National Aeronautics and
Space Administration

2025 NASA SCIENCE

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From STARS to LIFE

Wow—2024 was another busy and successful year for NASA science, with lots to celebrate! We saw new corners of the universe in stunning detail with the James Webb Space Telescope, analyzed samples from asteroid Bennu, and captured images of our Earth in a new spectrum of colors with the launch of PACE. We advanced a mission to Jupiter's icy moon Europa to seek out markers indicating it could be compatible with sustaining life, and studied how a space environment impacts plants on the International Space Station. The entire continental United States was treated to a solar eclipse, and we observed our Sun through a period of intense activity that is continuing into 2025. I'm so proud of the NASA team and science community, and I'm looking forward to a great 2025, filled with more learning and discovery.

As the Associate Administrator of NASA's Science Mission Directorate, I supervise a large portion of the Nation's Earth and space science research program. From this perspective, I see the unique interconnections and synergies across our 100+ science missions and our research programs. While each discipline is focused on a particular area of science, all of our work is interdisciplinary and cross-cutting.

Together, NASA's missions are helping us understand life, and its possibilities, near and far. We are looking deep into space and even seeing through time, tracing organic molecules on their journey to form fully fledged exoplanets. In our own solar system, we're searching for biosignatures beyond Earth and studying how the Sun impacts everything, including us. This helps us protect essential communications and navigation satellites and astronauts outside Earth's protective magnetic field. In doing so, we are helping to protect astronauts in space and humans on Earth.

Speaking of Earth, NASA studies our home planet more than any other location in the solar system. We use these data, the collective ingenuity of our science community, and advanced technology like artificial intelligence (AI) large language models to forecast and respond to emergency situations and improve the daily lives of people around the world. From single cells to entire galaxies, NASA uses data at many scales to help solve problems big and small. And we can always do more.

To me, the invisible connections between these missions and their impact on humanity are beautiful. If you look closely at the illustration on this page, you will see a composite image created from the tiny building blocks of life, including organic chemicals, DNA molecules, cells, and microorganisms. These smallest components of life often make the biggest impact on our understanding of the world around us. As you turn the page to each new month, the stunning science photos and images you will see are all composed of those same microscopic parts. I hope you will find inspiration in the images and feel encouraged to learn about each one of our unique missions. I invite you to follow along and engage with us throughout this year to see what we discover together.

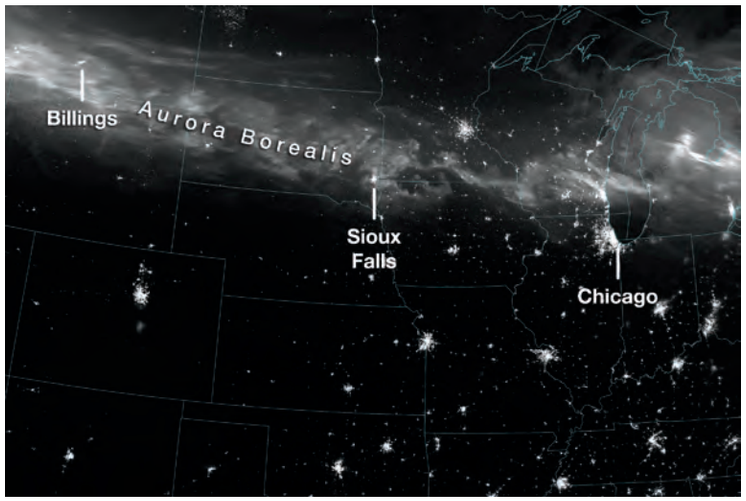
Nicola Fox
Associate Administrator
NASA Science Mission Directorate

P.S. Scan this code for more NASA science!

January 2025

Aurorasaurus Citizen Scientist Captures Brilliant Photo of Aurora. The strongest geomagnetic storm in over two decades dazzled scientists and skywatchers in May 2024. Overnight on May 10–11, an extreme storm culminated in a remarkable display of the aurora that was visible from many areas worldwide, including latitudes where aurora sightings are uncommon. Photographers captured the striking range of colors in ground-based photos, some of which they shared with NASA's Aurorasaurus project—a citizen science effort that maps crowdsourced aurora reports. This photo, shot by Aurorasaurus ambassador Gunjan Sinha, shows the sky on May 11, 2024, near Saskatoon in Saskatchewan, Canada. Aurorasaurus launched in 2014 around the time of the solar maximum, part of an approximately 11-year cycle when the Sun is most active and auroras are more frequent and intense. The Sun's activity ramped up again in 2024, and brilliant photos of the aurora poured in from citizen scientists, marking the first solar maximum that has included widespread pictures taken with smartphones. These reports help researchers better understand geomagnetic storms and verify models of where the aurora will be visible from the ground. Anyone can submit aurora sightings to Aurorasaurus online. Aurorasaurus is a project of the New Mexico Consortium, supported by the National Science Foundation and NASA. **Photo and text credit:** Photo by Aurorasaurus ambassador Gunjan Sinha; text by NASA Earth Observatory/Kathryn Hansen

https://go.nasa.gov/4bcnPw6



Historic Geomagnetic Storm Dazzles. The Suomi National Polar-orbiting Partnership (NPP) satellite's Visible Infrared Imaging Radiometer Suite (VIIRS) acquired this image of an aurora at 3:20 a.m. Central Time (08:20 Universal Time) on May 11, 2024. In this view, the northern lights appear as a bright white strip across parts of Montana, Wyoming, the Dakotas, Minnesota, Wisconsin, Iowa, and Michigan. While these satellite data are shown in grayscale, viewers on the ground saw colors from green (the most common) to purple to red. Atmospheric compounds found at different altitudes influence an aurora's color. **Image and text credit:** NASA Earth Observatory image by Wanmei Liang, using VIIRS/Suomi NPP data; text by Kathryn Hansen

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 New Year's Day	2	3	4
5	6 First Quarter	7	8	9	10	11
12	13 Full Moon	14	15	16	17	18
19	20 Birthday of Martin Luther King, Jr. (observed date) Inauguration Day	21 Last Quarter	22	23	24	25
26	27	28	29 New Moon	30	31	

December 2024

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February 2025

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February 2025

NASA's Lucy Observes First Contact Binary Orbiting Asteroid. On its journey to the never-before-visited Trojan asteroids that share an orbit around the Sun with Jupiter, NASA's Lucy spacecraft made a remarkable discovery during a flyby in the main asteroid belt—the first contact binary celestial body, or satellite, seen orbiting a larger asteroid. On November 1, 2023, during Lucy's planned encounter with asteroid Dinkinesh, the spacecraft spotted the larger asteroid's satellite, later named Selam. This montage beginning at the upper left and moving counter-clockwise shows the asteroid in the minutes around the spacecraft's closest approach—270 miles (430 kilometers). As Lucy sped away at 10,000 mph (16,093 kph), seen in the montage on the right moving clockwise, the two lobes of Selam came clearly into view. Lucy's encounter with Dinkinesh was added to the mission in January 2023 to test the spacecraft's tracking and imaging system. After an Earth gravity assist in December 2024, Lucy is slated for another main asteroid belt encounter in 2025, as it continues on its mission. **Image and text credit:** NASA/Goddard Space Flight Center/Southwest Research Institute (SwRI)/National Science Foundation National Optical-Infrared Astronomy Research Laboratory (NOIRLab)

https://go.nasa.gov/4bN6drT

Curation Team Loves Bennu. NASA's Origins, Spectral Interpretation, Resource Identification, and Security-Regolith Explorer (OSIRIS-REx) curation integrated processing and engineering team stands in the staging area just outside the sample laboratory. After being delivered to Earth on September 24, 2023, the largest asteroid sample collected from space was brought to a specially built clean room at NASA's Johnson Space Center's Astromaterials Research and Exploration Science (ARES) division, which also houses an extensive collection of lunar rocks, solar wind particles, meteorites, and comet samples. After engineering a new tool to open the stuck sample capsule, the curation team uncovered a total of 4.29 ounces (121.6 grams) of asteroid Bennu material, which is being studied by research teams around the world. **Photo and text credit:** NASA/James Blair

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
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2	3	4	5 First Quarter	6	7	8
9	10	11	12 Full Moon	13	14 Valentine's Day	15
16	17 Washington's Birthday (observed date)	18	19	20 Last Quarter	21	22
23	24	25	26	27	28 New Moon	

January 2025

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March 2025

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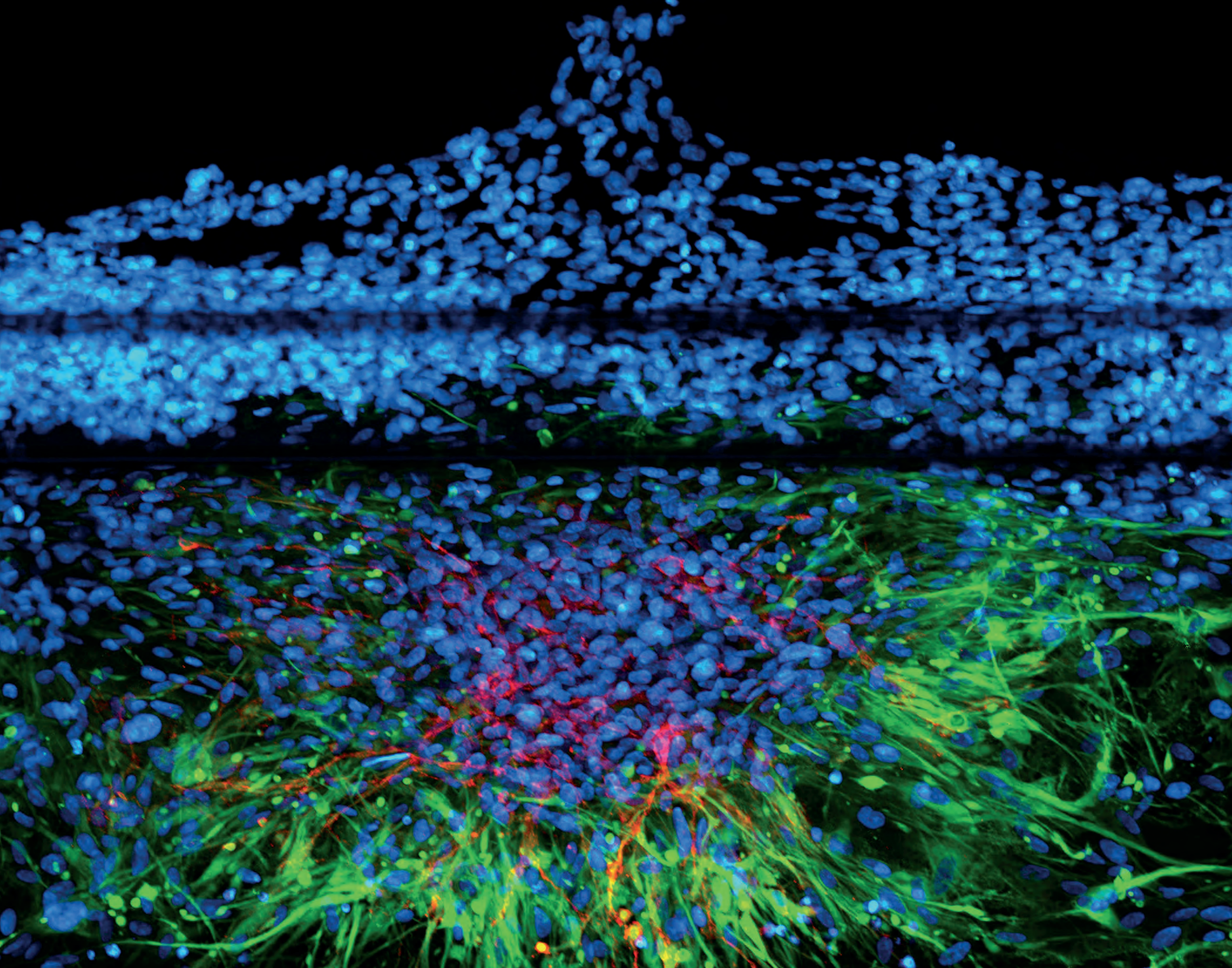

March 2025

Studying Biological Impacts of Space Radiation. As NASA prepares to return to the Moon, it is important to study the impacts of space radiation and other spaceflight hazards on the human body. To do that, researchers developed human brain models in the lab and exposed them to simulated space radiation. This image captures a variety of cells around blood vessels and shows how astrocytes, which regulate multiple aspects of brain health, respond to radiation. Astrocytes gather to form a pattern similar to a scar (green) and express a protein that controls the permeability of blood vessels (red). Cell nuclei appear in blue. Studying how space radiation affects cells and organ models, including the brain, enables scientists to better understand the risks to astronaut health and develop countermeasures to protect crew on long-duration space journeys. **Image and text credit:** Estrella Passerat de la Chapelle, Blue Marble Space Institute of Science, and Egle Cekanaviciute, NASA's Ames Research Center

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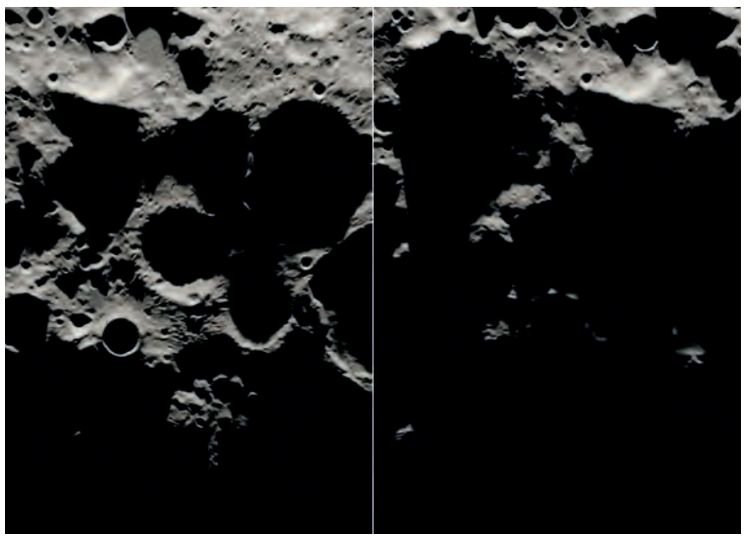

Seasonal Lighting on the Moon. Several factors, including seasonal availability of sunlight at the Moon's South Pole, influence the timing of lunar landings in the region by both robotic missions and the human explorers of NASA's Artemis III mission. This visualization made in February 2024, using data from NASA's Lunar Reconnaissance Orbiter, shows the contrasts in summer light (left) and winter light (right) at the Moon's South Pole. Seasons on the Moon are caused by the tilt of the Moon's axis with respect to the Sun. **Image and text credit:** NASA/Scientific Visualization Studio

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
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2	3	4	5	6 First Quarter	7	8
9 Daylight Saving Time Begins	10	11	12	13	14 Full Moon	15
16	17	18	19	20	21	22 Last Quarter
23 30	24 31	25	26	27	28	29 New Moon

February 2025

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April 2025

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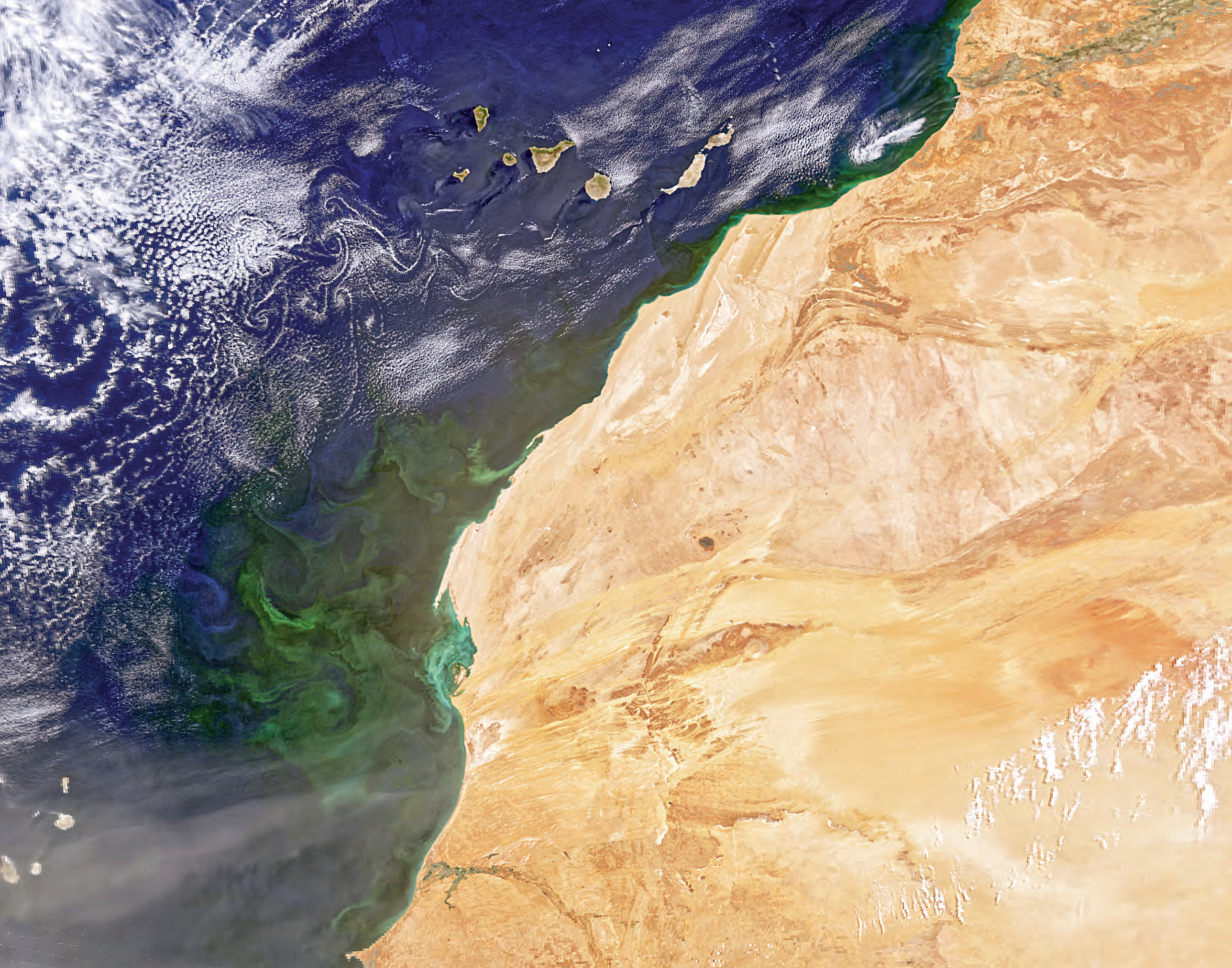
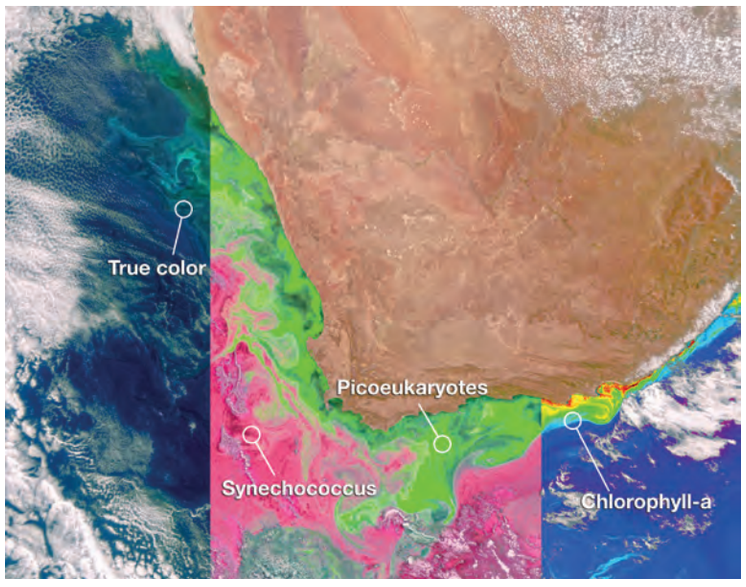


April 2025

Air and Ocean Views. NASA's Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) satellite, launched on February 8, 2024, collects data on microscopic life in the ocean and particles in the air, advancing researchers' understanding of issues including fisheries' health, harmful algal blooms, air pollution, and wildfire smoke. With PACE, scientists also investigate how the ocean and atmosphere interact with each other and are affected by a changing climate. This image of West Africa and the Canary Islands was taken by PACE's Ocean Color Instrument on May 4, 2024. In it are many elements the mission enables researchers to study—and that are represented in the PACE acronym. Blooms of phytoplankton (P) are seen as green colors off the coast. Tan dust aerosols (A) blow from western Africa over the Atlantic Ocean, which is dotted with white clouds (C), some of which show distinctive von Kármán vortices to the southwest of the Canary Islands. Minerals carried within the dust deliver key nutrients, such as iron, to sustain life at the base of the ocean ecosystem (E). **Image and text credit:** NASA's Goddard Space Flight Center/PACE; **Image processing:** Carina Poulin

https://pace.gsfc.nasa.gov



PACE Views Different Phytoplankton Communities. PACE's Ocean Color Instrument detects light across a hyperspectral range, which means it observes the ocean, land, and atmosphere across a spectrum of more than 250 waves of ultraviolet, visible, and near-infrared light. This technological leap gives scientists new information to differentiate species of phytoplankton (tiny marine plants). In PACE's first image, taken over South Africa on February 28, 2024, the left panel shows the ocean in true color. The right panel uses false color to show chlorophyll-a as bright green. The center panel is a false-color image that takes advantage of the hyperspectral capability. For the first time ever, scientists identified two different communities of phytoplankton—picoeukaryotes in green and *Synechococcus* in pink—using satellite observations from space. **Image and text credit:** NASA's Goddard Space Flight Center/PACE

March 2025

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May 2025

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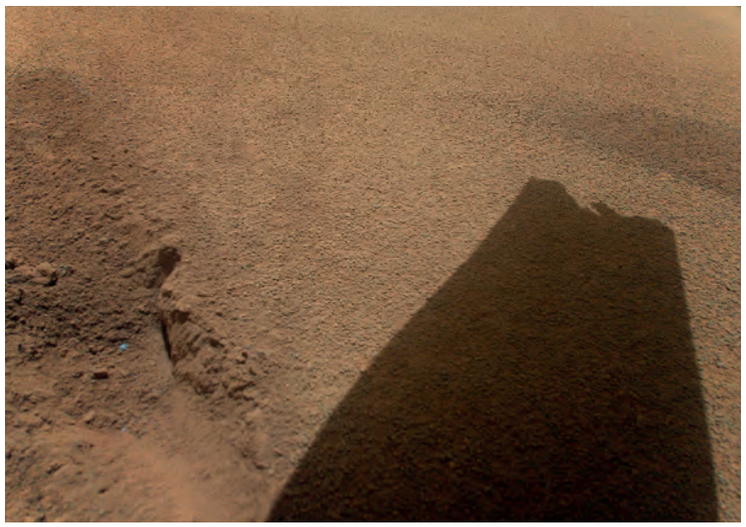
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5 First Quarter
6	7	8	9	10	11	12
13 Full Moon	14	15	16	17	18	19
20	21 Last Quarter	22	23	24	25	26
27 New Moon	28	29	30			

Did you know that April is Citizen Science Month? NASA's citizen science projects are collaborations between scientists and interested members of the public. Many projects can be done by anyone, anywhere, with just a cellphone or laptop. Visit *https://science.nasa.gov/citizenscience* or scan the QR code to get started.

May 2025

Cool as Ice. Every winter, a layer of carbon dioxide frost (dry ice) forms on the surface of Mars. At its greatest extent in midwinter, this frost reaches from the poles down to the middle latitudes, until it is too warm and sunny to persist. In most places, this is around 50 degrees latitude, similar to the latitude of southern Canada on Earth. However, small patches of dry ice are found closer to the equator on pole-facing slopes, which are colder because they receive less sunlight. This image was taken by the High Resolution Imaging Science Experiment (HiRISE) camera on NASA's Mars Reconnaissance Orbiter on March 18, 2022, in the middle of winter in Mars's southern hemisphere. It shows a crater near 37 degrees south latitude. The south-facing slope has patchy bright frost, blue in enhanced color. This frost occurs in and around the many gullies on the slope and, in other images, has caused flows in the gullies. **Image and text credit:** NASA/Jet Propulsion Laboratory (JPL)–Caltech/University of Arizona

https://go.nasa.gov/4bPJSty



Ingenuity's Last Flight. On January 18, 2024, this image of a damaged rotor blade's shadow confirmed that NASA's Ingenuity Mars Helicopter would fly no more. This tiny tech demo was designed to attempt five flights, the first time an aircraft achieved powered, controlled flight on another planet. Ingenuity surpassed this achievement, completing 72 flights in almost three years of operations, flying 14 times farther than planned as it transitioned from a demo to an aerial scout for NASA's Perseverance Mars rover. Although grounded, Ingenuity will continue to collect data to lead the way for future exploration. **Image and text credit:** NASA/JPL–Caltech

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
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4 First Quarter	5	6	7	8	9	10
11 Mother's Day	12 Full Moon	13	14	15	16	17
18	19	20 Last Quarter	21	22	23	24
25	26 Memorial Day	27 New Moon	28	29	30	31

April 2025

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June 2025

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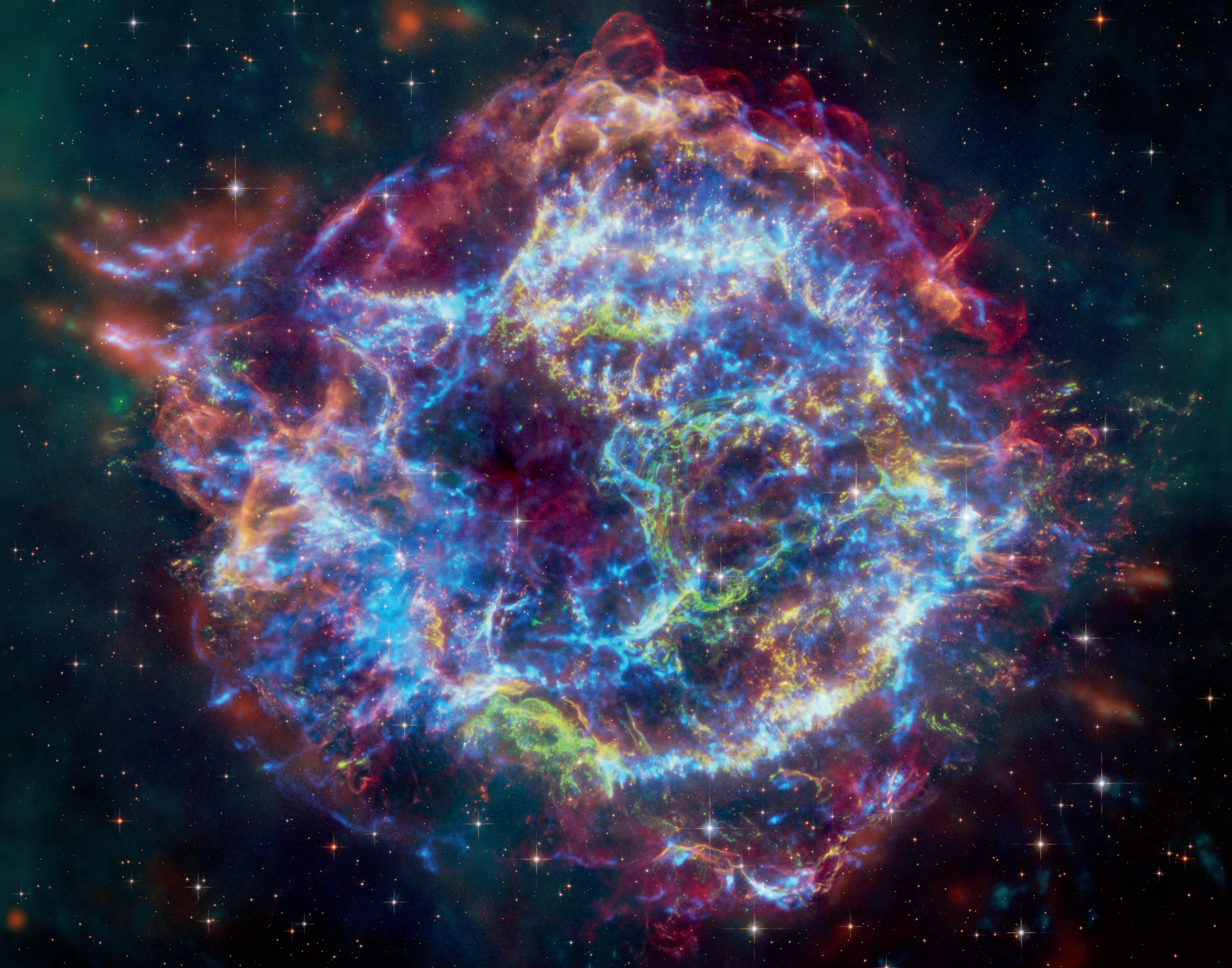
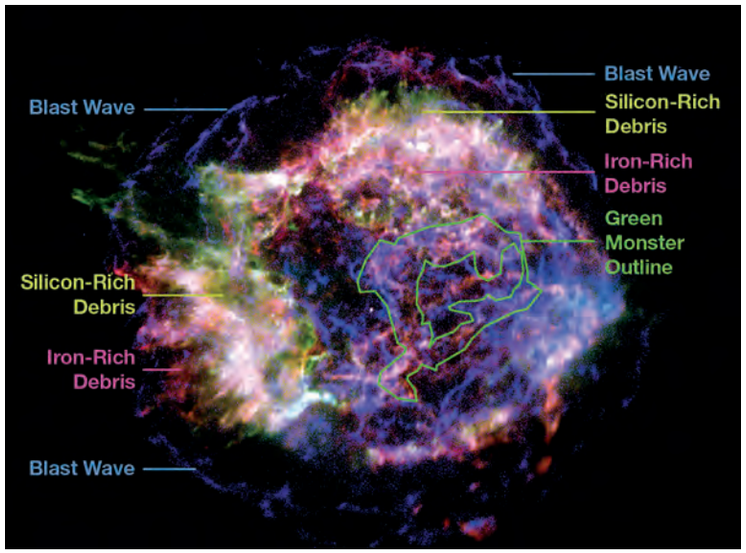


June 2025

NASA Telescopes Chase Down "Green Monster" in Star's Debris. For the first time, astronomers have combined data from NASA's Chandra X-ray Observatory and James Webb Space Telescope to study the well-known supernova remnant Cassiopeia A (Cas A). This work has helped explain an unusual structure in the debris from the destroyed star called the "Green Monster," first discovered in Webb data in April 2023. The area of the Green Monster is outlined in the inset image. This composite image contains X-rays from Chandra (blue), infrared data from Webb (red, green, blue), and optical data from Hubble (red and white). The outer parts of the image also include infrared data from NASA's Spitzer Space Telescope (red, green, and blue). **Image and text credit:** X-ray: NASA/Chandra X-ray Center (CXC)/Smithsonian Astrophysical Observatory (SAO); Optical: NASA/European Space Agency (ESA)/Space Telescope Science Institute (STScI); Infrared (IR): NASA/ESA/Canadian Space Agency (CSA)/STScI/Milisavljevic et al., NASA/Jet Propulsion Laboratory (JPL)–Caltech; **Image processing:** NASA/CXC/SAO/J. Schmidt and K. Arcand

https://flickr.com/photos/nasawebbtelescope/53453268481



Labeled Chandra Image of Cassiopeia A. This labeled graphic shows a Chandra image of Cassiopeia A, where red shows iron and magnesium at low X-ray energies, green shows silicon at intermediate X-ray energies, and blue shows the highest-energy X-rays from electrons spiraling around magnetic field lines. An outline of the Green Monster, the locations of the blast wave, and debris rich in silicon and iron are labeled. **Image and text credit:** X-ray: NASA/CXC/SAO

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3 First Quarter	4	5	6	7
8	9	10	11 Full Moon	12	13	14 Flag Day
15 Father's Day	16	17	18 Last Quarter	19 Juneteenth National Independence Day	20	21
22	23	24	25 New Moon	26	27	28
29	30					

May 2025

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July 2025

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SCIENCE FLEET

OPERATING & FUTURE MISSIONS

SPHEREX
GUSTO
FERMI
XRISM*
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CHANDRA
WEBB
TESS
ASPERA
HUBBLE
ROMAN
NEW HORIZONS
IXPE
GEHRELS SWIFT
XMM-NEWTON*
VOYAGER 1
VOYAGER 2
PANDORA
ARIEL*
PUEO
LISA*
UVEX
EUCLID*
NUSTAR
PARKER SOLAR PROBE
COSI
ULTRASAT*
WIND
THEMIS
SOLAR ORBITER*
TIMED
SOHO*
HELIOSWARM
ACE
IMAP
HINODE*
IRIS
SUNRISE
EUVST*
GOLD
STEREO
DRAGONFLY
EZIE
TRACERS
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LUCY
IBEX
MMS
CARRUTHERS
GEOCORONA OBSERVATORY
ENVISION*
JUNO
DAVINCI
PSYCHE
EUROPA CLIPPER
VERITAS

NEO SURVEYOR

OSIRIS-APEX

TRACE GAS ORBITER*

ESCAPADE

MMX*

MAVEN

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MARS EXPRESS*

MSR°

PERSEVERANCE

MARS ODYSSEY

CURIOSITY

ROSALIND FRANKLIN*

AOS SKY

TEMPO

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TSIS-2

OCO-2

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LIBERA

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CYGNSS

GRACE-C

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CLARREO-PF

ECOSTRESS

OCO-3

GEDI

SAGE III

LEAF*

TSIS-1

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ELF*

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FLARE*

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EML*

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ICESAT-2

CRISTAL*

PFMI

MHU*

SENTINEL-6

MICHAEL FREILICH*

BRIC

ACES*

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SPECTRUM

SENTINEL-6B*

PK-4

VEGGIE

BECCAL*

GRACE-FO

TIGERISS

DECLIC*

PREFIRE

NICER

XROOTS

LANDSAT NEXT

BRIC-LED

HERMES

LANDSAT 7, 8, 9

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THEMIS-ARTEMIS

JPSS-3, 4*

AWE

LEIA

ARTEMIS II

LUNAR PATHFINDER*

DSCOVR / NISTAR*

LRO

1ST BLUE GHOST~

DSCOVR / EPIC*

APEX 1.0~

2ND BLUE GHOST~

LUNAR TRAILBLAZER

SWOT

2ND NOVA-C~

SUOMI NPP*

GRIFFIN-1~

KPLO*

3RD NOVA-C~

TERRA

ARTEMIS III

NOAA-20, 21*

EARTH SCIENCE

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PLANETARY SCIENCE

ASTROPHYSICS

BIOLOGICAL & PHYSICAL

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*Partner-led

°Under Review

~Delivery contract for NASA instrument/payloads

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SEPTEMBER 2024

2025 YEAR AT A GLANCE

January

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June

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July

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November

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December

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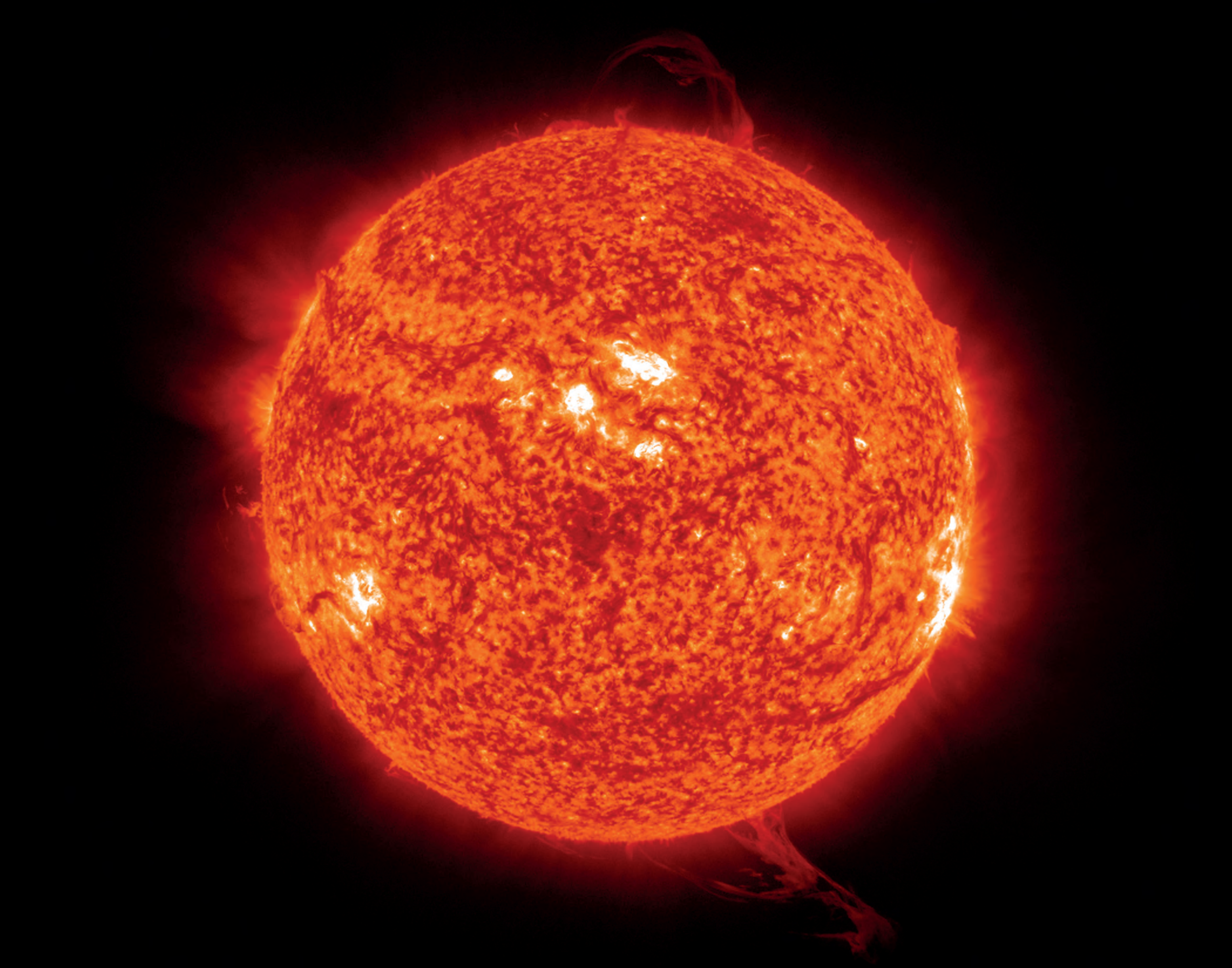

July 2025

NASA-NOAA Satellite Observes Large Solar Eruption. The Solar Ultraviolet Imager (SUVI) instrument aboard the Geostationary Operational Environmental Satellites (GOES) West satellite observed a flurry of solar activity in mid-December 2023. This December 11 image from the SUVI 304A channel corresponds to plasma in the upper chromosphere of the Sun at a temperature of about 6,000 kelvins. GOES is a collaborative National Oceanic and Atmospheric Administration (NOAA) and NASA program providing continuous imagery and data on atmospheric conditions and solar activity (e.g., space weather). NOAA's Space Weather Prediction Center uses GOES satellite data to produce space weather forecasts to predict the impact solar storms can have on Earth. Such solar eruptions can impact technology like satellites, spark auroras, and more. NASA builds and launches the GOES satellites, and NOAA operates them. **Image and text credit:** NOAA/ Cooperative Institute for Research in Environmental Sciences (CIRES)

https://www.nesdis.noaa.gov/our-satellites/currently-flying/goes-18-launch

2024 Total Solar Eclipse. A total solar eclipse happens when the Moon passes between the Sun and Earth, completely blocking the face of the Sun. On April 8, 2024, a total solar eclipse swept across a narrow portion of the North American continent from Mexico's Pacific coast to the Atlantic coast of Newfoundland, Canada. NASA photographer Keegan Barber captured this photo of the total solar eclipse in Dallas, Texas, on April 8, 2024. Studying the innermost part of the corona—shown in white, visible to our eyes only during total solar eclipses—is key to answering fundamental questions about how heat and energy are transferred from the Sun out into the solar wind, the constant stream of particles that the Sun spews into the solar system. **Photo and text credit:** NASA/Keegan Barber

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2 First Quarter	3	4 Independence Day	5
6	7	8	9	10 Full Moon	11	12
13	14	15	16	17	18 Last Quarter	19
20	21	22	23	24 New Moon	25	26
27	28	29	30	31		

June 2025

S	M	T	W	T	F	S
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15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

August 2025

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

August 2025

Webb and Hubble's Views of Spiral Galaxy NGC 628. This face-on view of spiral galaxy NGC 628 is split diagonally, showing observations from the James Webb Space Telescope (JWST) in the top left portion of the image and Hubble Space Telescope (HST) in the bottom right portion. JWST's observations combine near- and mid-infrared light, while HST's observations showcase visible light. Complementary views show predominantly stars (HST) and obscuring dust (JWST). In JWST's high-resolution infrared images, the gas and dust stand out in stark shades of orange and red and show finer spiral shapes with the appearance of jagged edges, though these areas are still diffuse. In HST's images, the gas and dust show up as hazy dark brown lanes, following the same spiral shapes. HST's images are about the same resolution as JWST's, but the gas and dust obscure a lot of the smaller-scale star formation. **Image and text credit:** NASA, European Space Agency (ESA), Canadian Space Agency (CSA), Space Telescope Science Institute (STScI), Janice Lee (STScI), Thomas Williams (University of Oxford), Physics at High Angular resolution in Nearby GalaxieS (PHANGS) Team

https://go.nasa.gov/3KP4iql

Webb and Hubble Affirm Universe's Expansion Rate. This image of NGC 5468, a galaxy located about 130 million light-years from Earth, combines data from the Hubble Space Telescope and James Webb Space Telescope. This is the farthest galaxy in which Hubble has identified Cepheid variable stars, a type of variable star that pulsates radially. Cepheids are important milepost markers for measuring the expansion rate of the universe. The distance calculated from Cepheids has been cross-correlated with a type Ia supernova in the galaxy. Type Ia supernovae are so bright they are used to measure cosmic distances far beyond the range of the Cepheids, extending measurements of the universe's expansion rate deeper into space. **Image and text credit:** NASA, ESA, CSA, STScI, Adam G. Riess (Johns Hopkins University, STScI)

July 2025

S	M	T	W	T	F	S
		1	2	3	4	5
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13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

September 2025

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 First Quarter	2
3	4	5	6	7	8	9 Full Moon
10	11	12	13	14	15	16 Last Quarter
17	18	19	20	21	22	23 New Moon
24 First Quarter 31	25	26	27	28	29	30

September 2025

Thinning Arctic Sea Ice. Sea ice is frozen seawater that floats in the ocean. This photo, taken from NASA's Gulfstream V Research Aircraft on July 21, 2022, shows Arctic sea ice in the Lincoln Sea north of Greenland. For more than 40 years, NASA has been observing a dramatic decline in Arctic sea ice extent, which is a result of warming global temperatures. With the launch of Ice, Cloud and land Elevation Satellite-2 (ICESat-2) in 2018, NASA observes sea ice thickness as well. Sea ice thickness is a crucial measurement for understanding total ice loss at the poles and its potential impact on Earth's climate. However, measurements of sea ice thickness are complicated in summer when the snow on sea ice melts, forming melt ponds (the aqua blue areas in the photo) that make it difficult for ICESat-2 observations to distinguish sea ice from open water. Researchers have been developing new methods to improve these summer sea ice thickness data and flew two different lidar instruments on the Gulfstream V aircraft along ICESat-2's orbit tracks to further develop and validate these methods. **Image and text credit:** NASA's Goddard Space Flight Center/ICESat-2/Rachel Tilling

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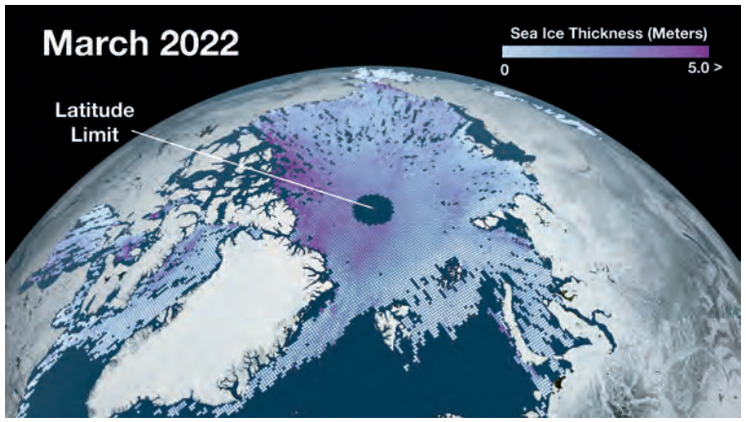

ICESat-2 Sea Ice Thickness 2022. A challenge in polar science is measuring the thickness of floating sea ice that blankets the Arctic and Southern Oceans. Newly formed sea ice might only be a few inches thick; sea ice several years old can grow up to 10 feet. This image shows monthly average sea ice thickness data from NASA's ICESat-2 satellite for March 2022, when Arctic sea ice is most extensive. Low values are light blue, and higher values are magenta. As the Arctic warms, it is increasingly dominated by younger and thinner ice cover, making these measurements invaluable for understanding our changing polar regions. **Image and text credit:** NASA Scientific Visualization Studio using ICESat-2 data

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 Labor Day	2	3	4	5	6
7 Full Moon	8	9	10	11	12	13
14 Last Quarter	15	16	17 Constitution Day	18	19	20
21 New Moon	22	23	24	25	26	27
28	29 First Quarter	30				

August 2025

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

October 2025

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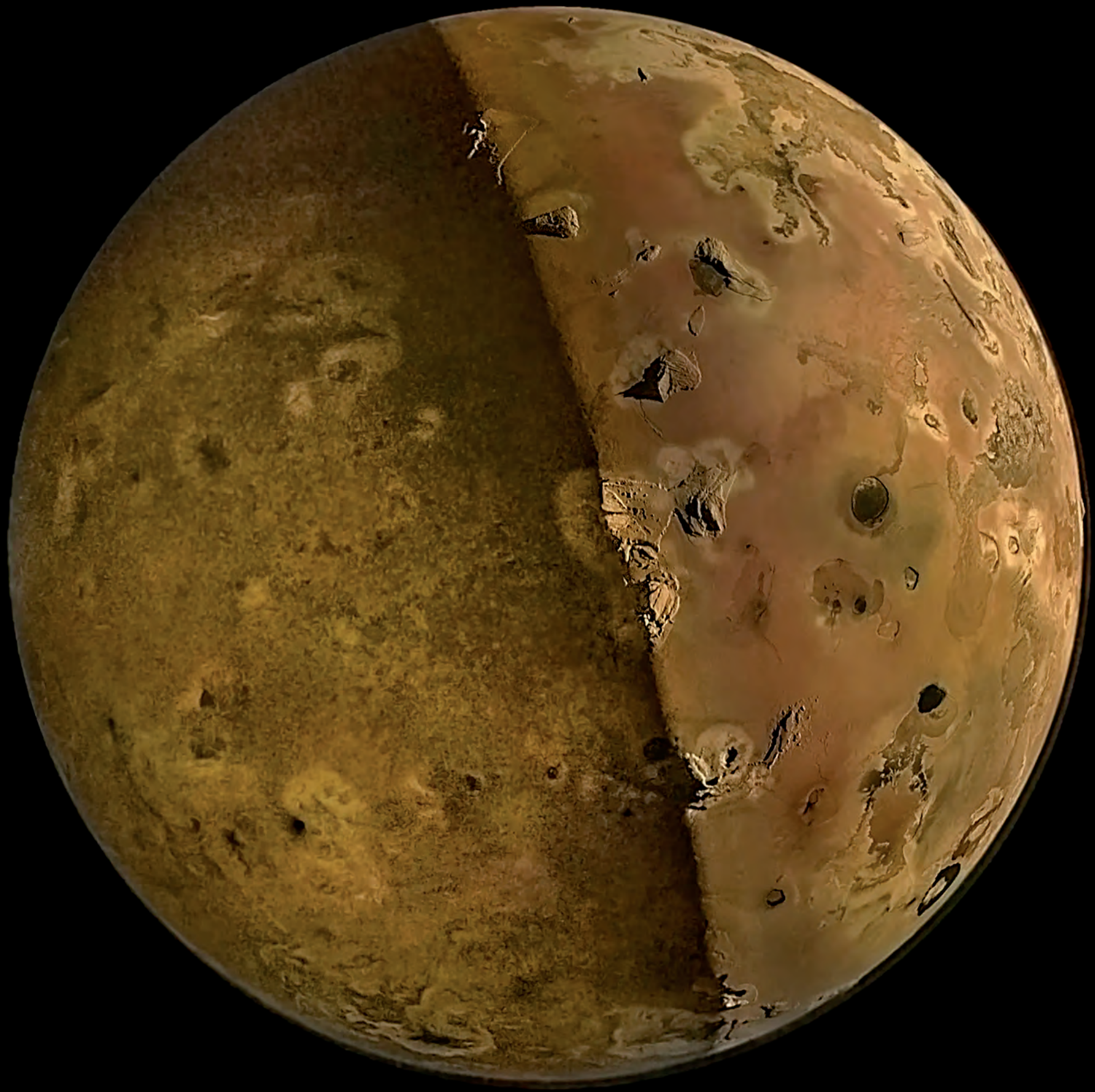
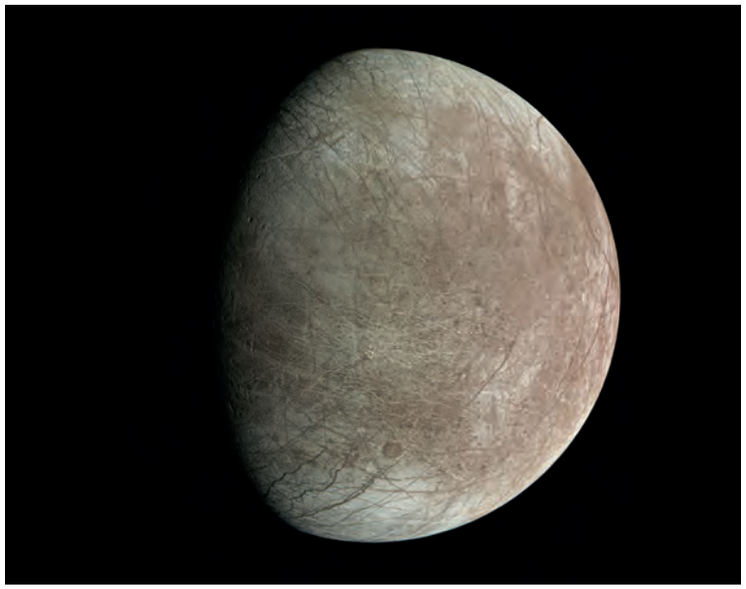
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	



October 2025

The Sharpest Pictures of Jupiter's Volcanic Moon Io in a Generation. During its close flyby of Jupiter's moon Io on December 30, 2023, NASA's Juno spacecraft captured some of the most detailed imagery ever of Io's volcanic surface. In this image, taken by the JunoCam instrument from about 930 miles (1,500 kilometers) above the moon, Io's night side [left lobe] is illuminated by "Jupitershine," which is sunlight reflected from the planet's surface. The image shows evidence of an active plume, tall mountain peaks, and lava lakes. Juno has been exploring Jupiter and its large moons Io, Ganymede, and Europa since the spacecraft's arrival at the planet in 2016. Originally designed to operate during eight Jupiter flybys in one of the solar system's harshest radiation environments, JunoCam has continued to collect stunning images as Juno completed 57 orbits around the planet in early 2024. The visible-light color images from JunoCam are made available for processing by citizen scientists around the world. Juno's other instruments include an infrared imager and navigational star camera. **Image and text credit:** NASA/Jet Propulsion Laboratory–Caltech/Southwest Research Institute (SwRI)/Malin Space Science Systems (MSSS). **Image processing:** Emma Wälimäki © CC BY

https://go.nasa.gov/4c9co9c



A JunoCam View of Jupiter's Moon Europa. This view of Jupiter's icy moon Europa was captured by the JunoCam imager aboard NASA's Juno spacecraft during the mission's close flyby on September 29, 2022. NASA's Europa Clipper spacecraft, scheduled to launch in October 2024, will search for signs of habitability in the vast oceans beneath Europa's icy surface when it arrives at its destination in 2030. **Image and text credit:** NASA/JPL–Caltech/SwRI/MSSS. **Image processing:** Björn Jónsson CC BY 3.0

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7 Full Moon	8	9	10	11
12	13 Last Quarter Columbus Day Indigenous Peoples' Day	14	15	16	17	18
19	20	21 New Moon	22	23	24	25
26	27	28	29 First Quarter	30	31 Halloween	

September 2025

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

November 2025

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2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
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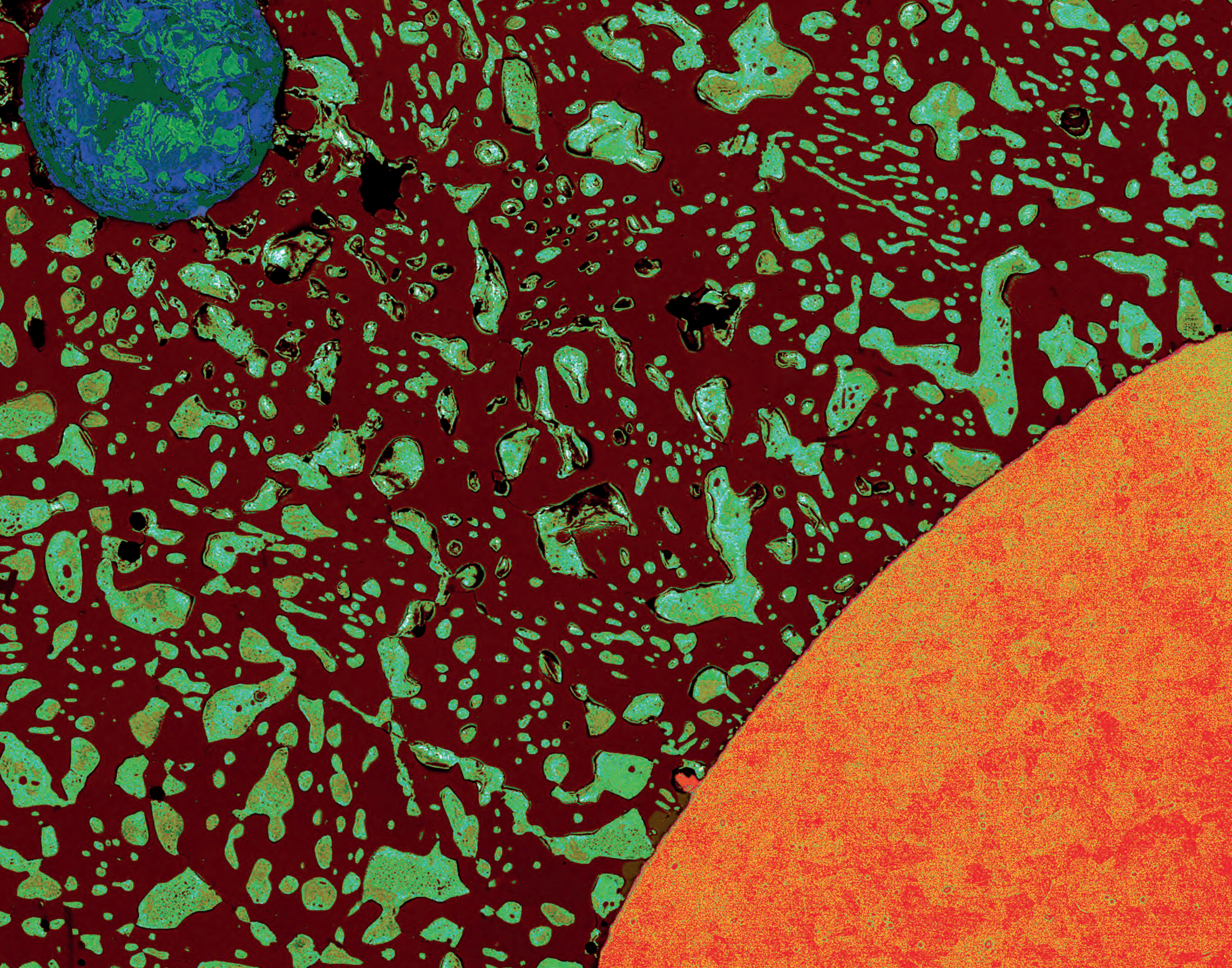
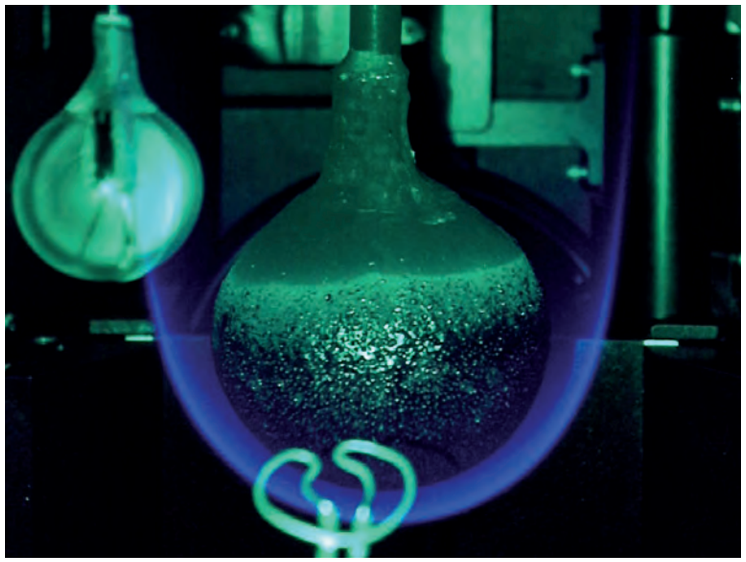


November 2025

Solar System Parallelism Inside a Solder Bead. Soldering is an essential manufacturing step for joining electrical conductors. It involves the melting and solidification of materials, which can result in voids and shrinkage during the process. To improve the soldering process on Earth—and enable deep-space repairs and manufacturing in space—researchers conducted experiments aboard the International Space Station (ISS). Solidified solder beads were made aboard the station in the microgravity environment and returned to Earth for investigation, where researchers cut, polished, and photographed the samples under a microscope. This photograph shows the copper wire in the top left corner (appearing as orange and resembling the Sun) and a void at the bottom right (bluish-green circle resembling Earth). Conventional solder aggregates appear in dark-brown and greenish-blue irregular patches in between. The photograph received the 2022 *Gravitational and Space Research* (GSR) Journal Cover Award at the 2022 American Society for Gravitational and Space Research (ASGSR) conference and appeared as the 2022 *GSR* journal cover. This work, supported by a NASA Biological and Physical Sciences (BPS) Physical Sciences Informatics (PSI) grant, was awarded to Iowa State University to study the fundamental mechanisms, phenomenology, and process conditions that govern the integrity and performance of solder joints produced in terrestrial versus reduced-gravity environments. **Image and text credit:** Iowa State University/Manish Kumar and Siddhartha Pathak

https://go.nasa.gov/3ziaWU7



Solid Fuel Ignition and Extinction. On Earth, gravity has a large influence on flames. In different gravitational environments, such as in microgravity aboard the International Space Station (ISS) or in partial gravity on the Moon, fires can be more hazardous and behave in less predictable ways. NASA's Solid Fuel Ignition and Extinction (SoFIE) project aims to better understand this phenomenon in space to ensure crew safety by studying the ignition and flammability of solid spacecraft materials. In the image above, a spherical fuel sample supports a flame on the leading edge of the sample. The green lighting allows the fuel surface to be seen during the burn so that several important parameters can be evaluated, such as how far the flame is from the fuel and how much the fuel is heating up. The igniter wire appears in the camera view, but it is in the foreground and not near the flame. In the background on the left, an unburned acrylic sphere waits for its turn to be tested on another day. **Image and text credit:** NASA's John H. Glenn Research Center

October 2025

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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

December 2025

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7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2 Daylight Saving Time Ends	3	4 Election Day	5 Full Moon	6	7	8
9	10	11 Veterans Day	12 Last Quarter	13	14	15
16	17	18	19	20 New Moon	21	22
23 30	24	25	26	27 Thanksgiving Day	28 First Quarter	29

December 2025

Spritacular Citizen Scientist Captures Photo of Elusive Upper Atmospheric Electrical Phenomena Over Château de Beynac. A flash of lightning, and then—something else. High above a storm, a crimson figure blinks in and out of existence. If you see it, you are a lucky witness of a sprite, one of the least-understood electrical phenomena in Earth's upper atmosphere. But if you catch it on camera, your photo could contribute to a ground-breaking scientific discovery. NASA's citizen science project, Spritacular (pronounced sprite-tacular), leverages the power of crowdsourcing to advance the study of sprites and other Transient Luminous Events (TLEs). TLEs include a range of electrical phenomena that occur above thunderstorms and produce brief flashes of light. Many science questions pertaining to TLEs remain unanswered. Spritacular aims to generate a crowdsourced database of TLEs and connect professional scientists with members of the public who would like their camerawork to contribute to scientific studies. The photo above, shot by Spritacular project participant Nicolas Escurat with a Sony A7s camera, shows the sky on September 3, 2022, looking toward a castle named Château de Beynac in Dordogne, a department in southwest France. **Photo and text credit:** Photo by NASA's Spritacular project participant Nicolas Escurat; text by NASA

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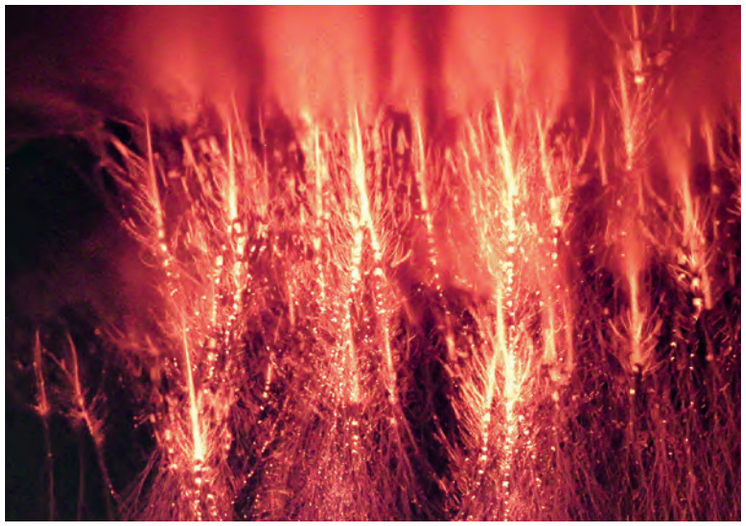

Red Sprites Photographed in Oklahoma. NASA's Spritacular project participant Paul Smith captured this photo of red sprites that formed above thunderstorms in Oklahoma on June 27, 2023. Sprites occur at an altitude of some 50 miles (80 kilometers), high above thunderstorms. They appear moments after a lightning strike—a sudden reddish flash that can take a range of shapes, often combining diffuse plumes and bright, spiny tendrils. Some sprites tend to dance over the storms, turning on and off, one after another. The late Davis "Dave" Sentman named these elusive events "sprites," a reference to a woodland nymph that can be seen only from the corner of one's eye. He refrained from assigning a scientific name, acknowledging their mysterious nature at the time. **Photo and text credit:** Photo by NASA's Spritacular project participant Paul Smith; text by NASA

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4 Full Moon	5	6
7	8	9	10	11 Last Quarter	12	13
14	15	16	17	18	19	20 New Moon
21	22	23	24	25 Christmas Day	26	27 First Quarter
28	29	30	31			

November 2025

S	M	T	W	T	F	S
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30						

January 2026

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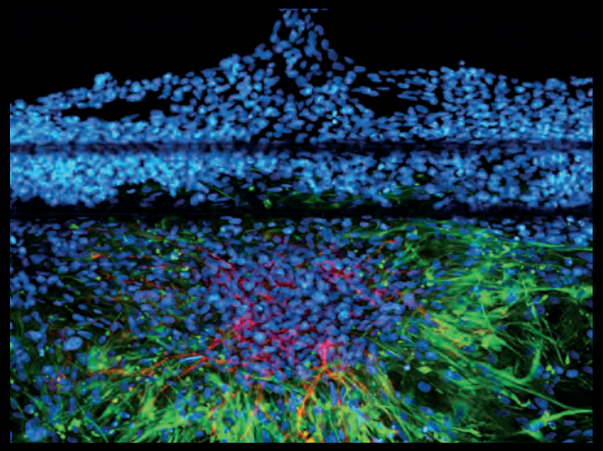
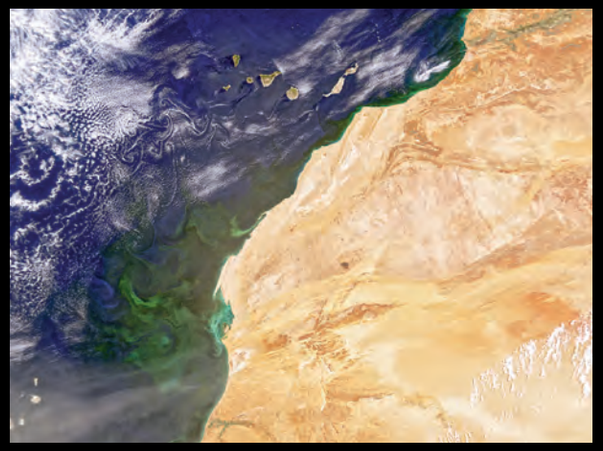
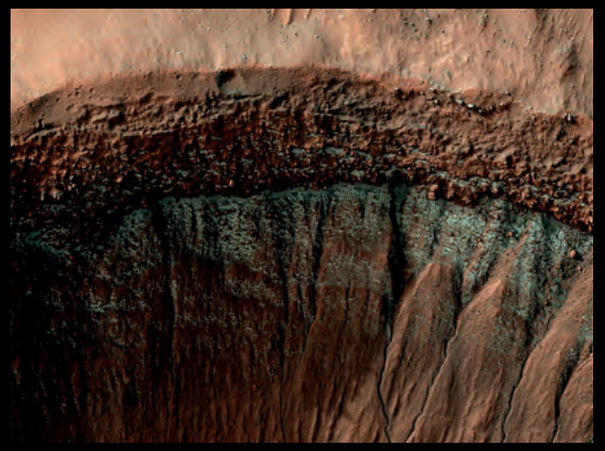
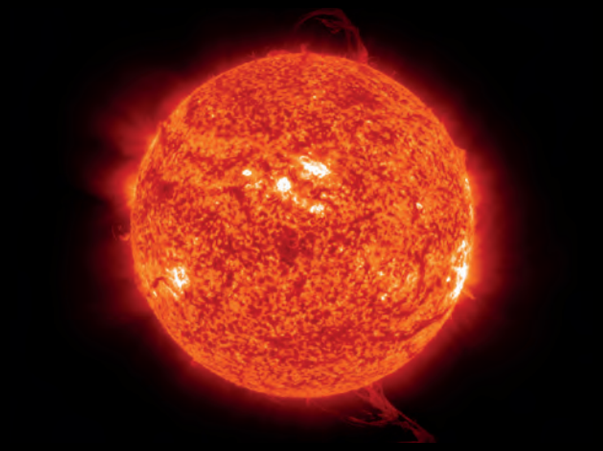
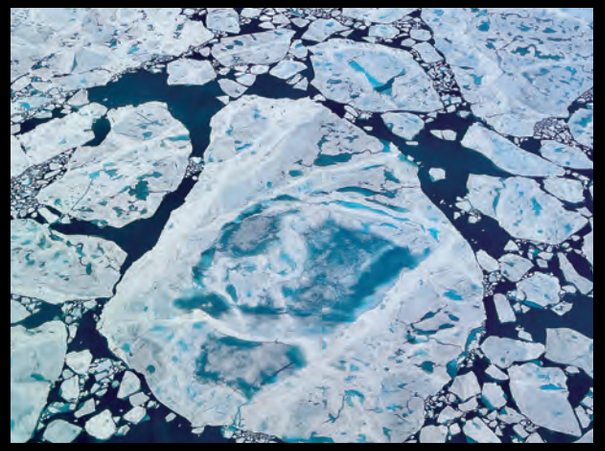
National Aeronautics and
Space Administration

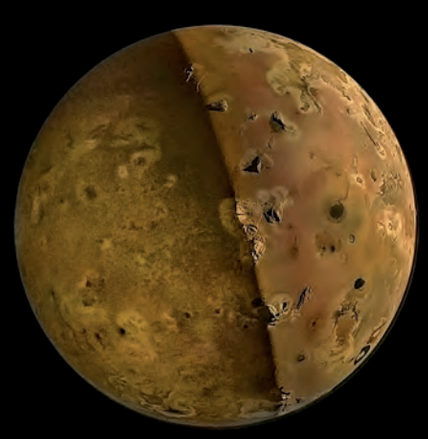


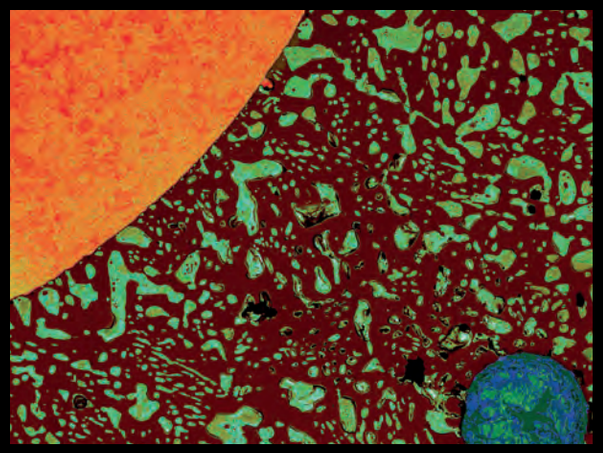












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