



Space Beacon



Adhara: A Bright Gem in Canis Major, Known for Its Intense Luminosity and Unique Stellar Characteristics.

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Orbital



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Comet G3 ATLAS to Shine Bright

Comet G3 ATLAS, a rare visitor with a 160,000-year orbit, will be visible in January 2025, offering a once-in-a-lifetime viewing opportunity. It will reach its closest approach to the Sun on 13 January, brightening significantly and possibly outshining Venus. Despite challenges for northern observers, the comet's display is expected to be extraordinary. Astronomers are closely monitoring its unpredictable behavior as it passes the Sun, potentially offering one of the brightest comet sightings in decades.



Astronomers Study Black Hole Jets with EHT

Astronomers are using the Event Horizon Telescope (EHT) to study the massive jets ejected by supermassive black holes. Led by Anne-Kathrin Baczko, the team observed the black hole at the center of galaxy NGC 1052, revealing bright radio waves at millimeter wavelengths. The EHT's ability to capture detailed images of these regions is critical in understanding the creation and acceleration of black hole jets, with potential for future video imaging and further advancements in black hole research.



Firefly Aerospace Team for 2028 Moon Mission

NASA has partnered with Firefly Aerospace to explore the Gruithuisen Domes, lunar volcanic formations, in 2028. The mission, worth \$179 million, will use the Lunar-VISE payload to analyze the Moon's regolith, offering insights into volcanic history and future lunar missions. Firefly Aerospace, part of NASA's CLPS program, will deliver scientific payloads to the Moon, advancing lunar exploration and supporting the growing lunar economy. The \$179 million mission will use the Lunar-VISE payload to study the Moon's regolith, advancing lunar exploration and supporting future missions.





Rosotics Shifts Focus to Orbital Transport Vehicles

Rosotics announced on 14 January that it will pivot from selling its Halo 3D printer to developing a fleet of orbital transfer vehicles. The company plans to build infrastructure in space, including propellant depots and power plants, using cold welding and large-scale additive manufacturing. Rosotics will work with multiple launch providers to operate in Earth-moon Lagrange point 5, benefiting from NASA's Artemis program and new space transportation vehicles like Starship. The company also relocates to Florida for expansion.



Galileo's Discovery of Jupiter's Moons and Europa

In 1610, Galileo Galilei discovered Jupiter's four moons, proving the Copernican theory. These moons, now known as the Galilean satellites, were named after the Medici family but later renamed Io, Europa, Ganymede, and Callisto. Europa, with its icy crust and subsurface ocean, is a prime candidate for life. Future missions like NASA's Europa Clipper and ESA's JUICE will explore Europa to unravel its mysteries, potentially revealing extraterrestrial life. The discoveries have shaped modern space exploration and enhanced our understanding of planetary systems.



White Dwarf Orbits Supermassive Black Hole Closely

Scientists have detected a white dwarf orbiting dangerously close to a supermassive black hole in the galaxy 1ES 1927+654, about 270 million light-years away. Observations show X-ray flashes as the white dwarf's orbit shrinks, stabilizing at around 5% of the Sun-Earth distance. This unprecedented close encounter offers insights into objects near black holes and may be confirmed by NASA's upcoming LISA mission, which will detect gravitational waves starting in 2035.



The search for life beyond Earth, intensifies with new findings

Genspace



Cover broader space news not fitting into other categories

Global Space Economy to Hit \$944B by 2033

The global space economy is set to grow from \$596 billion in 2024 to \$944 billion by 2033, driven by advancements in downstream applications like navigation and Earth observation. Commercial demand will lead the \$157 billion downstream market, while government investments, especially in defense, and emerging technologies like AI and cloud computing will fuel growth. Military space budgets exceed \$64 billion, highlighting space's strategic importance. This expansion will create opportunities in industries like agriculture, logistics, and urban planning.



Rising Space Debris: More Frequent, Higher Risk

A metallic ring, possibly from a rocket, crashed into a Kenyan village on Dec 30, raising concerns about increasing space debris risks. While its origin is uncertain, experts suggest it could be from a satellite launch vehicle. The frequency of space debris re-entries is growing, with objects falling to Earth twice a week now, compared to every two weeks a decade ago. Experts warn that as space launches rise, so does the likelihood of dangerous debris incidents. The rising number of satellite and rocket launches is accelerating this issue.



NASA Astronauts Tackle Space Mysteries in Spacewalks

NASA astronauts Don Pettit and Nick Hague are preparing for spacewalks on 16th and 23rd of January aboard the ISS. They will upgrade critical equipment, including NICER and AMS, while Pettit studies weightlessness and Hague experiments with algae for sustainable life support. These spacewalks, streamed live on NASA+, showcase groundbreaking research and international collaboration. The ongoing ISS projects are enhancing our understanding of space, human health, and Earth technologies, inspiring future generations of scientists and explorers.





China Launches Smart Dragon-3 Rocket from Sea

On 13 January, 2025, China achieved a significant milestone with its first sea-based rocket launch of the year. The Smart Dragon-3 rocket, launched from Haiyang, successfully placed 10 CentiSpace-01 satellites into orbit. This launch, conducted by the Taiyuan Satellite Launch Center, marks the first low-inclination orbit launch from offshore waters. The rocket carried a 1,600 kg payload, furthering China's commercial space ambitions. Since 2019, Haiyang has hosted 15 sea launches, deploying 89 satellites.



NOAA Expands Use of Commercial Weather Data

NOAA plans to pay a premium for targeted commercial weather data, including oil spill and fire detection observations. By acquiring niche datasets, such as microwave and radio occultation data, NOAA aims to enhance weather predictions and space weather models. While maintaining open access to global datasets, NOAA recognizes the value of tailored data for specific events. With a \$27.5 million budget for 2024, the agency will continue working with commercial satellite operators to validate and improve weather forecasts.



Toyota Invests \$44M in Japanese Rocket Company

Toyota's Woven initiative has invested \$44M in Interstellar Technologies, a Japanese company focused on developing reusable rockets for small satellite launches. The partnership aims to accelerate production of the Zero and Momo rockets, with plans for the heavy-lift Deca rocket for satellite communications. Toyota's expertise will help reduce launch costs as Japan targets 30 domestic rocket launches annually by the 2030s. This collaboration is expected to drive innovation in space infrastructure, similar to SpaceX's Starlink program.



**The dawn of a new space era,
commercial spaceflight and beyond**

Satellogy



Focus on recent and upcoming satellites and launches

SpaceX Launches NROL-153 Spy Satellite Mission

SpaceX successfully launched the NROL-153 mission on 9 January, deploying advanced reconnaissance satellites for the U.S. government. The Falcon 9 rocket, launched from Vandenberg Space Force Base, marked the seventh mission in the National Reconnaissance Office's satellite program. The satellites, possibly modified Starlink models, support a proliferated architecture initiative to enhance surveillance capabilities. SpaceX's reusable rockets continue to play a key role in national security, bolstering resilience and adaptability in reconnaissance operations.



UAE's MBZ-SAT Satellite Set for Launch

The UAE's advanced Earth-imaging satellite, MBZ-SAT, will launch on 14 January from Vandenberg Air Force Base, California, aboard SpaceX's Falcon 9 rocket. Developed by Emirati engineers, MBZ-SAT will be accompanied by the student-built CubeSat, HCT-SAT 1. This mission marks the UAE's second homegrown satellite, showcasing the nation's growing space capabilities. MBZ-SAT will transform Earth observation, providing advanced imaging, while HCT-SAT represents the UAE's commitment to training future space explorers.



Planet Launches Pelican-2 Satellite & 36 SuperDoves

Planet successfully launched its high-resolution Pelican-2 satellite and 36 SuperDoves aboard SpaceX's Transporter12 Rideshare mission from Vandenberg Space Force Base. Pelican-2, part of Planet's next-gen fleet, provides 40 cm resolution imagery and advanced multispectral capabilities. Equipped with NVIDIA's Jetson platform, the satellite enhances on-orbit computing, reducing the time between data capture and delivery. This launch expands Planet's SkySat capabilities, and more Pelican satellites are planned for launch this year.





SpaceX Launches 131 Payloads on Transporter-12

SpaceX's Transporter-12 mission successfully deployed 131 payloads on 14 January, including Earth imaging satellites, reentry vehicles, and even a "selfie sat." The Falcon 9 rocket lifted off from Vandenberg Space Force Base, carrying satellites for companies like Planet, Pixxel, and the UAE's MBZ-Sat. Notable payloads included D-Orbit's orbital transfer vehicles and Varda Space's W-2 mission. SpaceX's frequent rideshare missions offer affordable access to space, supporting startups and innovation in satellite technology.



Space42 Launches Foresight-2 to Expand Constellation

Space42, a UAE-based SpaceTech company, launched its Foresight-2 satellite on 14 January, 2025, aboard SpaceX's Transporter-12 mission. In partnership with ICEYE, the satellite enhances Earth observation with high-resolution SAR technology, supporting disaster mitigation, maritime surveillance, and urban mobility. The launch strengthens the UAE's position as a global leader in satellite-based Earth observation. With Foresight-1 and Foresight-2 in orbit, the UAE's Earth Observation Space Programme progresses towards full operational capacity by 2027.



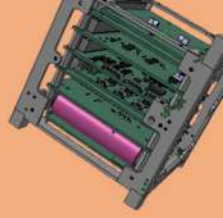
Skylo Expands Satellite Connectivity for Devices

Skylo has enabled satellite connectivity for over a billion devices worldwide, becoming the largest direct-to-device network. Their satellite SMS solution addresses connectivity gaps, ensuring reliable communication in emergencies and remote areas. At CES, Skylo unveiled partnerships and innovations, showcasing a standards-based ecosystem that supports seamless global connectivity for various industries. Skylo's technology allows devices to seamlessly switch to satellite signals when cellular coverage is unavailable, enhancing user experience.



**Connecting, observing, exploring,
the power of satellites**

CubeTech



Showcase innovative CubeSat missions and unique payloads

BlackCAT CubeSat to Detect X-rays from GRBs

The BlackCAT CubeSat, launching early this year, aims to detect X-rays from gamma-ray bursts (GRBs) and black-hole mergers. Designed by Penn State researchers, BlackCAT uses advanced CMOS X-ray cameras and a coded mask imager to capture soft X-rays with high sensitivity and a wide field of view. Funded by NASA, the mission will enhance multimodal astronomy, linking gravitational wave signals with electromagnetic radiation, offering a cost-effective solution to explore high-energy events in space.



phy.org

Pentagon Advances Small Satellite Technology

The Pentagon's Space Development Agency (SDA) and National Reconnaissance Office (NRO) made key progress in satellite technology. SDA's Proliferated Warfighter Space Architecture achieved successful laser communication, enhancing global missile tracking. The NRO launched its seventh batch of satellites, boosting intelligence and reconnaissance capabilities. Both efforts focus on deploying smaller, numerous satellites to improve security, coverage, and resilience against adversary attacks.



airandspace.com

CubeSat Market to Reach USD 1.18 Billion by 2030

The CubeSat market, valued at USD 450 million in 2023, is set to grow at a CAGR of 14.8%, reaching USD 1,182.51 million by 2030. This growth is driven by the demand for cost-effective satellite solutions in Earth observation, communication, and scientific research. CubeSats offer affordable, rapid development, and flexible applications, with major players like AAC Clyde Space, Planet Labs, and Rocket Lab leading the market. Applications include environmental monitoring, space exploration, and defense.



openpr.com

NASA Launches CubeSat Training Program for Students

NASA, in partnership with the U.S. Air Force and U.S. Space Force, invites applications for the University Nanosatellite Program Mission Concept 2025 Summer Series. Running from May to August 2025, the program offers systems engineering training to help students, faculty, and institutions build small satellites. Participants can also qualify for space flight opportunities through NASA's CubeSat Launch Initiative. The program encourages applications from all U.S. colleges, especially minority-serving institutions, and covers travel expenses for key events.



FOSSA Systems Launches Next-Gen Nanosatellites

FOSSA Systems has launched three new FOSSASats aboard SpaceX's Falcon 9 as part of the Transporter 12 mission. These upgraded nanosatellites, designed for global IoT connectivity, will provide enhanced durability and longer lifespans, operating for 5-7 years. FOSSA aims to deploy 80 satellites in low Earth orbit to offer worldwide coverage for industries like agriculture, energy, and logistics. The company also opened its first international subsidiary in Portugal to expand its global presence.

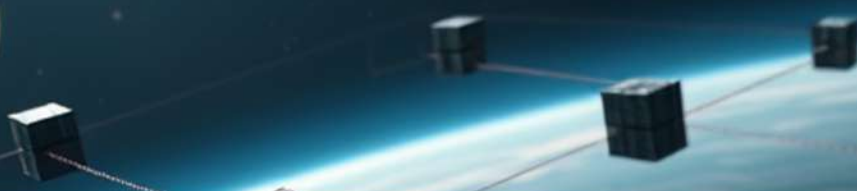
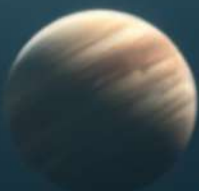


ESA's InCubed Satellites Highlight Innovation in Space

Three InCubed satellites launched from Vandenberg Space Force Base on 14 January, emphasizing ESA's role in supporting technological innovation. The satellites, launched aboard SpaceX's Falcon 9, include AIX for AI and blockchain testing in space, Forest-3 for wildfire detection, and Hive for land temperature data collection. These missions exemplify ESA's collaboration with industry, advancing Earth observation services for critical applications like wildfire detection, farming, and asset monitoring.



Exploring the solar system on a small scale



The 75SSM

SSM: Students' Satellites Mission

Update readers on our ITCA internal space-based innovations

Advanced 6A H-Bridge for DC Motor Control

The IFX9201SG, a powerful 6A H-Bridge ideal for DC motor control and inductive load applications. It supports both 3.3 V and 5 V logic inputs and includes key protection features like short circuit, overtemperature, and undervoltage shutdown.

With a maximum PWM frequency of 20 kHz and low power consumption in sleep mode, the IFX9201SG offers precise motor control and energy efficiency. Its SPI diagnostics provide valuable system insights, while the PG-DSO-12-17 package ensures efficient heat dissipation and reliable performance.

The IFX9201SG also includes a chopper current limitation mode to prevent damage from high load currents, ensuring the longevity of the system. Its open load detection capability enhances reliability during both disabled and PWM operation, making it a robust solution for demanding applications.

Introducing the IFX9201SG H-Bridge Motor Driver

Discover the capabilities of the IFX9201SG

The IFX9201SG is a powerful 6A H-Bridge meticulously crafted for the precise control of DC motors and various inductive loads.

Ensure safety with current limitation

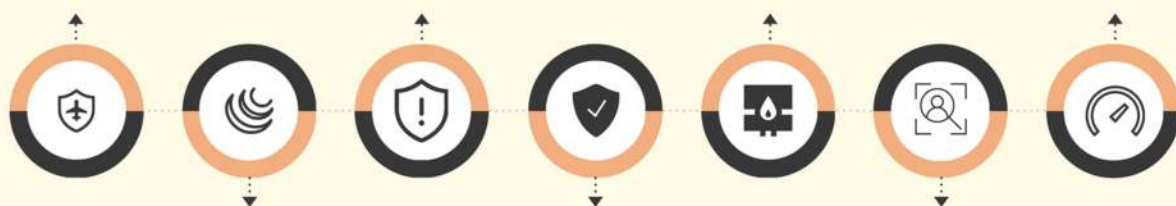
Prevents overcurrent damage by activating protective measures when currents exceed 8A, ensuring device longevity.

Optimize thermal performance

Features PG-DSO-12-17 package with copper heat slug for efficient heat dissipation and easy soldering inspections.

Assess performance and optimize

Regular performance evaluations align with project goals, refining motor control strategies for improved results.



Simplify control with PWM/DIR

Control motor direction and speed with fewer microcontroller pins, optimizing design and efficiency.

Advanced protection mechanisms

Includes short-circuit prevention, overtemperature safeguards, and open load detection for reliable operation.

Utilize diagnostics for precise control

Utilizes SPI feedback and error flags for real-time troubleshooting and performance monitoring.

A constellation of student innovation



Space@India



Glimpses into India's space chronicle, every week

3 Indian Startups Set to Launch Satellites on SpaceX Transporter-12, Advancing Space Innovation

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



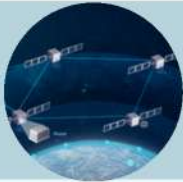
India's Space Development Roadmap Set Until 2047: ISRO Chief V Narayanan

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



ReOrbit and Ananth Technologies Sign MoU for Geo Communications Satellites.

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



ISRO's 2025 Missions: Gaganyaan Test, GSLV Launches, and NASA Collaboration.

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



Industries Play Crucial Role in Realizing India's Space Vision: ISRO Chief Somanath.

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



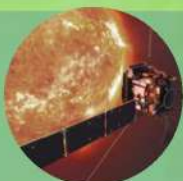
ISRO will launch a communication satellite for US firm AST SpaceMobile in March to boost global connectivity.

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



ISRO Releases First Set of Scientific Data from Aditya-L1 Solar Observatory

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



'SpaDeX: ISRO Aligns Satellites Within Three Meters in Successful Trial, Advancing Satellite Maneuvering Capabilities.

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



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.

Upcoming.....

15th IAA Symposium on Small Satellites

4-8 May 2025
 Berlin, Germany
iaaspace.org

Global Space Exploration Conference 2025

7-9 May 2025
 New Delhi
glex2025.org

Inter-Planetary Small Satellite Conference

29 April - 1 May 2025
 California Institute of Technology
spacetechnologyconference.com

Launches

SpaceX | Falcon 9 Block 5 | Starlink Group 11-6

24 Jan, 2025 19:35 IST
 SLC-4E, Vandenberg SFB,
 California, USA

CASC | Long March 8A | Demo Flight

25 Jan, 2025 15:30 IST
 LC-201, Wenchang Space
 Launch Site, China

SpaceX | Falcon 9 Block 5 | Starlink Group 12-7

28 Jan, 2025 00:51 IST
 SLC-40, Cape Canaveral SFS,
 Florida, USA



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