography>

NASA CASSINI DATA REVEALS BUILDING BLOCK FOR LIFE IN ENCELADUS' OCEAN

June 14, 2023

Phosphorus, a key chemical element for many biological processes, has been found in icy grains emitted by the small moon and is likely abundant in its subsurface ocean.

Using data collected by NASA's [Cassini mission](#), an international team of scientists has discovered



phosphorus – an essential chemical element for life – locked inside salt-rich ice grains ejected into space from Enceladus.

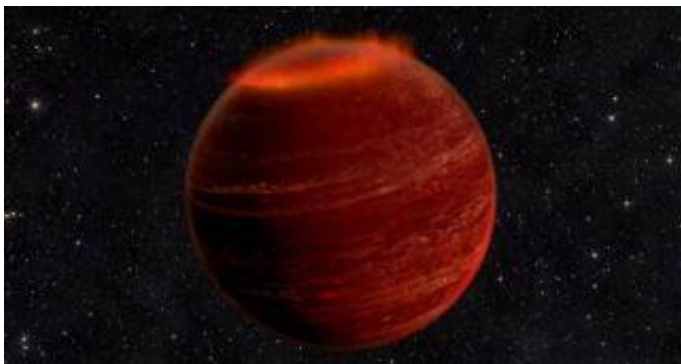
The small moon is known to possess a [subsurface ocean](#), and water from that ocean erupts through cracks in Enceladus' icy crust as geysers at its south pole, creating a [plume](#). The plume then feeds [Saturn's E ring](#) (a faint ring outside of the [brighter main rings](#)) with icy particles.

During its mission at the gas giant from 2004 to 2017, Cassini flew through the plume and E ring numerous times. Scientists found that Enceladus' ice grains contain a rich array of minerals and organic compounds – including the [ingredients for amino acids](#) – associated with life as we know it. To read more click on the link: <https://www.nasa.gov/feature/jpl/nasa-cassini-data-reveals-building-block-for-life-in-enceladus-ocean>

SPACE PIC OF THE MONTH



This cloud of orange and red, part of the Sh2-284 nebula, is shown here in spectacular detail using data from the VLT Survey Telescope, hosted by the European Southern Observatory (ESO). This nebula is teeming with young stars, as gas and dust within it clumps together to form new suns. If you take a look at the cloud as a whole, you might be able to make out the face of a cat, smiling down from the sky.



An illustration of a brown dwarf - a hot, massive object that blurs the lines between planet and star --- in a distant star system. (Image credit: NASA Goddard)

BIZARRE OBJECT HOTTER THAN THE SUN IS ORBITING A DISTANT STAR AT BREAKNECK SPEED

By Joanna Thompson June 26, 2023

A weird, super-hot celestial body is breaking records and challenging astronomers' understanding of the boundary between stars and planets.

The object, called WD0032-317B, is a [brown dwarf](#) — a type of bright, gaseous "protostar." Brown dwarfs typically have a similar atmospheric composition

to [Jupiter](#) but are 13 to 80 times larger. At that mass, these objects begin to fuse hydrogen isotopes in their cores. However, they aren't quite massive enough to spark the kind of full self-sustaining stellar fusion that powers stars like our [sun](#) — think of smoldering charcoal rather than a lit wood-fired oven.

[Brown dwarfs](#) usually burn at around 4,000 degrees Fahrenheit (2,200 degrees Celsius). That's fairly cool compared with most stars, whose surface temperatures reach about 6,700 F (3,700 C).

But WD0032-317B, which is 1,400 light-years from Earth, is not like most brown dwarfs. To read more click the link: <https://www.space.com/object-hotter-than-sun-orbiting-distant-star>

BLACK HOLE QUESTION

*One of the most extreme objects in the universe is a black hole. Gravity is so strong that nothing can escape, not even light. The interior of a black hole is unknown, but there is speculation about what's there. The question this month is this. **What do you think we might find in the interior of a black hole?***

INTERESTING QUOTES

“Whatever words we utter should be chosen with care for people will hear them and be influenced by them for good or ill.” -- **Buddha**

“Almost Everything will work again if you unplug it for a few minutes, including you.” -- **Anne Lamott**

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