



Space Beacon



7-PLANET ALIGNMENT

IT WON'T HAPPEN AGAIN UNTIL 2161!

Astrophotographer Captures Stunning Planetary Alignment in Night Sky

Stay up-to-date with the latest in spacetechnology

Orbital



Lead with the most significant celestial events and discoveries

Did you Know
The Chang'e-6 mission found evidence supporting the theory that the Moon once had a global magma ocean, revealing its volcanic past.

Chang'e-6 Finds Evidence of Moon's Magma Ocean

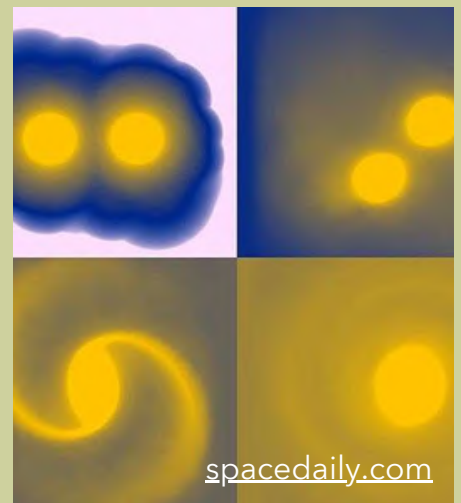
China's Chang'e-6 mission has discovered crucial evidence supporting the theory that the early Moon had a global magma ocean. Lunar samples collected from the Moon's far side contain unique minerals, suggesting extensive volcanic activity in its past. Scientists believe this finding helps explain the Moon's geological evolution. The data provides new insights into planetary formation processes, improving our understanding of both the Moon and Earth. This breakthrough strengthens China's role in lunar exploration and space research.



news.cgtn.com

Origins of the Universe's Most Energetic Particles

New research suggests that high-energy cosmic rays may originate from magnetic outflows produced by merging stars. These cosmic rays, composed mostly of protons, reach Earth with energies far surpassing those created in human-made particle accelerators. Scientists initially suspected gamma-ray bursts (GRBs) as their source, but IceCube Observatory data challenges this theory. Instead, active galactic nuclei (AGNs), massive black holes at galaxy centers, remain a strong candidate for these extreme accelerators.



spacedaily.com

Hubble's Deep Dive into Andromeda's Satellite Galaxies

Hubble Space Telescope has mapped Andromeda's 36 satellite galaxies, revealing a complex ecosystem orbiting in an unexpected plane. Unlike the Milky Way's satellites, Andromeda's dwarf galaxies show prolonged star formation, suggesting a unique evolutionary history. Some may be remnants of past mergers, altering their structure. Future observations will reconstruct their movements over billions of years, providing insight into galaxy formation. This groundbreaking study underscores Hubble's continued impact on cosmic discovery.

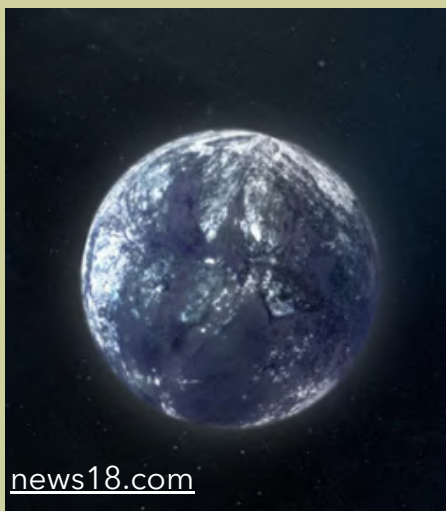


eurekaalert.org



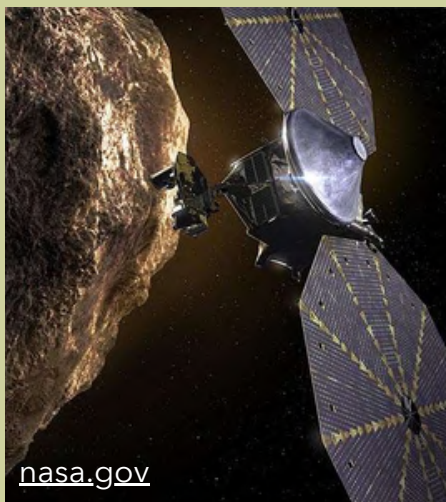
SpaceX Falcon 9 Rocket Launches to Moon

SpaceX's Falcon 9 rocket launched from Kennedy Space Center, carrying Intuitive Machines' Athena lander and NASA's Lunar Trailblazer satellite. The mission aims to explore the Moon's South Pole, with Athena expected to land on March 6. Objectives include searching for ice and testing a lunar cellular network. This mission supports NASA's Artemis program and the Commercial Lunar Payload Services (CLPS) initiative, paving the way for future human lunar exploration. The successful launch marks another milestone in space exploration.



Young Star Clusters Birth Rogue Planetary Objects

An international team of astronomers has discovered that rogue planetary-mass objects (PMOs) form from the chaotic dynamics of young star clusters. Using advanced simulations, they found that close encounters between circumstellar disks create tidal bridges, which collapse into dense filaments and form PMOs. These objects, with masses around 10 Jupiters, drift freely through space and often form in pairs or triples. This discovery reshapes our understanding of cosmic diversity and the formation of PMOs.



Scientists Join Mission to Study Trojan Asteroids

Eight scientists have been chosen to support the Lucy mission, which is exploring Jupiter's Trojan asteroids—ancient remnants from the solar system's formation. The spacecraft, launched in 2021, is heading toward the L4 Trojan swarm, with asteroid flybys planned for 2027 and 2028. These researchers will provide valuable insights into the asteroids' composition and evolution, with studies continuing through 2030. Their work aims to deepen understanding of planetary origins and early solar system dynamics.

A close-up photograph of a telescope's lens or sensor. The lens is a large, yellow, hexagonal shape. The background is a dark, starry space with a nebula visible on the right side. The text 'New telescopes peer deeper into the universe, revealing hidden wonders' is overlaid in a white box at the bottom right.

New telescopes peer deeper into the universe, revealing hidden wonders

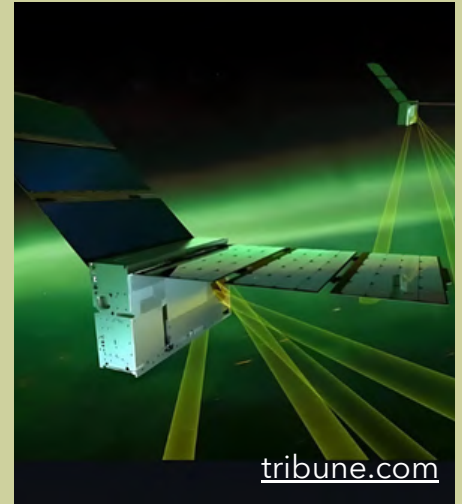
Genspace

Cover broader space news not fitting into other categories

Did you Know
China is developing a dual-mode Mars drone, and Europe's Ariane 6 rocket aims for independent space access.

EZIE Mission to Improve Space Weather Forecasts

The Electrojet Zeeman Imaging Explorer (EZIE) mission will study electrojets—intense electrical currents in Earth's upper atmosphere. Using small CubeSats, it will measure magnetic fields through the Zeeman effect, enhancing space weather predictions. This research is vital for safeguarding satellites, power grids, and astronauts. The mission, launching aboard a SpaceX Falcon 9 rocket, marks a major advancement in small satellite technology for space science. Scientists hope these insights will lead to better forecasting of geomagnetic storms.



Microbes Could Help Keep Space Station Healthy

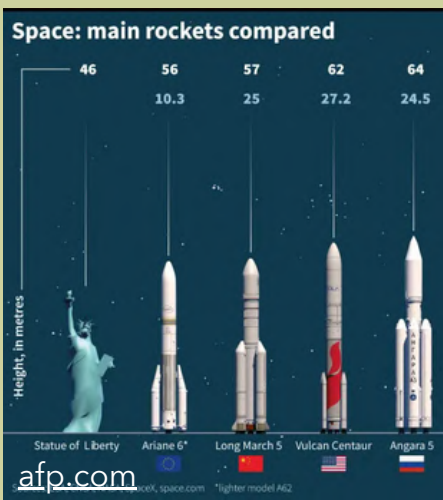
The International Space Station (ISS) may be too clean, potentially harming astronauts' immune systems. While stringent cleaning prevents harmful bacteria, it also eliminates beneficial microbes that help maintain a balanced environment. Researchers suggest introducing resilient microbes that could help break down waste and improve air quality, creating a healthier habitat. This microbial approach could benefit future long-term space missions by promoting a more self-sustaining ecosystem. Space microbes could aid biotech and health research.



China Develops Dual-Mode Mars Drone for Exploration

Chinese scientists are developing a lightweight Mars drone that can both roll on the ground and fly using contra-rotating coaxial rotors. Weighing just 300 grams, the UAV, designed by Harbin Institute of Technology's School of Astronautics, has exceptional endurance—six times longer than similar drones. It rolls by shifting its center of gravity and flies using controlled rotors. The drone is expected to aid Mars exploration, underground construction, and environmental detection, according to researchers.





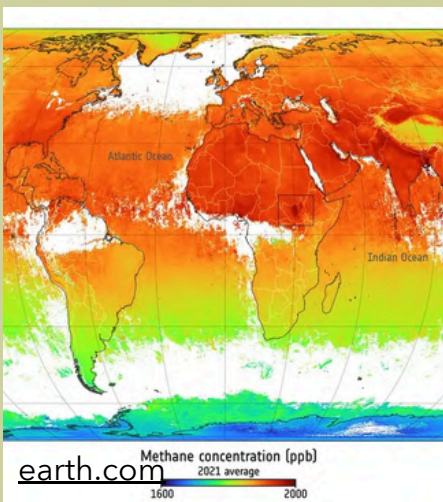
Ariane 6 Rocket Boosts Europe's Space Ambitions

Europe's Ariane 6 rocket is set for its first commercial mission, aiming to secure independent access to space. The launch, scheduled from Kourou, French Guiana, will carry a French military satellite to an 800 km orbit. This mission follows several delays and highlights Europe's efforts to reduce reliance on the US and compete with SpaceX. The CSO-3 satellite will enhance France's military autonomy and intelligence capabilities, marking a significant step for European space endeavors.



Advancing Space-Based Missile Tracking Technology

The U.S. is enhancing space-based missile tracking to counter rising threats from hypersonic and advanced ballistic missiles. The initiative involves deploying low-orbit satellites for real-time tracking, improving early warning capabilities, and strengthening global defense networks. By leveraging advanced sensors and AI, these systems will enhance threat detection, reducing response times for missile defense. This effort aligns with international collaborations to address emerging security challenges in space and missile warfare.



Satellites Reveal Top 10 Methane Hotspots Worldwide

A recent study using satellite data has identified the top 10 global methane emission hotspots, highlighting both natural and human-driven sources. The Sudd wetland in South Sudan is the largest natural emitter, while Turkmenistan's oil and gas fields lead human-caused emissions. Other major sources include coal fields in China and Russia, as well as U.S. oil basins. Since methane traps heat more effectively than CO₂, reducing emissions is crucial in combating climate change. Focused strategies are needed to curb these persistent emissions.

The universe awaits

Satellogy

Focus on recent and upcoming satellites and launches

Did you Know
Spire Global achieved a major breakthrough by establishing a two-way laser communication link between two satellites in orbit, enhancing data speed, reliability, and security for future space missions.

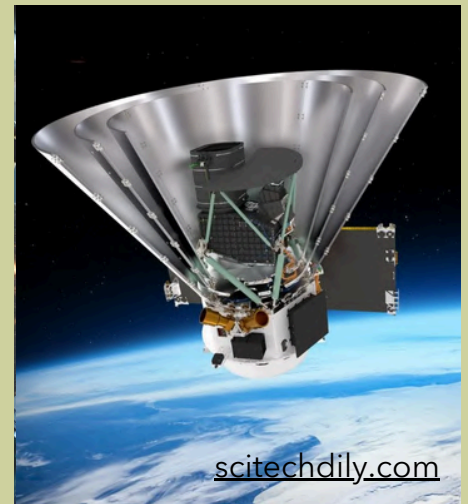
Final Block 1 WorldView Legion Satellites Launched

The final block 1 WorldView Legion satellites for Maxar Technologies have been successfully launched. The two satellites were deployed into a mid-inclination Earth orbit (MEO) from Launch Complex 39A at NASA's Kennedy Space Center. These satellites will enhance Maxar's 30 cm-class satellite imagery capability, providing high-quality and accurate images for commercial use. The mission marks a significant milestone in Maxar's satellite program, with the company now operating a total of six WorldView Legion satellites in various orbits.



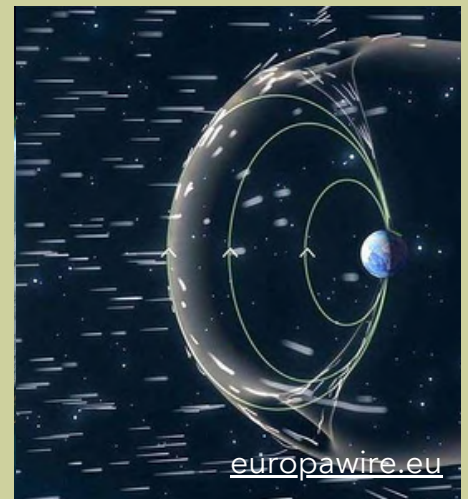
NASA & SpaceX Set Sights on SPHEREx, PUNCH Mission

The SPHEREx space telescope, designed to study cosmic origins, is now scheduled for launch in April 2025. The PUNCH mission, which will observe the Sun's outer atmosphere, is set for October 2025. These missions aim to advance scientific understanding of space and solar physics, contributing to ongoing astrophysical research and exploration. Scientists anticipate groundbreaking discoveries that could reshape our knowledge of the universe. The data collected will help answer fundamental questions about cosmic evolution and solar wind behavior.



BAE Systems to Build NOAA Space Weather Satellite

BAE Systems has been selected to develop NOAA's next-generation space weather satellite, known as SWFO-L1 (Space Weather Follow-On Lagrange 1). This satellite will enhance space weather monitoring, protecting critical infrastructure from solar storms. The project, part of a \$19.3 million contract, involves building a crucial instrument for tracking solar wind and geomagnetic disturbances. SWFO-L1 is set to launch in 2025, improving forecasting capabilities for satellites, power grids, and communication networks.





Spire Achieves Milestone in Satellite Communication

Spire Global has successfully established a two-way laser communication link between two satellites in orbit. This breakthrough enhances the speed, reliability, and security of data transmissions for future missions. Supported by the European Space Agency's ARTES Pioneer Partnership Project, Spire plans to launch three additional LEMUR satellites with this technology in 2025. This achievement marks a significant step forward in satellite communication, offering improved data speeds and security for various applications.



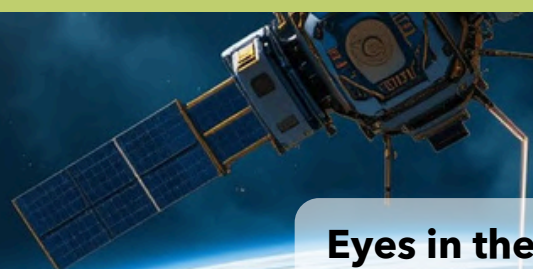
Albedo Nears Launch of Atmosphere-Skimming Satellite

Denver-based startup Albedo is set to launch its Clarity-1 satellite, designed to operate in very low-Earth orbit (VLEO), on SpaceX's Falcon 9 rocket. This innovative satellite aims to capture high-resolution imagery at a 10 cm resolution, rivaling the best spy satellites. Clarity-1 will be deployed at an altitude of 500-600 km and then lower itself to 274 km. This marks a significant step in commercializing VLEO technology for enhanced Earth observation. Albedo aims to revolutionize Earth imaging with this cutting-edge technology.



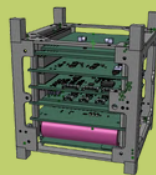
Voyager Adopts Partnership Strategy for Golden Dome

Voyager Technologies is shifting its focus to national security by adopting a partnership strategy for the Golden Dome program. This initiative, previously known as "Iron Dome for America," aims to protect the U.S. from various aerial threats. Voyager plans to contribute technologies for ground systems, space sensors, and interceptor missile components. The company is currently developing a solid-propulsion subsystem for the Next Generation Interceptor and edge computing systems in collaboration with Palantir.



Eyes in the sky, solutions on Earth

CubeTech



Showcase innovative CubeSat missions and unique payloads

Did you Know
The Aerospace Corporation achieved the first-ever optical crosslink between two CubeSats, enabling high-speed data transfer in space at up to 312.5 Mbps.

Aerospace Achieves First CubeSat Optical Crosslink

The Aerospace Corporation has successfully demonstrated the first optical crosslink between two CubeSats in low-Earth orbit. This breakthrough, called the Flashlight Laser Crosslink, enables small satellites to transfer data at high speeds, improving their ability to work collaboratively. Using a miniaturized laser system, the test achieved data rates up to 312.5 Mbps. This advancement paves the way for cost-effective, high-performance satellite constellations for commercial and government applications.



[aerospace.org](https://www.aerospace.org)

LEO Satellite Market Poised for \$12 Billion Growth

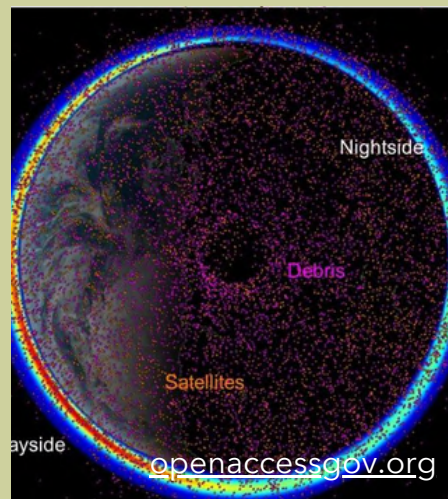
The Low Earth Orbit (LEO) satellite market is set to expand by \$12 billion between 2025 and 2029, achieving a compound annual growth rate (CAGR) of 19%. The growth is driven by increasing demand for satellite-based communication, Earth observation, and defense applications. North America remains the dominant region, while technological advancements in satellite miniaturization and cost reduction fuel market expansion. Key players include Airbus, Lockheed Martin, and Northrop Grumman.



[globalnewswire.com](https://www.globalnewswire.com)

UAF Scientist Develops Satellite to Hunt Space Debris

A University of Alaska Fairbanks (UAF) scientist is leading the development of the "Space Debris Hunter" satellite to detect and track hazardous space debris as small as one centimeter. This pioneering project aims to enhance satellite safety by addressing the growing threat of undetected orbital debris. The initiative could revolutionize space monitoring, ensuring the protection of critical satellite infrastructure and advancing global efforts in space sustainability.

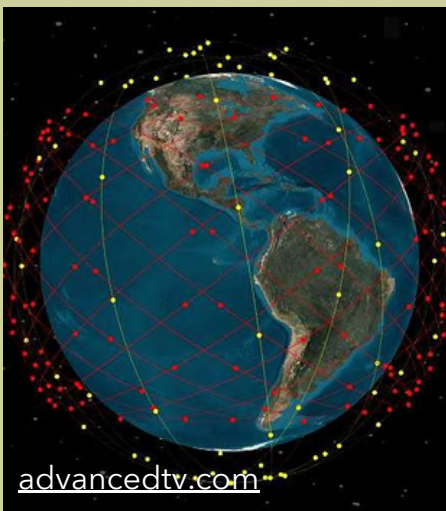


[openaccessgov.org](https://www.openaccessgov.org)



MethaneSAT: Advancing Climate Action Globally

MethaneSAT, a \$29M government-backed satellite, enhances methane detection for climate action. Developed with the Environmental Defense Fund, it strengthens New Zealand's role in sustainability. Despite transparency concerns, its advanced technology aids global efforts to reduce emissions. This initiative reinforces the country's commitment to innovative environmental solutions and supports science-driven policies. By providing precise data, MethaneSAT helps industries and governments make informed decisions to combat climate change.



Telesat and Intellian Unveil Advanced LEO Terminals

Telesat and Intellian have partnered to develop high-performance Ka-band flat panel terminals for the Telesat Lightspeed Low Earth Orbit (LEO) network. These advanced terminals, utilizing Active Electronically Scanned Array (AESA) technology, aim to enhance connectivity across industries, including enterprise, government, and maritime. Manufactured at Intellian's state-of-the-art facilities, the terminals promise efficient, lightweight solutions for seamless global communication. This collaboration reinforces Telesat's focus on satellite innovation.



Amateur Satellites Scheduled for Launch

A SpaceX Falcon 9 rocket will launch several satellites on its 13th smallsat rideshare mission. Among them is HADES-ICM 1.5 PocketQube satellite, which will act as an FM voice repeater and carry an experiment by the University of Manchester. AMSAT-EA will operate the mission with support from private companies and universities. The satellite will relay various communications and transmit telemetry, marking a significant advancement for amateur radio enthusiasts and satellite technology.



**The future of space,
one CubeSat at a time**

The 75SSM

SSM: Students' Satellites Mission

Update readers on our ITCA internal space-based innovations

Precision Power Management: INA226 in CRSat

CRSat offers students hands-on experience with satellite technology, mirroring professional CubeSat systems. It integrates solar power, environmental sensors, and real-time data collection. By bridging theory and practice, CRSat develops skills in power management, data analysis, communication, and problem-solving, preparing students for real-world space challenges. CRSat requires efficient power monitoring to ensure mission success. The INA226 plays a crucial role in tracking real-time voltage, current, and power, optimizing energy use. It measures the voltage drop across a shunt resistor, enabling precise current calculation. Integrated with STM32 or Raspberry Pi via I2C, it helps detect anomalies, prevent failures, and enhance system reliability. Combined with solar arrays, batteries, and power regulators, the INA226 strengthens the EPS workflow: Solar panel → INA226 → MPPT → Battery → Microcontroller → Telemetry, ensuring efficient energy distribution and robust satellite performance.



Student power in orbit

Space@India

Glimpses into India's space chronicle, every week

Union Minister Jitendra Singh Predicts 5X Growth in Space Sector Over Next Decade



[Read more at: timesofindian.com](https://timesofindian.com)



ISRO to Resume SpaDeX Experiments on March 15: Dr. V Narayanan

[Read more at: orissapost.com](https://orissapost.com)

India Should Lead in Establishing an Asian Space Agency, says Ex-ISRO Scientist Nambi Narayanan



[Read more at: 13angle.com](https://13angle.com)



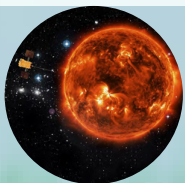
ISRO Scientist Elaborates on India's Expansive Vision for Space Exploration and Innovation

[Read more at: thenewindiaexpress.com](https://thenewindiaexpress.com)

ISRO Keeps Critical Software Systems In-House: Ex-ISRO Chief Dr. Somanath



[Read more at: newsbyteapp.com](https://newsbyteapp.com)



India's Aditya-L1 Detects Solar Flare 'Kernel,' Revealing Insights into Sun's Explosive Activity

[Read more at: thehindubusinessline.com](https://thehindubusinessline.com)

In-Space Proposes Tech Alliance for ISRO Sensors in Auto Industry



[Read more at: indiandefencenews.com](https://indiandefencenews.com)



VEM Technologies Launches VIDHWAMS Long-Range Guided Rocket

[Read more at: idrw.org](https://idrw.org)

Innovating India's tech for 21 years, we pioneered the '75 Students' Satellites Mission' and made a global impact in space tech, precision agriculture, and Industry 4.0.

Events

SATELLITE 2025

10-13 March 2025
Washington, DC
satshow.com

Space-Comm Expo

11-12 March 2025
London Excel, UK
spacecomm.co.uk

Farnborough International Space Show

19-20 March 2025
FIECC, Farnborough, UK
farnboroughspaceshow.com

Launches

SpaceX | Falcon 9 Block 5 | Starlink Group 12-16

08 Mar 2025 19:11 IST
SLC-40, Cape Canaveral SFS, Florida, USA

Rocket Lab | Electron | The Lightning God Reigns

10 Mar 2025 05:30 IST
Rocket Lab LC-1B, Māhia Peninsula, New Zealand

Gilmour | Eris | TestFlight1

NET 15 Mar 2025 Orbital Launch Pad, Bowen Orbital Spaceport, Australia

Upcoming.....



Compiled by

Er. S. Shanmugam
Er. Anvitha Lokipalli

Er. Srinivas Durvasula
Er. Moses Denny Veliath

#3, First Main, BDA Layout, HAL 2nd Stage, Bangalore 560008

www.itca.org.in; contact@itca.org.in

Reader Advisory

This newsletter features curated content from a variety of reputable sources. We strive to bring you the most interesting and informative space news articles each week. The views expressed in the linked articles are those of the sources and do not necessarily reflect the views of this newsletter. We link to the original sources in some cases for further exploration.