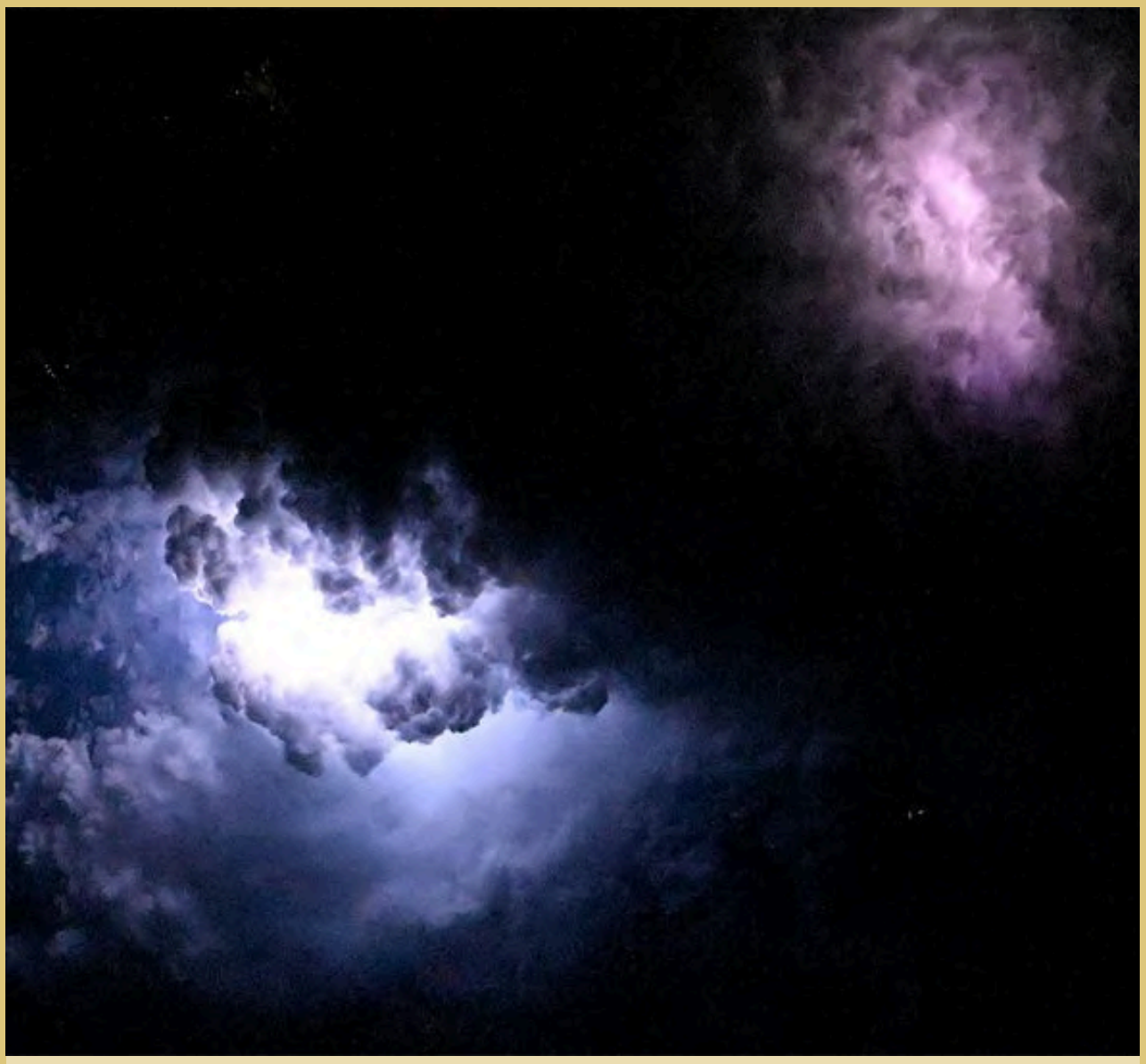
ISSUE 47 | 28 MAY 2025

Space Beacon



A stunning view of lightning, captured aboard the International Space Station, showing bright flashes illuminating Earth's atmosphere against the backdrop of space.

Stay up-to-date with the latest in spacetech

INDIAN TECHNOLOGY CONGRESS ASSOCIATION

Orbital

Lead with the most significant celestial events and discoveries

Did you Know
Pluto's heart-shaped glacier, known as Tombaugh Regio, is a vast expanse of nitrogen ice!

Doubt arises over claims of life signs on exoplanet

Recent claims of detecting signs of life on a faraway planet have come under scrutiny. Scientists are now questioning the evidence suggesting biosignatures in the exoplanet's atmosphere. New analyses reveal that the signals could be caused by other, non-biological processes, casting doubt on the initial exciting hypothesis. This cautious approach highlights the challenges in confirming extraterrestrial life and the importance of rigorous verification. The debate continues as researchers work to understand the planet's environment better.


timesofindia.com

Dragonfly mission explores Titan's alien secrets

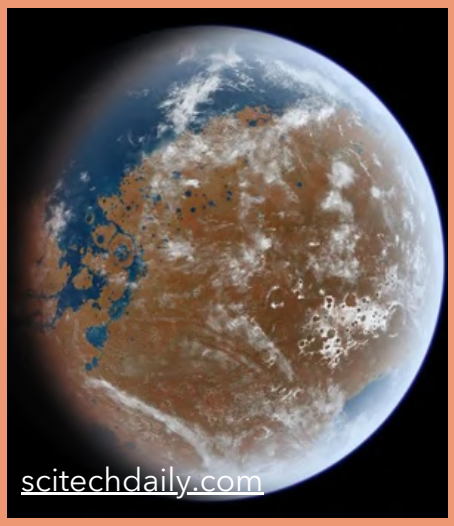
The mission is poised to revolutionize our understanding of Titan, Saturn's largest moon. Scheduled for a 2027 launch, this innovative rotorcraft will fly across Titan's icy terrain, investigating its organic-rich landscape and atmospheric chemistry. Designed to search for prebiotic processes and potential signs of life, it marks a bold departure from previous planetary missions. The drone-like explorer will sample diverse regions to decode the moon's mysterious environment and chemical evolution. It could bring us closer to understanding the conditions for life beyond Earth.


phy.org

Galactic showdown, one galaxy blasts another apart

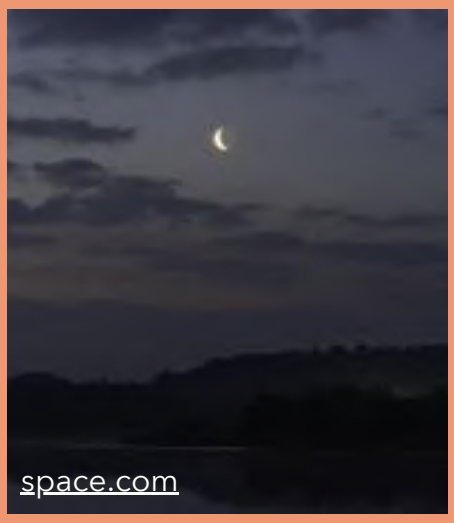
In an extraordinary observation, astronomers have captured a "cosmic duel" between two galaxies located 11 billion light-years from Earth. Using data from the James Webb Space Telescope, scientists observed one galaxy blasting a high-speed stream of gas into another – possibly triggering star formation or disrupting it entirely. This galactic clash is the first of its kind ever recorded, offering a glimpse into the turbulent youth of our universe. The findings open new windows into how galaxies evolve and interact.


economictimes.com


scitechdaily.com

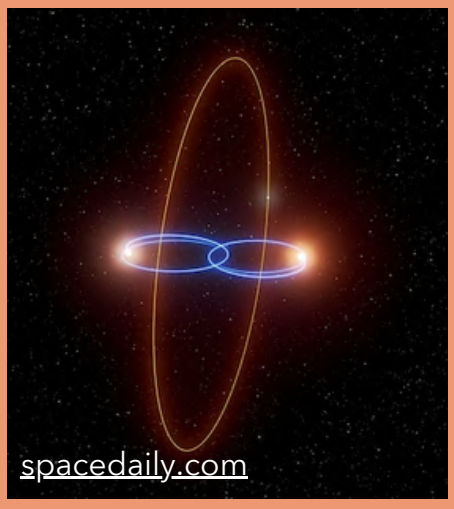
Mars' oceans vanished, hiding deep beneath surface

Mars may not be as dry as it seems. A new study suggests that much of the Red Planet's ancient ocean water didn't escape into space—but instead, was gradually absorbed into its crust. For nearly two centuries, scientists have puzzled over the fate of Mars' ancient oceans. Now, using data from meteorites and rovers, researchers propose that chemical reactions trapped water in minerals below the surface. This hidden reservoir changes our understanding of Mars' climate history and its potential for life.


space.com

Venus, Saturn, and Moon light up over Chew Valley lake

In a stunning early morning view captured from Chew Valley Lake in Somerset, UK, Venus, Saturn, and the crescent Moon aligned beautifully just before sunrise. The magical moment was photographed by astrophotographer Jamie Cooper, who described the tranquil scene as romantic and surreal. With the planets appearing close to the Moon, offering a rare treat for stargazers and skywatchers alike. These kinds of planetary conjunctions are fleeting and always inspire awe. For space lovers and early risers, this was a moment of celestial poetry.


spacedaily.com

Rare planet orbits brown dwarf pair sideways

Astronomers have discovered a rare planet likely orbiting a pair of brown dwarfs at an extreme right angle—unlike most planetary orbits aligned with their stars' equators. The planet's tilted orbit around the binary system suggests complex gravitational interactions, possibly from a past stellar encounter or dynamic birth conditions. Such misaligned systems are valuable for studying how planets form and evolve in diverse environments. This find opens new windows offering clues about orbital architectures in the universe's more chaotic corners.

Saturn's rings shimmer, as new moons are discovered

Genspace

Cover broader space news not fitting into other categories

Did you Know
Exoplanets and the Search for Life, thousands of planets outside our solar system have been discovered, sparking the quest to find potentially habitable worlds!

CloudCatcher 2025 students chase clouds from space

CloudCatcher 2025 invites UK students aged 11–18 to join an exciting satellite mission focused on observing clouds from space. Run by RAL Space, this initiative helps students design experiments and contribute data for Earth observation research. Through hands-on activities and real satellite engagement, students will explore how clouds affect weather and climate. The mission fosters STEM learning, creative thinking, and collaboration with experts. Whether you're a school, teacher, or student, this is your chance to be part and contribute to climate science.

Challenges in regulating satellite radio frequencies

The radio frequency spectrum is vital for satellite communications but managing it presents complex challenges. This seminar explores how regulators balance competing demands for spectrum access, address interference issues, and promote efficient usage in an increasingly crowded space environment. Experts discuss international coordination efforts, evolving policies, and technological innovations that enable better spectrum management.

LEO sat innovations accelerating space internet growth

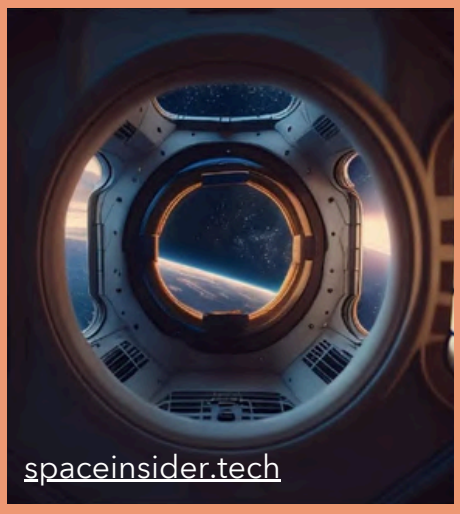
Innovations in low Earth orbit (LEO) satellites are revolutionizing the global space-based internet landscape. These advanced satellites offer lower latency, higher bandwidth, and improved connectivity compared to traditional systems. Companies and governments are investing heavily in LEO constellations to provide affordable internet access to underserved and remote regions. This growing technology is expected to bridge digital divides and enable new applications like IoT and smart cities.

Scientists unveil satellite swarm to monitor Earth quickly

A new breakthrough in satellite technology allows a coordinated swarm of small satellites to observe the entire planet in just 35 minutes. This innovative system offers unprecedented real-time monitoring capabilities, enabling faster data collection for weather forecasting, disaster management, and environmental tracking. By working in unison, the satellites provide comprehensive global coverage more efficiently than traditional single-satellite systems. This advancement could revolutionize how we monitor Earth's changes and respond to emergencies.

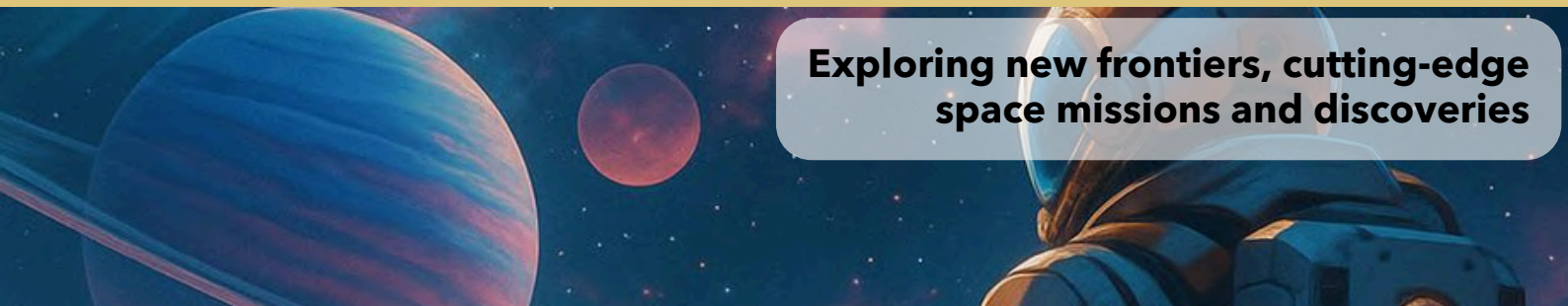
Golden dome plan to transform space weapons

The U S President's controversial 'golden dome' initiative aims to develop advanced space-based weapons systems designed to protect US interests beyond Earth's atmosphere. The plan envisions a robust orbital defense network, possibly changing the nature of modern warfare by extending military reach into space. Experts highlight this could spark an intense space arms race, raising geopolitical tensions. Still, proponents argue it will ensure American dominance in future conflicts.



Trump's Commercial space stations

A new study from the National Space Foundation highlights how commercial space stations could significantly reduce NASA's operational costs—saving billions over the next decade—while simultaneously unlocking new markets worth billions more. As the International Space Station nears retirement, private stations could offer a more cost-effective and revenue-generating alternative for government and industry alike. The findings show that a commercial ecosystem in LEO could support research, tourism, and manufacturing, while accelerating innovation.



Satellogy

Focus on recent and upcoming satellites and launches

Did you Know
Landsat 1 (1972 - USA), the first Earth observation satellite, providing valuable imagery of Earth's surface for agriculture, forestry, and land-use planning!

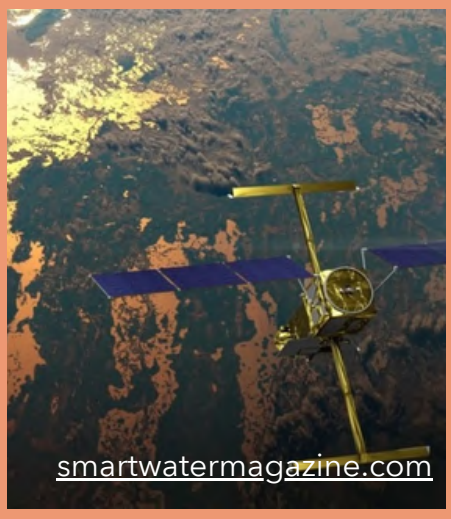
SES partners with Impulse space's helios kick stage

SES has made history as the first commercial customer to adopt Impulse Space's Helios kick stage for orbit insertion. This milestone collaboration will debut on a SpaceX Falcon9 rideshare mission in 2026. The Helios stage enhances mission flexibility by offering last-mile orbital delivery – crucial for satellite operators seeking specific orbital placements. Impulse Space, founded by SpaceX veteran Tom Mueller, brings deep propulsion expertise to the venture. This partnership signifies more efficient and customized satellite deployment.

satellitetoday.com

Satellite spots giant river waves after extreme rainfall

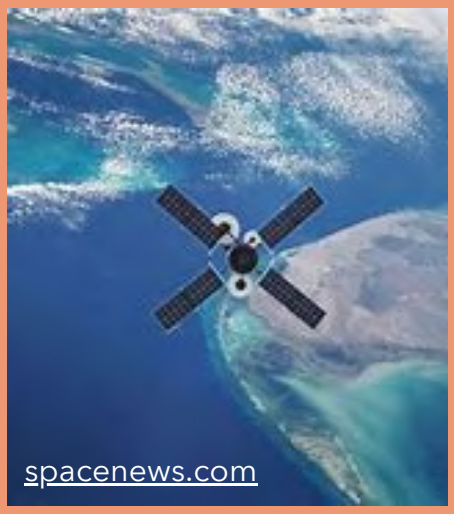
In a groundbreaking discovery, NASA and CNES's Surface Water and Ocean Topography (SWOT) satellite has detected large-scale river waves for the first time. Triggered by extreme rainfall and melting ice jams, these waves traveled hundreds of miles along Alaska's Kuskokwim River. This unique observation offers new insights into how inland waterways respond to climate-driven events. Researchers from NASA and Virginia Tech believe this could significantly enhance our understanding of flood dynamics and improve early-warning systems for riverine flooding.


smartwatermagazine.com

China's IoT satellite network reaches global milestone

Chinese commercial space firm Galactic Energy achieved a major milestone by successfully launching its CERES-1 Y-5 rocket from a sea-based platform in Shandong Province. This mission deployed four satellites, completing the first phase of the Tianqi constellation–China's inaugural low-Earth orbit network dedicated to Internet of Things (IoT) communications. Comprising 37 satellites, the constellation offers integrated data services across sectors like agriculture, emergency response, and smart city management.


globaltimes.cn


spacenews.com

Satellites are reshaping maritime security and defense

Satellites are transforming the way maritime security is handled, offering real-time monitoring of vast ocean areas once considered blind spots. From tracking illegal fishing and piracy to enhancing military situational awareness, space-based systems are now a vital tool in global naval operations. Nations and defense organizations are increasingly integrating commercial satellite capabilities to improve maritime domain awareness. With growing global threats at sea, these technologies are no longer optional—they're essential.


ipaper.com

Starship breaks apart mid-flight during test mission

In its latest test flight, SpaceX's Starship rocket lost control and disintegrated mid-air, marking another hurdle in the company's ambitions for deep-space travel. The uncrewed mission, which launched from Texas, initially showed promise but soon experienced spinning issues that led to the vehicle breaking apart. Despite this failure, SpaceX remains optimistic, calling it a valuable learning experience. These large-scale tests are crucial as Starship is key to Artemis program and future Mars missions.

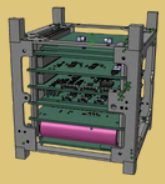

weatherfox.com

India's Sat unlock real-time civilian surveillance powers

India's space technology has taken a major leap forward, enabling real-time monitoring for civilian oversight. Equipped with high-resolution sensors, these advanced satellites can instantly capture and transmit data instantly, allowing authorities to assess disaster zones, track infrastructure, and enhance public safety in real time. This technological shift brings a new level of transparency and response capability to civil governance. From flood mapping to traffic management, the applications are vast and immediate.

Protecting our planet, satellites monitoring environmental changes and natural disasters

CubeTech



Showcase innovative CubeSat missions and unique payloads

Did you Know
Longest CubeSat Journey - LightSail 2, this CubeSat utilized solar sailing to demonstrate propulsion, traveling hundreds of kilometers while showcasing innovative technology!

CubeSat propulsion tech transforms Earth observation

Researchers have unveiled a compact propulsion system tailored for CubeSats that could dramatically enhance their maneuverability and mission longevity. Unlike traditional systems, this innovation uses a solid iodine propellant that sublimates into gas, providing precise thrust in a compact form. The technology offers scalable performance without adding much mass—crucial for Earth observation missions where agility and endurance are key. Its successful deployment on orbit demonstrates a leap forward for small satellite autonomy.

Rice students create safer, cheaper sat thruster system

A team of Rice University students has developed a groundbreaking satellite thruster designed to be safer and more affordable than conventional systems. Using a solid iodine propellant, the thruster eliminates the use of hazardous pressurized gases and flammable fuels, making it ideal for small satellites like CubeSats. The innovation is part of the Rice ORBIT program, aimed at preparing students for aerospace careers while advancing space tech. The prototype is currently undergoing vacuum chamber testing, with plans to eventually launch aboard a student-built sat.

SITAEL launches versatile Empyreum satellite platform

Italy-based aerospace company SITAEL has launched its new Empyreum satellite platform designed for flexible and scalable space missions. Empyreum is a modular, customizable satellite bus that supports a wide range of payloads for Earth observation, telecommunications, and scientific research. This innovative platform enhances mission adaptability and cost-efficiency, enabling rapid development and deployment of satellites tailored to specific needs.

eurocircuits.com

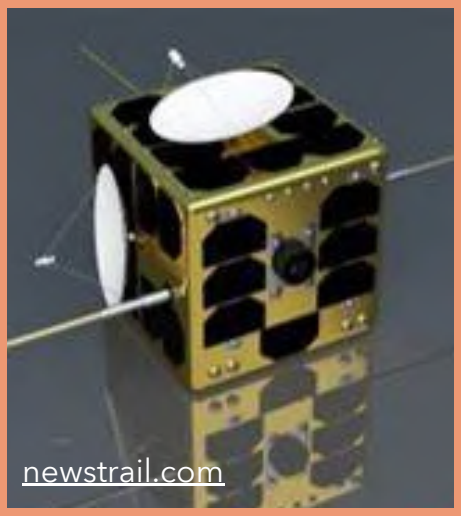
Da Vinci satellite readies for launch with EGSE support

The Da Vinci satellite, a student-built nanosatellite, is gearing up for launch with crucial support from Eurocircuits' Electrical Ground Support Equipment (EGSE). This cutting-edge technology allows students to test, validate, and monitor the satellite's electronics before deployment, ensuring mission success. The project showcases how hands-on experience and advanced tools empower future aerospace engineers to innovate and prepare for real space missions. Eurocircuits' highlights the importance of reliable circuit boards and testing in satellite development.

spacewatch.global

York secures USSF contract for smallsat missions

York Space Systems has been awarded a major contract by the United States Space Force (USSF) to deliver small satellites for a variety of national security missions. The contract includes both hardware and services, highlighting York's role in advancing responsive space capabilities for defense needs. This win solidifies York's growing reputation as a key player in the smallsat industry, capable of supporting urgent national objectives. The agreement includes satellite platforms, launch integration, and ground operations, showcasing York's end-to-end capabilities.


newstrail.com

Small sat spark new opportunities across industries

The small satellite market is entering a high-growth phase, driven by increased demand for data, connectivity, and Earth observation. According to the latest investment outlook (2025–2032), the market is expanding rapidly across the value chain—from launch services to ground infrastructure. Growth is powered by defense modernization, commercial IoT applications, and academic satellite projects. Startups and investors are capitalizing on miniaturization, affordability, and versatile mission profiles.

The 75SSM

SSM: Students' Satellites Mission

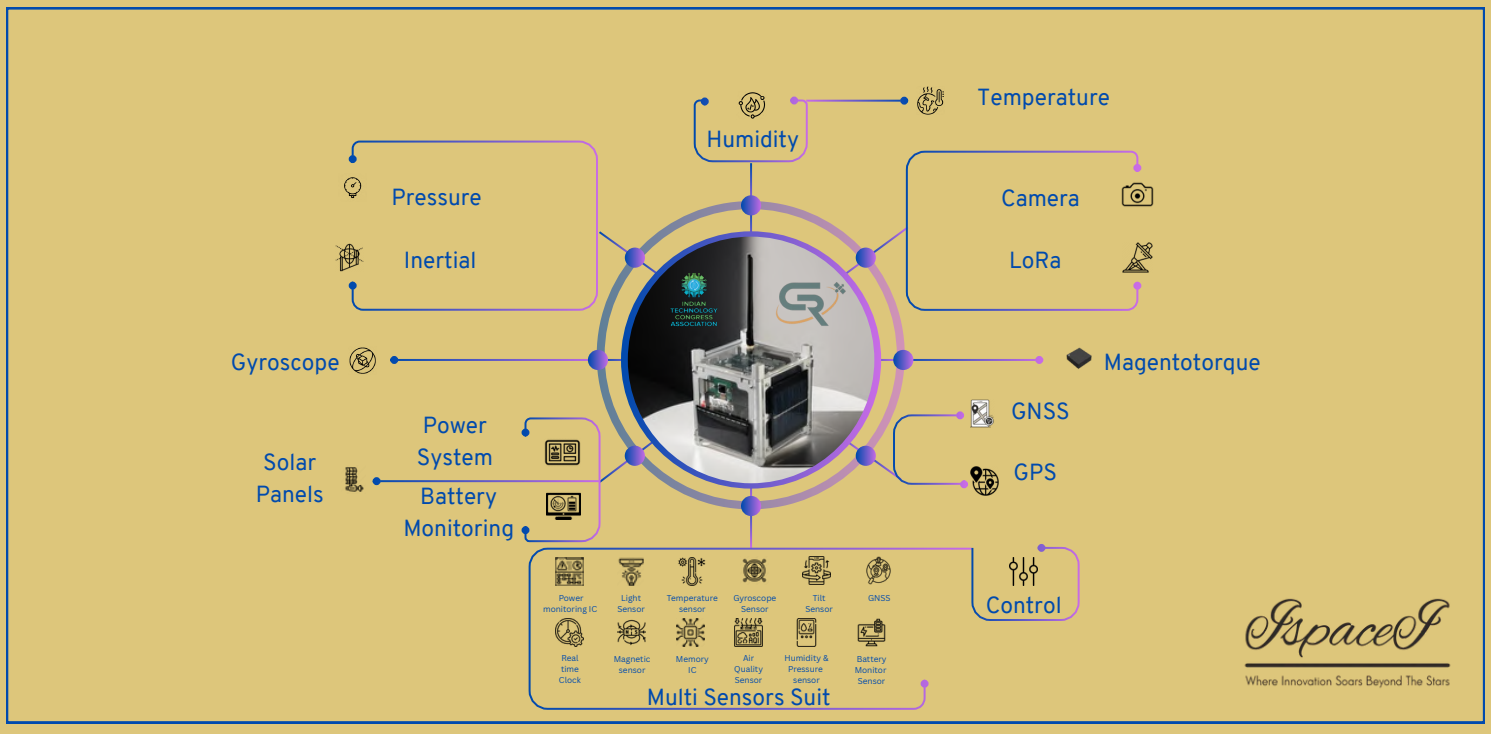
Update on our ITCA internal space-based innovations

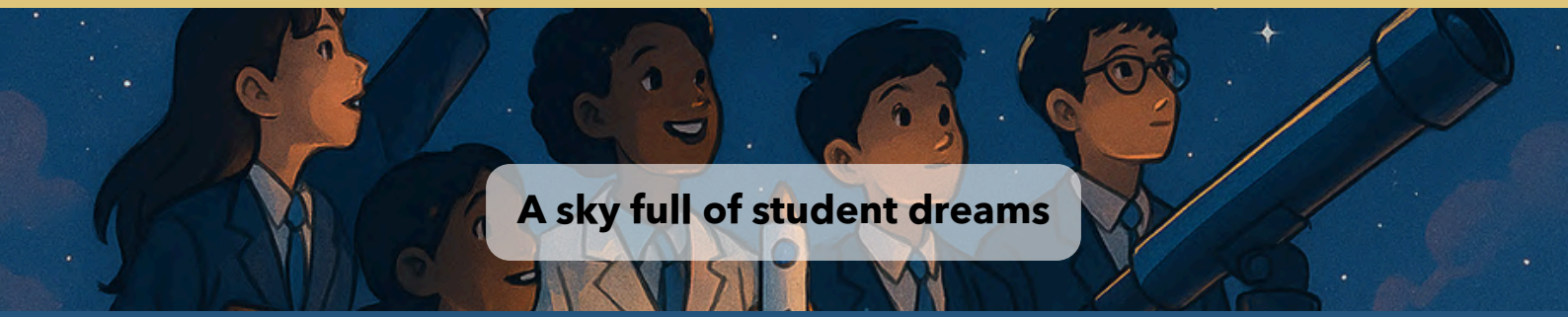
Did you Know

The 75 Students Satellites Mission (75SSM) is turning a sky full of student dreams into reality by empowering future space innovators with hands-on satellite projects!

CRSat: A Hands-On CubeSat Platform for Real-World Space Learning

CRSat gives students hands-on experience with satellite tech, mirroring CubeSats. It integrates solar power, sensors, and real-time data collection, bridging theory and practice to build skills in power management, data analysis, and communication for real-world space challenges. Its core features include a quad-processor On-Board Computer (Arduino, STM32, Raspberry Pi) for tasks like telemetry, control, and image processing, supported by redundancy and safety systems. The Electrical Power System (EPS) ensures stable power through MPPT, MT3608, MIC29302, and real-time monitoring via INA226. The Payload Board handles data acquisition with sensors for GNSS, environment, and motion, while optimizing power use. A dual-cell lithium-ion Battery Board (6400mAh) offers reliable energy storage with built-in protection and monitoring. CRSat's architecture supports flexible learning, allowing each processor to function independently, making it an ideal platform to bridge classroom theory and real-world space engineering.





Space@India

Glimpses into India's space chronicle, every week

Did you Know
Chandrayaan-2 (2019), although its lander faced challenges, Chandrayaan-2 successfully orbited the Moon, further advancing lunar science and exploration

ISRO chief shares detailed vision about India's upcoming space station, ambitious Gaganyaan crewed mission, and future lunar exploration projects

Read more at: business-standard.com

Women now represent around 20 percent of ISRO's workforce, reflecting growing gender diversity in India's space program

Read more at: deccanherald.com

India officially declares 2025 as the landmark year for the Gaganyaan mission, marking a historic step towards India's first human spaceflight.

Read more at: newkerala.com

Indian astronaut Group Captain Shubhanshu Shukla and crew begin quarantine ahead of Axiom 4 mission launch to the International Space Station

Read more at: thehindu.com

The Indian government advances ₹44 billion bill to boost space capabilities and private sector involvement

Read more at: swarajyamag.com

Rapidly growing Indian space economy is transforming from traditional satellite missions to a vibrant startup ecosystem

Read more at: indianweb2.com

75 Students' Satellites Mission

ITCA's Engineering Prowess and Ingenuity

ITCA: Pioneering India's Tech Future

Innovating India's tech for 22 years, we pioneered the '75 Students' Satellites Mission' and made a global impact in space tech, precision agriculture, and Industry 4.0.

Events

India Space Congress

25- 27 June 2025
New Delhi, India
isc2025.com

UK Space Conference 2025

16 - 17 July 2025
Manchester, UK
uksc2025.com

Small Satellite Conference

10 - 13 August 2025
Utah, USA
smallsat.org

Upcoming...

Launches

Blue Origin | New Shepard | NS-32

31 May 2025 19:00 IST
Launch Site One,West Texas, Texas, USA

Rocket Lab | Electron/Curie | Full Stream Ahead

03 June 2025 05:00 IST
Rocket Lab LC-1B, Māhia Peninsula, New Zealand

ISRO | GSLV Mk II | NISAR

18 June 2025 17:00 IST
Second Launch Pad, Satish Dhawan Space Centre, India

SPACE BEACON
cosmic cadences on our radar

Compiled by

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