



August 2022

Update

**Oklahoma Space
Alliance**

A Chapter of The
National Space Society

A free email newsletter of the Oklahoma Space Alliance

The Smile Says It All



Credit: Blue Origin

August 2022 OSA Meeting

Saturday, August 13, 2022

2:00 PM

**Cliff & Claire McMurray's
House**

2715 Aspen Circle, Norman, OK 73072

405-863-6173

Program— Space News and
Events

Website: <http://osa.nss.org>



Quote of the Month

"I don't for a moment think that there's any concept which anyone's working with now which will be followed as a straightforward scenario. But the idea embodied in concepts such as space colonization or space industrialization, or the availability of nonterrestrial resources, is fundamental, and it will change the way in which people look at the future." – Rusty Schweickart

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Oklahoma Space Alliance Update

August 13, 2022

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The Heavenly Palace Gets a New Wing



Credit: CMSA/CCTV/Chinese Academy of Sciences

The Wentian ("quest for the heavens") laboratory module, the first additional module to Tiangong's core, launched on a Long March 5B on July 24 and docked with Tiangong about 11 hours later. The module weighs 23 metric tons; it houses a series of experiment cabinets for a wide range of science experiments, with additional solar arrays and a new airlock for spacewalks. It also has extra astronaut sleeping quarters to allow temporary accommodation of six crew members aboard the space station during crew handovers.

Article: <https://spacenews.com/china-prepares-for-july-24-launch-of-second-space-station-module/>

<https://www.space.com/china-launches-space-station-module-wentian>

https://www.dailywire.com/news/china-launches-first-of-two-remaining-modules-needed-to-complete-permanent-orbiting-space-station?utm_campaign=dw_newsletter&utm_medium=email&utm_source=housefile&utm_content=non_member

<https://spacenews.com/second-module-docks-at-chinas-space-station-large-rocket-stage-tracked-in-orbit/>

<https://www.space.com/china-launches-communications-satellite-tiangong-space-station>

Where It Will Land, Nobody Knows



Credit: CGTN

The core stage of the Long March 5B rocket that lofted the Wentian module to Tiangong made an uncontrolled reentry of the Earth's atmosphere over the Indian Ocean on July 30. The booster weighed 25-ton (22.5 metric tons) before atmospheric friction whittled it down to somewhere between 5.5 tons and 9.9 tons (5 to 9 metric tons) crashing to Earth at several hundred mph. These uncontrolled reentries are frowned upon by other spacefaring nations.

Articles: <https://www.space.com/china-long-march-rocket-uncontrolled-reentry-wentian>

<https://www.space.com/chinese-rocket-space-debris-fall-no-panic>

<https://spacenews.com/long-march-5b-rocket-stage-makes-uncontrolled-reentry-over-indian-ocean/>

<https://www.space.com/chinese-long-march-5b-rocket-space-debris-crash>

<https://www.space.com/china-rocket-debris-reentry-skywatcher-videos>

Chinese HLV to be Reusable





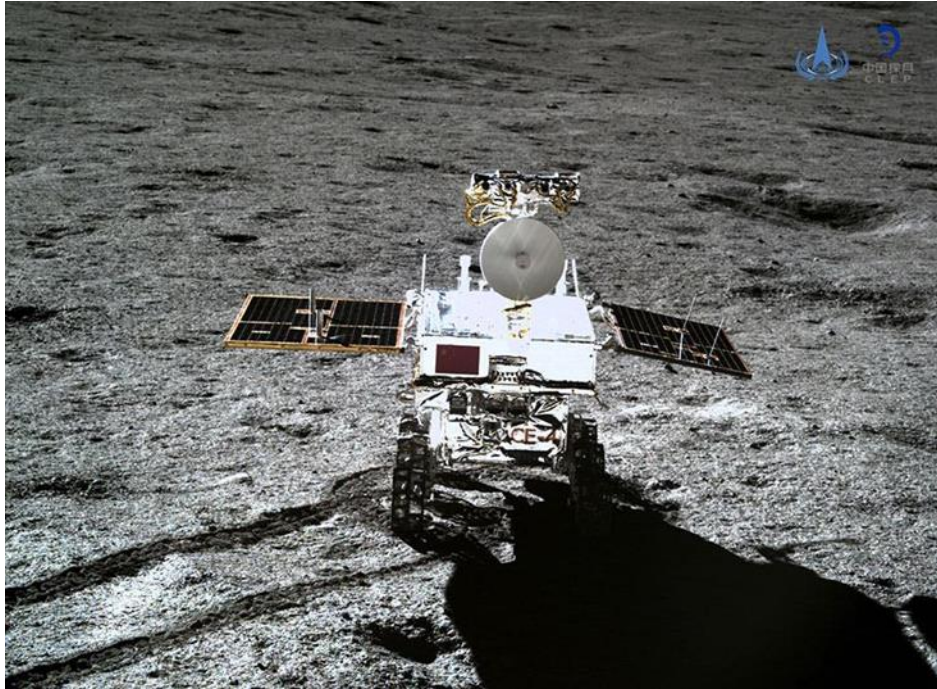
Credit: CGTN

The Chinese government signaled approval in 2021 for the continued development of a super heavy-lift launcher, designated Long March 9. That launcher was to be expendable, with three stages and four side boosters. But Long Lehao, a veteran chief designer of the Long March rocket series and frequent presenter of updates on China's space activities, said in a recent public lecture that a new launcher of the same class, this one two stages and fully reusable, would come into service by 2035. Is the Long March 9 design in flus, or is this a brand-new launcher? Developing reusable spacecraft is one of the priorities listed in China's latest five-year plan for space. China launched a secretive test of something "reusable," possibly a spaceplane similar to our X-37B, on August 4.

Article: <https://spacenews.com/china-could-shift-to-fully-reusable-super-heavy-launcher-in-wake-of-starship/>

<https://spacenews.com/china-launches-secretive-reusable-test-spacecraft/>

China Won't Claim the Moon. They Promise!



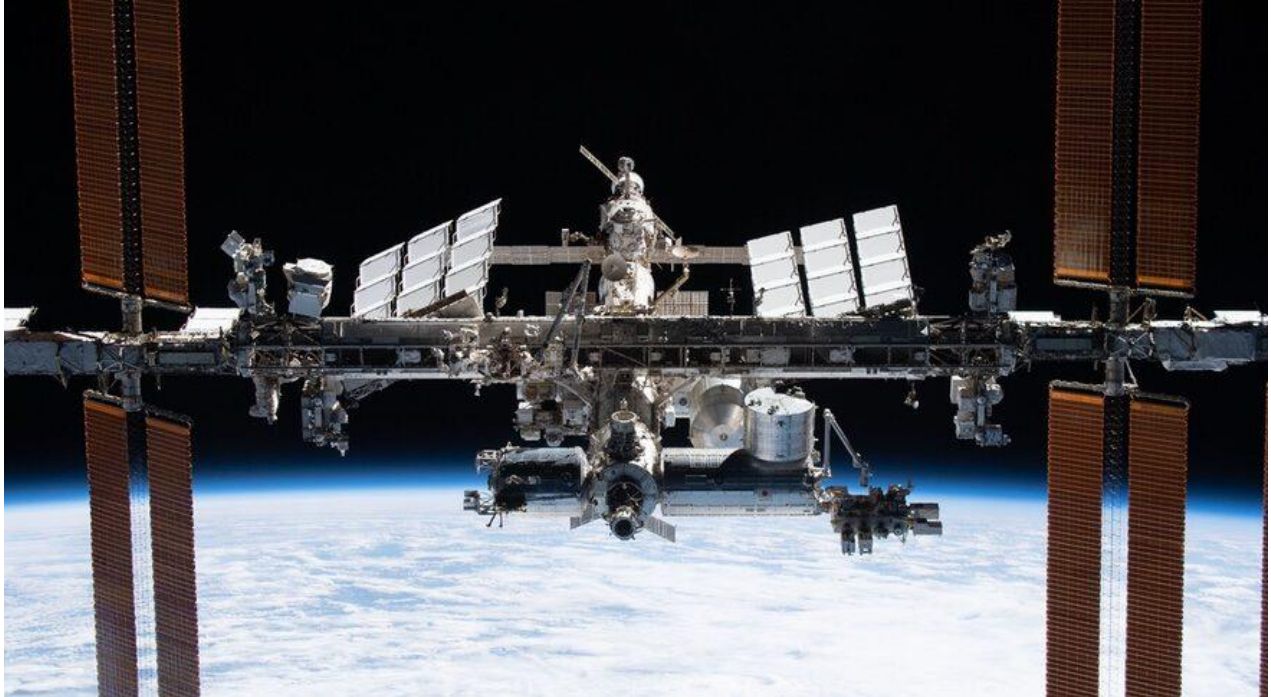
Credit: CNSA/CLEP

"We must be very concerned that China is landing on the moon and saying: It's ours now and you stay out." NASA Administrator told the German magazine Bild. China is shocked! SHOCKED! anyone could ever think such a thing.

Article: <https://www.bild.de/politik/inland/politik-inland/nasa-chef-schlaegt-alarm-chinesen-wollen-den-mond-besetzen-80490242.bild.html>

<https://www.space.com/why-china-will-not-hijack-moon>

They're Leaving! But When?



Credit: NASA

"The decision to leave the station after 2024 has been made," said the new head of Roscosmos, Yuri Borisov, on July 26. But NASA Administrator Bill Nelson said that NASA has yet to receive a formal withdrawal notice from Russia. Then in another statement on July 29 Borisov said "We stated that we intend to do so not from 2024, but after 2024," and the withdrawal process may take a couple of years. Russia has announced that it wants to put up a space station of its own, called Russian Orbital Service Station (ROSS), by 2028, but western observers are skeptical that they can do it that quickly.

Articles: <https://spacenews.com/nasa-no-notification-by-russia-to-end-iss-participation/>

<https://www.space.com/russia-space-station-departure-threat-seriousness>

<https://www.space.com/russia-leaving-international-space-station-2024>

<https://spacenews.com/roscosmos-head-revises-comments-about-quitting-iss-after-2024/>

<https://www.space.com/russian-space-station-ross-2028-timeline>

<https://spacenews.com/nasa-and-roscosmos-officials-restate-intent-to-operate-iss-after-2024/>

We Have a Deal (and a New Roscosmos Chief)



Credit: Roscosmos

NASA announced on July 15 that it has signed a deal with Russia's space agency Roscosmos to exchange seats on their respective spacecraft traveling to the International Space Station. Anna Kikina will fly on SpaceX's Crew-5 mission in September — a plan that has been in the works for a while and now confirmed. NASA astronaut Frank Rubio will travel to ISS on a Soyuz with scheduled to launch on September 21. Other astronauts and cosmonauts have been assigned to missions launching in 2023. But the agreement doesn't mean all is well with the Russian ISS partners. In retaliation for ESA's announcement on July 12 that it was formally terminating cooperation with Roscosmos on the ExoMars mission, Dmitry Rogozin, head of Roscosmos, announced the same day that he would instruct cosmonauts on ISS to no longer use a European robotic arm on Russia's Nauka module. In a brief statement issued on the very same day as the seat swap announcement, the Kremlin announced that Vladimir Putin had dismissed Rogozin as head of Roscosmos, effective immediately, and appointed Yuri Borisov, deputy prime minister of Russia, as Rogozin's successor. No explanation was given, but it's probably not a demotion for Rogozin, a Putin favorite for his vigorous public support of the war with Ukraine.

Articles: <https://www.space.com/russian-cosmonaut-spacex-crew-5-mission-space-station>
<https://spacenews.com/rogozin-removed-as-head-of-roskosmos-as-seat-barter-agreement-signed/>
<https://spacenews.com/russia-threatens-iss-european-robotic-arm-after-exomars-termination/>

South Korea Joins the Moon Club



Credit: Korean Aerospace Research Institute (KARI)

If all goes well, South Korea will become the eighth member of the lunar explorer club, joining Russia, the U.S., China, India, the E.U., Japan and Israel. The 678 kg. Korean Pathfinder Lunar Orbiter, aka Danuri (a mashup of the Korean words for “moon” and “enjoy”) launched on a Falcon 9 from Cape Canaveral on August 4. It will follow a long, circuitous path to arrive at a 100 km. lunar polar orbit in mid-December. Among its science instruments is NASA’s Shadowcam for looking for ice in deep shadows, a much more sensitive camera than that aboard LRO, which has been returning pictures for 13 years. South Korea has ambitions for a lunar lander in the 2030s, as well as Mars and asteroid missions.

Articles: <https://www.space.com/korea-moon-mission-danuri-science>
<https://www.space.com/south-korea-first-moon-mission-launch-one-week>
<https://www.space.com/spacex-launches-south-korea-moon-mission-danuri>
<https://spacenews.com/south-koreas-first-lunar-orbiter-on-way-to-the-moon/>

Don’t Look Now, Elon



Credit: Relativity Space/Impulse Space

SpaceX won't be fly the first commercial mission to Mars if Relativity Space and Impulse Space have their way. The two startup companies in announced that they will partner to launch the first commercial mission to Mars in 2024. A Mars Cruise Vehicle and Mars Lander built by Impulse Space will launch on Relativity Space's reusable, 3D-printed Terran R rocket. Big dreams for two companies neither of which has put anything into space yet.

Article: <https://www.space.com/relativity-space-private-mars-mission-launching-2024>

NASA Heads for the Farside

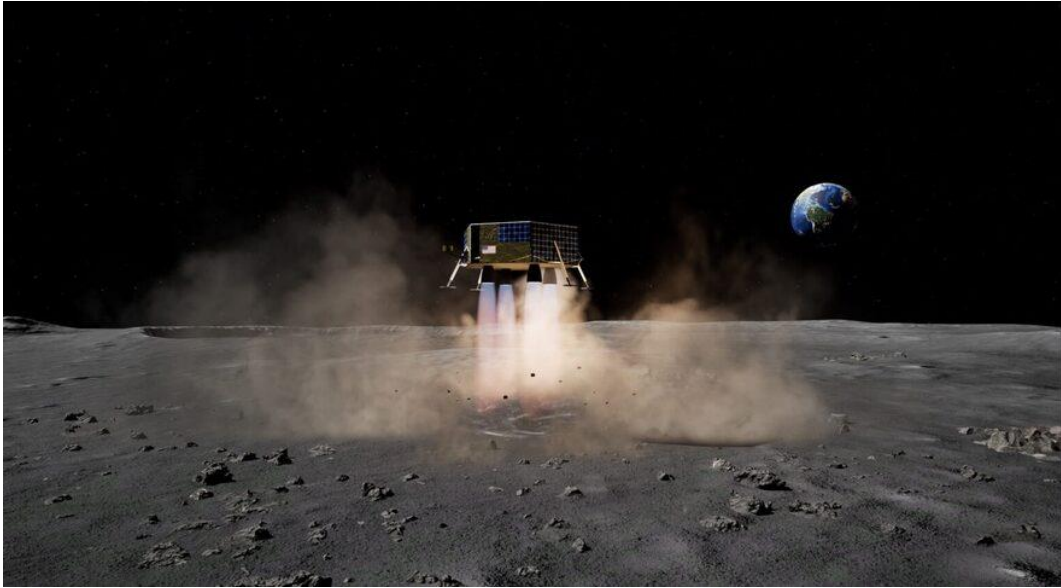


Credit: Draper

NASA announced on July that it has awarded Draper a CLPS contract for \$73M for its mission to land in Schrödinger Basin, scheduled for 2025. Schrödinger Basin is an impact basin about 190 miles across on the lunar farside, near the lunar south pole. This will be NASA's first landing on the farside.

Article: <https://spacenews.com/draper-wins-nasa-contract-for-farside-lunar-lander-mission/>

Another One Bites the Dust



Credit: Masten Space Systems

Masten Space Systems filed for Chapter 11 bankruptcy July 28. Chapter 11 of the United States Bankruptcy Code is frequently referred to as a "reorganization" bankruptcy. Usually, the debtor remains "in possession," has the powers and duties of a trustee, may continue to operate its business, and may, (with court approval) borrow new money. Masten says it intends to continue operations, but Adam Stein-Sapir, a bankruptcy expert at Pioneer Funding Group (not involved in the case) says elements of the filing led him to conclude that Masten's investors decided "to cut their losses and sell the pieces to willing buyers." "This is not going to be a reorganization," he said. Masten won a \$75.9M CLPS contract in 2020 to deliver NASA instruments to the moon on its lander; they will probably be looking for new homes on other landers.

Article: <https://spacenews.com/masten-space-systems-files-for-bankruptcy/>

Six New Spacefarers on Blue Origin's Sixth



Credit: Blue Origin

On August 4, Blue Origin launched a commercial crew flight designated NS-22. Its New Shepard suborbital vehicle was making its sixth crewed flight in a little more than a year. Among the six paying passengers were the first persons from Egypt and Portugal to go to space. Back in February, Blue Origin CEO Bob Smith said the company would “easily double” in 2022 the 14 people they flew on the three New Shepard flights in 2021. So far this year, they’re on track to do that; they’ve flown 18 people on three flights, for a total of 31 passengers (one passenger has flown twice).

Articles: <https://www.space.com/blue-origin-crew-ns-22-announced>

<https://spacenews.com/blue-origin-launches-sixth-new-shepard-crewed-suborbital-flight/>

<https://www.space.com/blue-origin-ns-22-space-tourist-flight-success>

<https://www.space.com/blue-origin-new-shepard-ns-22-reactions>

Successful and Failed Debut Launches



Credit: ESA webcast

Europe's new Vega C medium-lift rocket lifted off from Europe's Spaceport in Kourou, French Guiana on its maiden flight July 13. The four-stage launcher successfully delivered Italy's 295-kg Laser Relativity Satellite-2 (LARES-2) and six cubesats to orbit. LARES-2 was placed in an unusual inclined orbit at 5,893 km in order to test Einstein's theory of General Relativity. First commercial launch of Vega C is scheduled to take place this November. Just a few weeks later, on August 6, the debut launch of India's three-stage Small Satellite Launch Vehicle (SSLV) failed to reach orbit when the rocket's kick stage malfunctioned. SSLV was carrying a 135-kg Earth observation satellite built by ISRO (the Indian space agency) called EOS-02, and an 8-kg cubesat made by Indian students called AzaadiSAT. ISRO announced that the malfunctioning kick stage had deployed the satellites into an elliptical orbit of 76-356 km instead of the intended 356 km circular orbit of 356 km. Per ISRO, the "Satellites are no longer usable" and likely reentered over the Pacific Ocean.

Articles: <https://spacenews.com/vega-c-lifts-off-on-maiden-flight/>

<https://www.space.com/arianespace-vega-c-debut-launch-success>

<https://spacenews.com/indias-new-sslv-rocket-suffers-data-loss-in-maiden-flight-satellites-status-unaccounted-for/>

NASA Has New Rules for Commercial Crew Visits



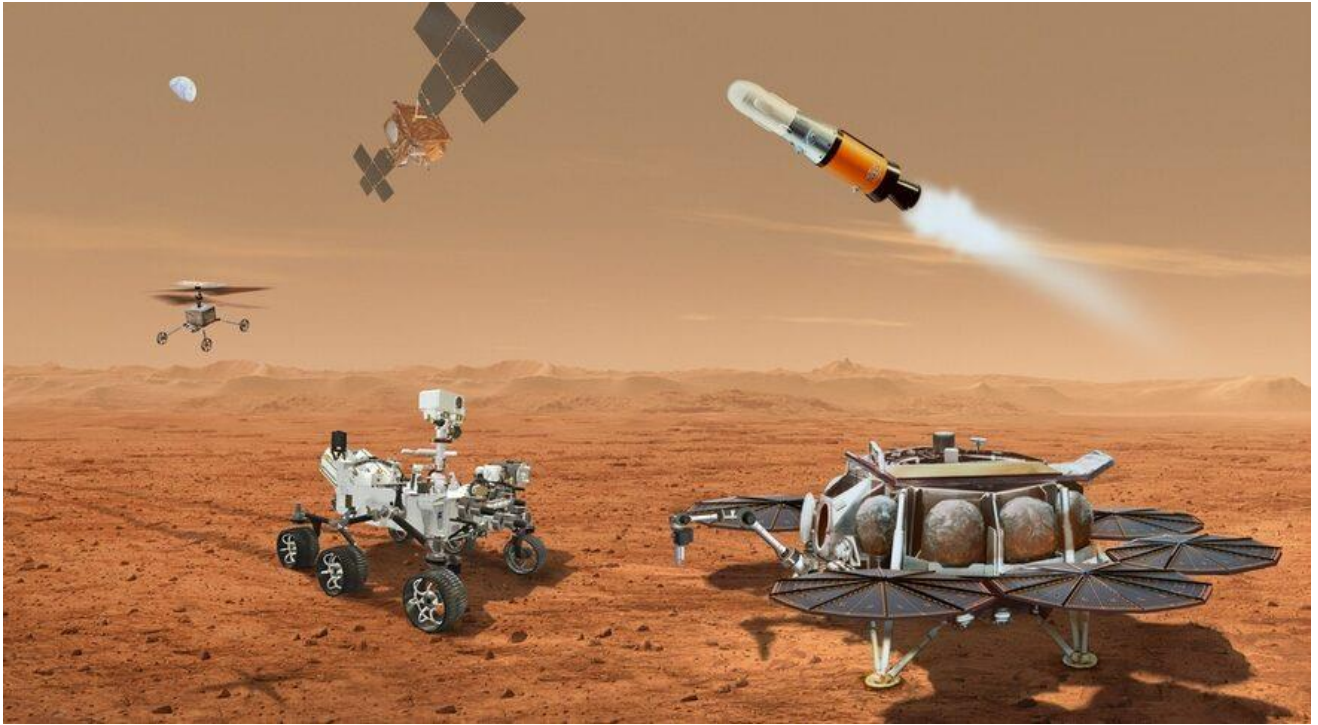
Credit: ESA

In a procurement notice published August 1, NASA announced changes in requirements for future private astronaut missions, or PAMs, to the International Space Station, based on experience earlier this year with AX-1, the first such flight. NASA will now require “a former flown NASA (U.S.) government astronaut” be aboard all such flights as commander. Axiom, which flew AX-1 and has other flights in works, had announced plans to fill all four seats on upcoming flights with paying customers; this new requirement may affect their profitability. Meanwhile, NASA is seeking funding starting in FY 2023 for an initiative called Commercially Enabled Rapid Space Science (CERISS) to fly non-astronaut scientists to ISS to conduct research there. “In some disciplines,” said Craig Kundrot, director of NASA’s biological and physical sciences division, “this could easily produce a factor of 10-fold increase in speed of research, and even 100-fold.”

Articles: <https://spacenews.com/nasa-revises-requirements-for-iss-private-astronaut-missions/>

<https://spacenews.com/nasa-division-proposing-program-to-send-scientists-to-iss/>

Rejiggering the Rube Goldberg Plan



Credit: NASA/JPL

Out: one rover. In: two Ingenuity-style helicopters. NASA/ESA's complex Mars sample return mission continues to evolve. Why bother? Send Starship and bring back a truckload of regolith.

Articles: <https://spacenews.com/nasa-and-esa-remove-rover-from-mars-sample-return-plans/>
<https://www.space.com/ingenuity-class-helicopters-mars-sample-return>

Consequences, and the Avoidance Thereof



Credit: Benchmark Space Systems

Remember those “conjunction squalls” of satellites running through ASAT test debris fields that we talked about a couple of months ago? The Starlink constellation just had one. On August 6 there were more than 6,000 close approaches, (i.e., within 10 km) involving 841 Starlink satellites, with debris from a Russian direct-ascent ASAT that destroyed Cosmos 1408 in a November 2021 test. That represents about 30% of the sats in the Starlink constellation. How many, if any, of the satellites had to maneuver to avoid collisions remains unclear. But Starlink dodged a bullet – literally. Lots of bullets. Benchmark Space Systems has a partial remedy: a 2U-size collision-avoidance kit to help smallsats maneuver to avoid debris and other spacecraft. They announced the “Cola Kit” at the Small Satellite Conference this week, and plan to start deliveries to customers early next year.

Articles: <https://spacenews.com/starlink-satellites-encounter-russian-asat-debris-squalls/>

<https://spacenews.com/benchmark-cola-kit/>

Yet Another SpaceX Record



Credit: SpaceX

In 2021, SpaceX launched 31 times. On July 22 of this year, barely over halfway through the year, it made its 32nd launch of 2022. This launch delivered 42 Starlink satellites to orbit.

Article: <https://www.space.com/spacex-second-launch-attempt-starlink-group-3-2>

How Low Can You Go?



Credit: Thales Alenia Space

The European company Thales Alenia Space announced on July 19 that it had been awarded 2.3M euros (\$2.4M USD) by ESA to advance its design of a satellite able to operate in very low Earth orbit (VLEO, i.e., an orbit 250-450 km above the Earth's surface). The demo satellite would use electrical propulsion to compensate for air drag at a planned altitude of 300 km. This is only a study contract to refine the concept, and no launch date has been set. VLEO sats hold the promise of delivering sharper resolutions for Earth observation; there's growing interest by the military for that service. There's already a VLEO demo underway: among the 59 smallsats on its Transporter-5 rideshare on May 25, SpaceX launched a shoebox-size cubesat built by Blue Canyon Technologies for MIT Lincoln Laboratory whose goal is to test operations in VLEO for several months.

Articles: <https://spacenews.com/esa-funds-skimsat-demonstrator-study-for-vleo/>

<https://spacenews.com/blue-canyon-looks-to-demonstrate-small-satellite-performance-at-very-low-altitude/>

This Week At NASA

Videos: https://www.nasa.gov/multimedia/podcasting/twan_index.html

That's All Folks



Credit: SpaceX