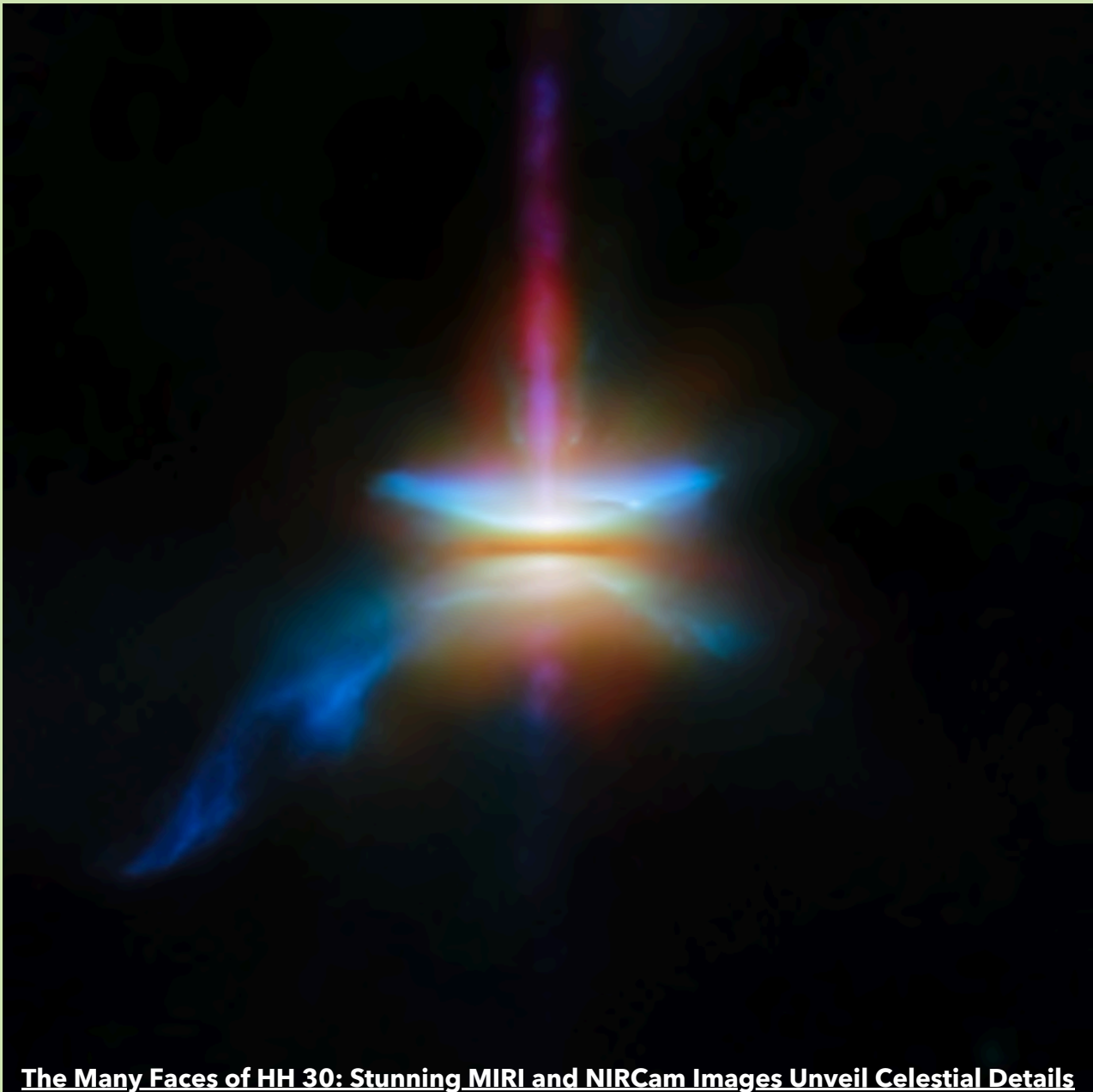


# Space Beacon

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**The Many Faces of HH 30: Stunning MIRI and NIRCam Images Unveil Celestial Details**

*Stay up-to-date with the latest in spacetech*

# Orbital



*Lead with the most significant celestial events and discoveries*

*Did you Know*  
**That supernova remnants in the Large Magellanic Cloud reveal a denser interstellar medium, offering new insights into its evolution?**

## Supernova Remnants in Neighbor Galaxy

A new study has revealed the presence of supernova remnants in the Large Magellanic Cloud. The discovery suggests that the galaxy has a denser interstellar medium than previously thought. The researchers used XMM-Newton to observe the remnants in different X-ray energies, allowing them to determine the chemical composition of the remnants and classify one of them as a Type Ia supernova. The discovery of these remnants provides new insights into the evolution of the Large Magellanic Cloud and its interaction with the Milky Way.



## Asteroid Impact Risk Increased to 2.3%

A recent study has raised the odds of an asteroid hitting Earth in 2032 to 2.3%. However, experts say that further observations of the asteroid might drop the impact probability down to zero. The asteroid, named Apophis, is about 1,100 feet in diameter and is expected to make its closest approach to Earth in 2029. Scientists are currently tracking the asteroid and are confident that they will be able to predict its path in the future. While the increased probability warrants attention, the chances of an actual impact remain low.



## PUNCH Mission to Study Sun's Corona

NASA's PUNCH mission will use four satellites to track the sun's corona and solar wind in 3D. The data collected could improve understanding of solar wind dynamics and space weather forecasting. This mission is expected to enhance space weather forecasting by enabling real-time tracking of solar storms. The PUNCH mission will complement the Parker Solar Probe, which is currently making direct observations of the Sun's corona. Ultimately, this research will contribute to protecting Earth's technology from solar disruptions.





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## Marsquakes Hint at Red Planet's Secrets

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Recent marsquake data collected by NASA's InSight lander could solve a 50-year-old mystery about Mars' interior. Scientists believe the seismic readings may reveal the size and composition of Mars' core, helping determine if it's solid or liquid. Understanding the core's nature is crucial for comprehending Mars' geological history and its potential for past or present life. Further analysis of the marsquake data promises exciting new insights into the Red Planet. These findings could also shed light on why Mars lost its magnetic field billions of years ago.



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## Quantum Tech Reveals Cosmic Bubble Dance

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Simulating the dynamic behavior of cosmic bubbles in a false vacuum has been achieved using quantum technology. This breakthrough study explores the creation, growth, and interaction of these bubbles, key to understanding the decay process. This work could help scientists better understand the dynamics of the universe and the potential for it to collapse. These simulations offer valuable insights into fundamental physics and the early universe. Further research may even shed light on the nature of dark energy.



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## Exploring Venus with Balloons and Aerobots

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NASA's VExAG is developing balloons and aerobots for Venus exploration. These technologies will operate in Venus's upper atmosphere, with missions like VERITAS, DAVINCI, and EnVision enhancing our understanding. The aerial platforms will enable in-situ investigations, offering valuable data on Venus's atmosphere, surface, and climate, and providing insights into similar exoplanets. These advancements will help scientists unravel the mysteries of Venus, paving the way for future manned missions and deeper space exploration.

**Advancements in space technology,  
pave the way for future exploration**





Cover broader space news not fitting into other categories

*Did you Know*  
That 3D-printed hydrogels are being developed as radiation shields for astronauts, offering a stable and leak-proof barrier to protect against harmful space radiation?

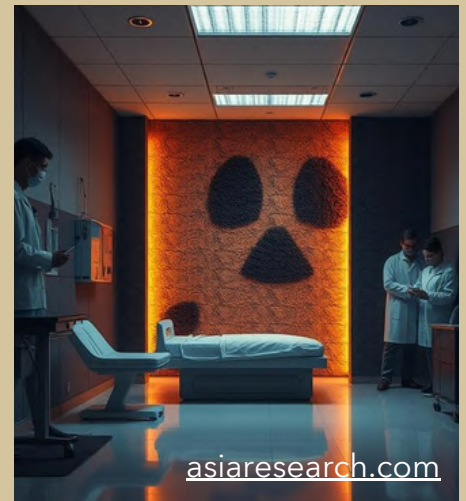
## 3D-Printed Hydrogels for Space Radiation Shielding

Researchers are developing 3D-printed hydrogel shields to protect astronauts and spacecraft from harmful radiation. Hydrogels, thanks to their high water content, offer effective radiation blocking. Unlike free-flowing water, they provide a stable, leak-proof barrier, even if punctured. 3D printing allows for customized shapes for spacesuits and spacecraft. This innovative approach offers a promising solution for safer space exploration. The technology may also be used for water storage on future missions. This research significantly improves deep space astronaut safety.



## Volcanic Ash: A Radiation Shielding Solution

Ateneo researchers have discovered that Taal volcanic ash can be used as radiation shielding. The ash's high iron content effectively blocks X-rays and gamma rays, offering a sustainable alternative to traditional materials like lead. This discovery provides a use for volcanic ash waste, abundant in the Philippines, while improving safety in hospitals and other facilities. Further research will optimize the material's durability and performance. This innovative approach could revolutionize radiation protection in various settings.



## Galileo Sites Migrate from Pole to Tropics

The European Space Agency (ESA) is upgrading its Galileo Ground Segment, a vast network of stations spread around the world. This operation is critical for the roll-out of the Public Regulated Service (PRS). The upgrades presented significant logistical and technical challenges. These activities mark the first major migration of Galileo's Ground Segment remote sites since they began providing services a decade ago. The improved network will enhance Galileo's accuracy and resilience. This migration ensures Galileo remains a cutting-edge global navigation system.





[spacenews.com](http://spacenews.com)

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## Modular Satellites Drive Vertical Integration

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As satellites become more modular, the argument for vertical integration within companies is strengthening. Building all components in-house offers advantages in managing complex interfaces and optimizing performance. This approach can streamline development, reduce costs, and accelerate innovation in the rapidly evolving space industry. Vertical integration allows companies to control their supply chain and respond quickly to changing market demands. However, it also presents challenges in terms of investment and maintaining expertise across diverse areas.



[nasa.gov](http://nasa.gov)

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## NASA Hosts First Live Twitch Stream from Space

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For the first time, NASA is hosting a live Twitch event from the International Space Station. Viewers can interact with astronauts Don Pettit and Matt Dominick, who will discuss daily life in orbit and research conducted in microgravity. The event aims to engage new audiences and promote citizen science projects and STEM programs. NASA's official Twitch channel to join this groundbreaking event and learn more about space exploration. This initiative highlights NASA's commitment to engaging audiences globally with space.



[interest.com](http://interest.com)

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## Boom Supersonic Achieves Boomless Cruise Milestone

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Boom Supersonic's XB-1 demonstrator successfully achieved "boomless cruise" during flight, breaking the sound barrier three times without creating an audible sonic boom. This breakthrough, based on Mach cutoff physics, allows supersonic travel over land without noise disruption. The technology will be integrated into Boom's Overture airliner, enabling speeds up to Mach 1.3 over land and reducing coast-to-coast flight times by 90 minutes. This innovation promises faster, quieter, and more sustainable supersonic travel.



**The future of space is now**



# Satellogy

*Focus on recent and upcoming satellites and launches*

*Did you Know*  
That researchers have developed an AI-driven system using satellite imagery to map poverty, offering a cost-effective alternative to traditional surveys for accurately predicting wealth distribution?

## SpaceX Launches Maxar's WorldView Satellites

SpaceX successfully launched Maxar's WorldView Legion satellites. The Falcon 9 rocket carried the fifth and sixth WorldView Legion satellites from Kennedy Space Center. The launch was previously delayed. These satellites will provide high-resolution Earth observation imagery. This launch expands Maxar's constellation and enhances its ability to capture detailed images of our planet. The data collected will be valuable for various applications, including mapping, disaster response, and environmental monitoring. This launch advances commercial Earth observation.



## BlackSky Wins Imagery Subscription Contract

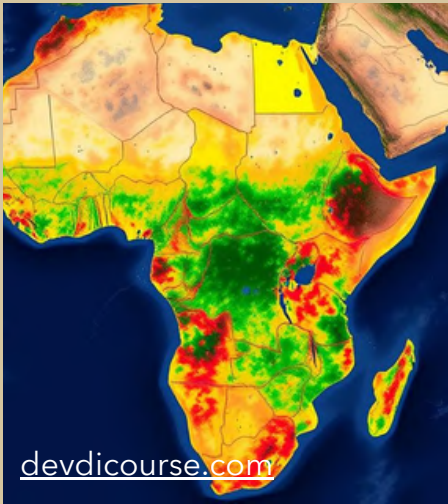
BlackSky has secured a multi-year subscription contract with EMDyn for its on-demand Gen-2 space-based imagery. EMDyn will use BlackSky's high-resolution imagery and analytics for various applications. This contract underscores the growing demand for real-time geospatial intelligence. BlackSky's constellation provides timely and actionable insights for its customers. This partnership demonstrates the value of commercial satellite imagery for diverse industries. The agreement further solidifies BlackSky's position as a leading provider of geospatial intelligence solutions.



## Satellite Industry 2030: Growth and Opportunities

The satellite market is set for significant growth by 2030, driven by high-bandwidth internet demand and data analytics. Key players like SpaceX, Lockheed Martin, and Airbus lead the market, while startups like Pixxel and Kuiper Systems emerge. The Asia-Pacific region, particularly China and India, is projected to dominate the market. Challenges include regulatory fragmentation and space debris. However, increasing government investments in space agencies present ample opportunities for market expansion and technological advancements.





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### AI and Satellites Revolutionize Poverty Mapping

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Researchers from Stanford University and the World Bank have developed an AI-driven poverty measurement system using satellite imagery and deep learning. This innovative approach offers a cost-effective, scalable alternative to traditional surveys, accurately predicting wealth distribution and economic changes at national and city levels. The model focuses on four African nations—Malawi, Mozambique, Burkina Faso, and Madagascar—using various satellite images and geospatial data. This innovation improves poverty alleviation and economic interventions.



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### Planet Labs: Transforming Earth Observation Tech

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Planet Labs is pioneering advanced satellite technology, combining high-resolution imagery and AI for real-time data. This innovation supports environmental monitoring, disaster response, and agricultural management. Their small satellite constellation provides unmatched coverage and insights, enhancing decision-making and resource management. Planet Labs' technology revolutionizes our understanding of the planet, offering critical information to governments, businesses, and researchers globally.



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### Addressing Space Safety for 100,000 Satellites

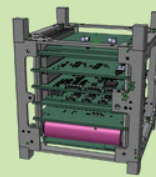
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At the Smallsat Symposium, experts discussed the challenges of managing 100,000 satellites in space. Key concerns include collision avoidance, cyber threats, and the need for better observability and monitoring. Tim Lynch highlighted the risks from both man-made and natural events, while Dr. Rajeev Gopal emphasized the importance of resilience and mitigation strategies. Dr. Dan Ceperley noted the increasing solar activity and space traffic, stressing the need for advanced monitoring systems to ensure space safety and sustainability.

**The future is in orbit**



# CubeTech



*Showcase innovative CubeSat missions and unique payloads*

*Did you Know*  
That a Taiwanese microsatellite has captured world-class high-resolution Earth images, highlighting Taiwan's growing space technology sector and its potential for advanced Earth observation?

## Satellite Swarm Brain Software Revealed

New software enables satellite swarms to collaborate and achieve shared objectives. Individual spacecraft can make independent decisions while working together. The software has shown promising results in both space and simulated environments. This technology is expected to be crucial for future space missions. This advancement opens doors for more complex and efficient space exploration. Ultimately, this could lead to more effective monitoring of Earth and deeper exploration of the solar system. This software advances autonomous space.



## New Radiation Belts Discovered After Solar Flare

A powerful solar storm in May 2024 created two new radiation belts around Earth. A small, resurrected NASA CubeSat made this surprising discovery. One belt contained both electrons and protons, a unique finding. These temporary belts, located between the Van Allen belts, lasted much longer than previous ones. The data helps scientists understand solar storm impacts on technology and spacecraft, especially those in geostationary orbit. This research highlights the importance of continued space weather monitoring.



## Taiwanese Microsatellite Demonstrates Capabilities

A Taiwanese microsatellite has demonstrated world-class optical capabilities, according to Japan's ArkEdge Space. The satellite, developed by National Cheng Kung University, captured high-resolution images of Earth. ArkEdge Space will collaborate with the university to utilize the satellite's data. This achievement highlights Taiwan's growing space technology sector and its potential for Earth observation. The collaboration with ArkEdge Space will help commercialize the satellite's imagery and expand its applications.







[space.com](http://space.com)

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## Iridium Explores Small Satellites for PNT

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Iridium Communications is considering using small satellites to enhance its Positioning, Navigation, and Timing (PNT) capabilities. CEO Matt Desch mentioned exploring experimental smallsat deployments. This could also support VHF radio development for improved pilot communications with Aireon. While Iridium's current constellation is robust, they are investigating future options, though no new constellations are planned yet. This exploration reflects Iridium's commitment to innovation and expanding its service offerings.



[biz.chosun.com](http://biz.chosun.com)

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## South Korea's Quantum Technology Investment Surge

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South Korea's Ministry of Science and ICT will invest 198 billion won in 2025 to advance quantum science and technology. This 54.1% increase from last year will fund 32 new projects, including quantum computing services and quantum ICT engineering. The initiative aims to enhance industrial competitiveness, foster international cooperation, and establish quantum research hubs. Minister Yoo Sang-Im highlighted the foundational year's focus on quantum industrialization, emphasizing technology development, international collaboration, and infrastructure.



[scimag.news](http://scimag.news)

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## CubeSat Captures Stunning Earth Imagery

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ArkEdge Space's CubeSat, ONGLAISAT, developed with Taiwan Space Agency and the University of Tokyo, has achieved world-class imaging. This 6U class satellite demonstrated advanced optical systems and TDI sensor technology. Successfully completing its two-month orbital demonstration, ONGLAISAT showcased high-precision control and temperature regulation. This breakthrough significantly advances small satellite optical systems, enhancing earth observation capabilities and providing valuable data for various applications.

**Beyond boundaries, within reach**

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SSM: Students' Satellites Mission

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## Elevating Space Innovation with Precision Sensors

The VEML6030 Ambient Light Sensor and TMP117 Temperature Sensor are essential for space and aerospace technology. The VEML6030 offers precise light detection (0.0036 to 120,000 lux) and low power consumption, ideal for spacecraft displays. The TMP117 ensures high-accuracy temperature monitoring ( $\pm 0.1^{\circ}\text{C}$ ) in extreme environments, perfect for satellites and aerospace systems. Both sensors enhance energy efficiency, display readability, and thermal stability, supporting critical applications in spacecraft instrumentation, satellites, and aerospace systems for future missions.



**The future of space is in their hands**



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NSIL Set to Launch India's First Fully Industry-Made PSLV in the Second Quarter of This Year

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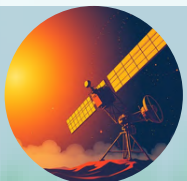


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ISRO's Visionary Roadmap: Gaganyaan, Samudrayaan, and Chandrayaan-4 Leading the Journey to 2027

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



Thales to Supply India with Cutting-Edge High-Resolution Optical Satellite for Technological Leap

[Read more at: military.com](https://www.military.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.

**Events**

**Business of Space Conference**

23-25 February 2025  
UAH, Huntsville, Alabama  
[uah.edu](http://uah.edu)

**Spatial Perspectives**

12 February 2025  
Les Salons Hoche, Paris  
[perspectives-spatiales.com](http://perspectives-spatiales.com)

**Farnborough International Space Show**

19-20 March 2025  
FIECC, Farnborough, UK  
[farnboroughspaceshow.com](http://farnboroughspaceshow.com)

**Launches**

**SpaceX | Falcon 9 Block 5 | Starlink Group 12-8**

14 Feb 2025 22:56 IST  
SLC-40, Cape Canaveral SFS, Florida, USA

**Rocket Lab | Electron/Curie | Fasten Your Space Belts**

19 Feb 2025 04:45 IST  
Rocket Lab LC-1B, Māhia Peninsula, New Zealand

**Arianespace | Ariane 62 | CSO-3**

26 Feb 2025 21:54 IST  
ELA-4, Guiana Space Centre, French Guiana, France

Upcoming.....



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