February 2024

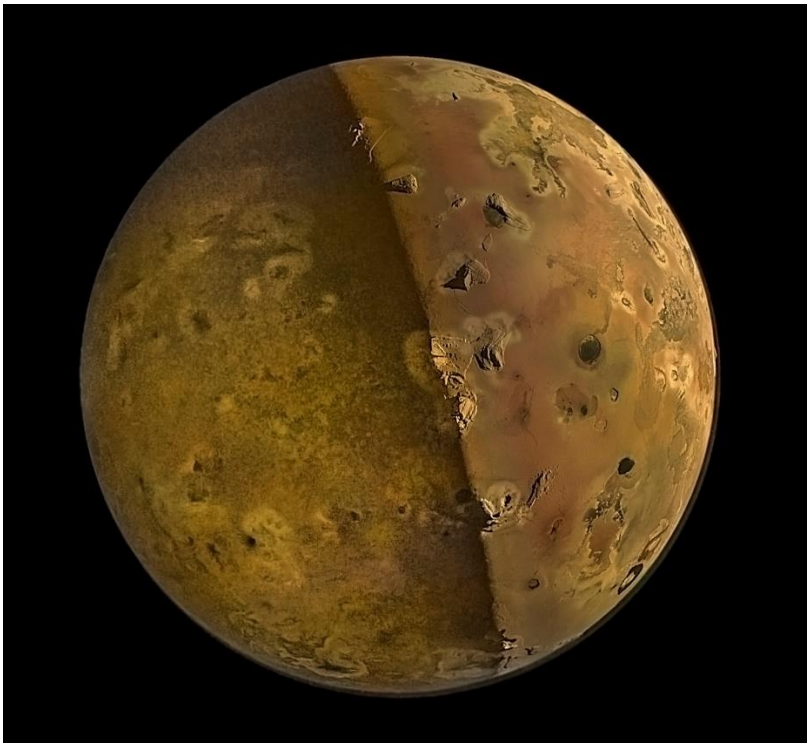
Update

A free email newsletter of the Oklahoma Space Alliance

Oklahoma Space Alliance

A Chapter of The
National Space Society

Io Up Close



Credit: NASA/JPL-Caltech/SwRI/MSSS Image processing by Emma Wälimäki

February 2024 OSA Meeting

Saturday, February 10, 2024

2:00 PM

Norman Computers

916 W Main St, Norman, OK 73069

405-863-6173

Program— Space News and Events

Website: http://osa.nss.org

Quote of the Month

For the first time in history, we have the chance to change the path of a celestial body. Let's realize what we're talking about here. We would be slightly changing the mechanics of our solar system to enhance our survival. That is gigantic! -- Rusty Schweickart

Table of Contents

Io Up Close 1
February 2024 OSA Meeting 1
Quote of the Month 1
Table of Contents 2
Parts, Parts, Parts! 3
Depends On How You Read It 4
Japan Joins the Club 5
UAE at the Gateway 6
Orbitfab Builds an Ecosystem 7
Going Steady, But Not Engaged 8
The Landers are Coming Along 9
No Moon for Us This Year 10
Suit and Countersuit 11
Stars and Stripes on Starship? 12
First Guardian to Fly 13
Just Let It Die! 14
Mars' Underground Ocean 15
Breaking Point 16
Getting the Beans Out of the Can 17
A Moore's Law for Space? 18
This Week At NASA 19
That's All Folks 20

Oklahoma Space Alliance
Update

February 10, 2024

Editor **Cliff McMurray**

Asst Editor **Claire McMurray**

cliffmcmurray@hotmail.com

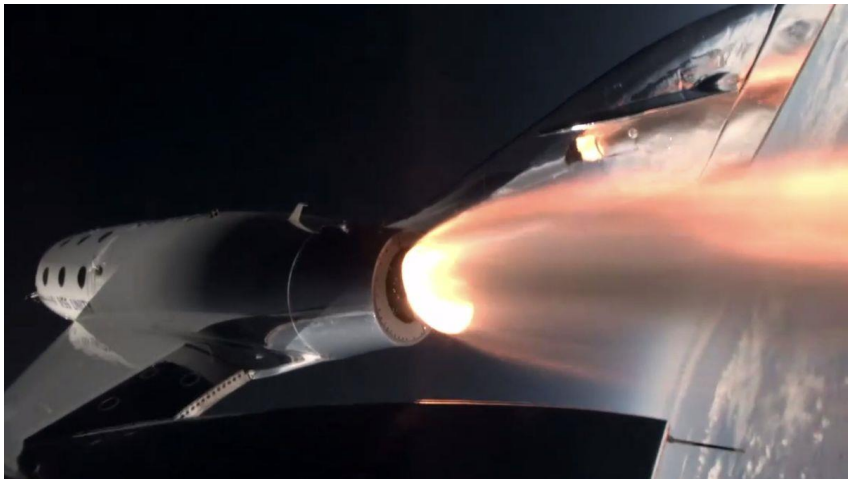
405-863-6173 (C)

The *Oklahoma Space Alliance Update* is a bi-monthly newsletter of the Oklahoma Space Alliance a chapter of the National Space Society, a non-profit organization headquartered in Washington, D.C. The address of **OSA** is **102 W. Linn, #1, Norman, OK 73071**.

Unless otherwise noted, all contents of articles herein do not necessarily reflect the opinion of anyone but the writer. Reprint rights are granted to recognized chapters of **NSS,** provided credit is given.

Articles may be submitted by U.S. mail or electronically. Articles may be sent to the Editor at 121 South Creekdale Drive, Norman, OK 73072 or to david.sheely51@gmail.com. Each submission should include the author's name and either e-mail address or phone number (for verification only). A text or Microsoft Word file is preferred. Please contact the Editor by phone, e-mail or texting before mailing your information.

Parts, Parts, Parts!



Credit: Virgin Galactic

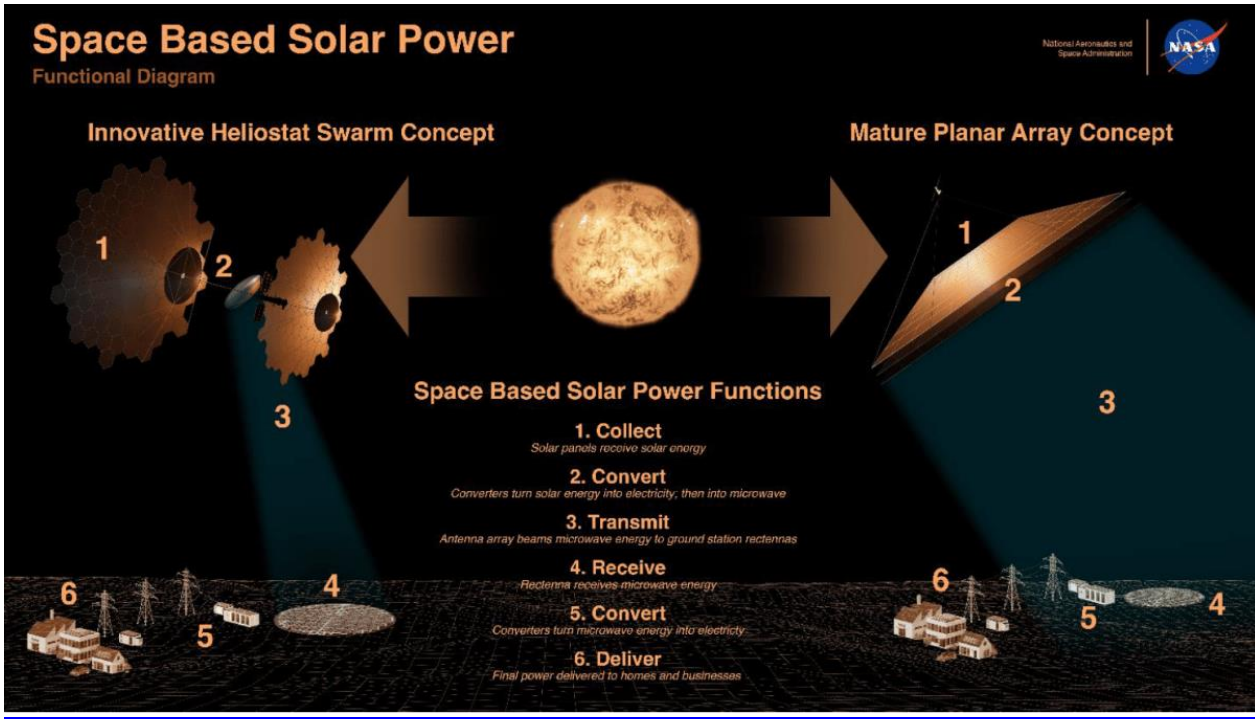
On January 26, Virgin Galactic conducted its first suborbital mission of the year, carrying four paying passengers. There may be only two more flights of VSS Unity later this year before VG retires it so it can devote full attention to building an upgraded replacement. Virgin Galactic says it's investigating why a pin fell from the carrier aircraft, stressing that this incident did not pose a safety risk to those on board.

Articles: https://www.space.com/virgin-galactic-06-suborbital-spaceflight-mission

https://spacenews.com/virgin-galactic-launches-four-private-astronauts-as-it-prepares-to-end-unity-flights/

https://spacenews.com/virgin-galactic-investigating-dropped-pin-on-most-recent-suborbital-flight/

Depends On How You Read It



Credit: NASA

Did the NASA study support Space-Based Solar Power, or didn't it?

Articles: https://spacenews.com/nasa-report-offers-pessimistic-take-on-space-based-solar-power/

https://spacenews.com/nasa-study-clean-space-based-solar-power-beaming-possible/

https://nss.org/nss-congratulates-nasa-on-the-distribution-of-the-otps-space-solar-power-report/

Japan Joins the Club

Credit: JAXA

On the morning of January 19, Japan became the fifth nation to successfully soft land a probe on the lunar surface.

Articles: https://www.space.com/japan-moon-landing-success-slim-spacecraft

https://spacenews.com/japan-makes-history-with-tense-successful-moon-landing/

https://www.space.com/japan-preparing-recovery-slim-moon-lander

https://spacenews.com/japans-moon-lander-forced-to-power-down-but-may-yet-be-revived/

https://www.space.com/japan-slim-moon-precise-landing

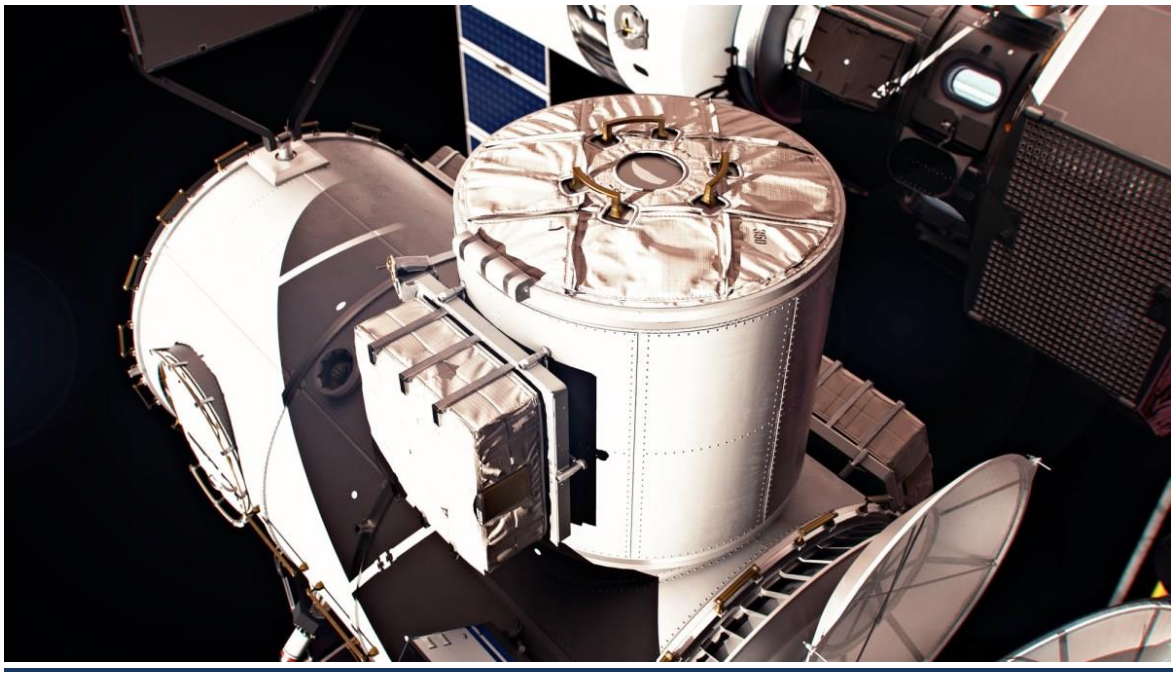
https://spacenews.com/japans-slim-achieved-pinpoint-moon-landing-with-just-one-working-engine/

https://www.space.com/japan-slim-moon-lander-awake-after-hibernation

https://spacenews.com/slim-moon-lander-revived-after-solar-power-setback/

https://www.space.com/japan-slim-moon-lander-dormant-final-photos

UAE at the Gateway



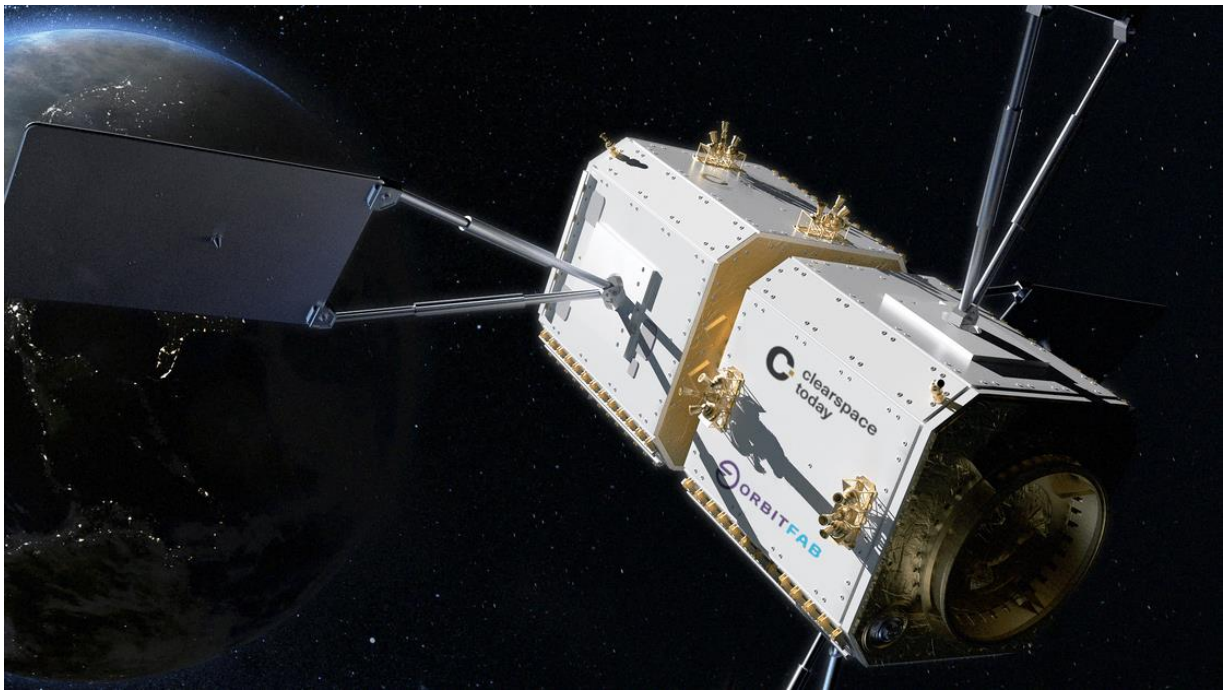
Credit: NASA

The UAE will supply an airlock for the Lunar Gateway, in exchange for a seat on one of the Artemis missions. Meanwhile, Northrop Grumman is taking a beating on its fixed price contract to build the Habitation and Logistics Outpost (HALO) module for the Gateway; it's lost $100M on the $935M contract so far.

Articles: https://spacenews.com/uae-to-build-airlock-for-lunar-gateway/

https://spacenews.com/northrop-charges-on-lunar-gateway-module-program-reach-100-million/

Orbitfab Builds an Ecosystem



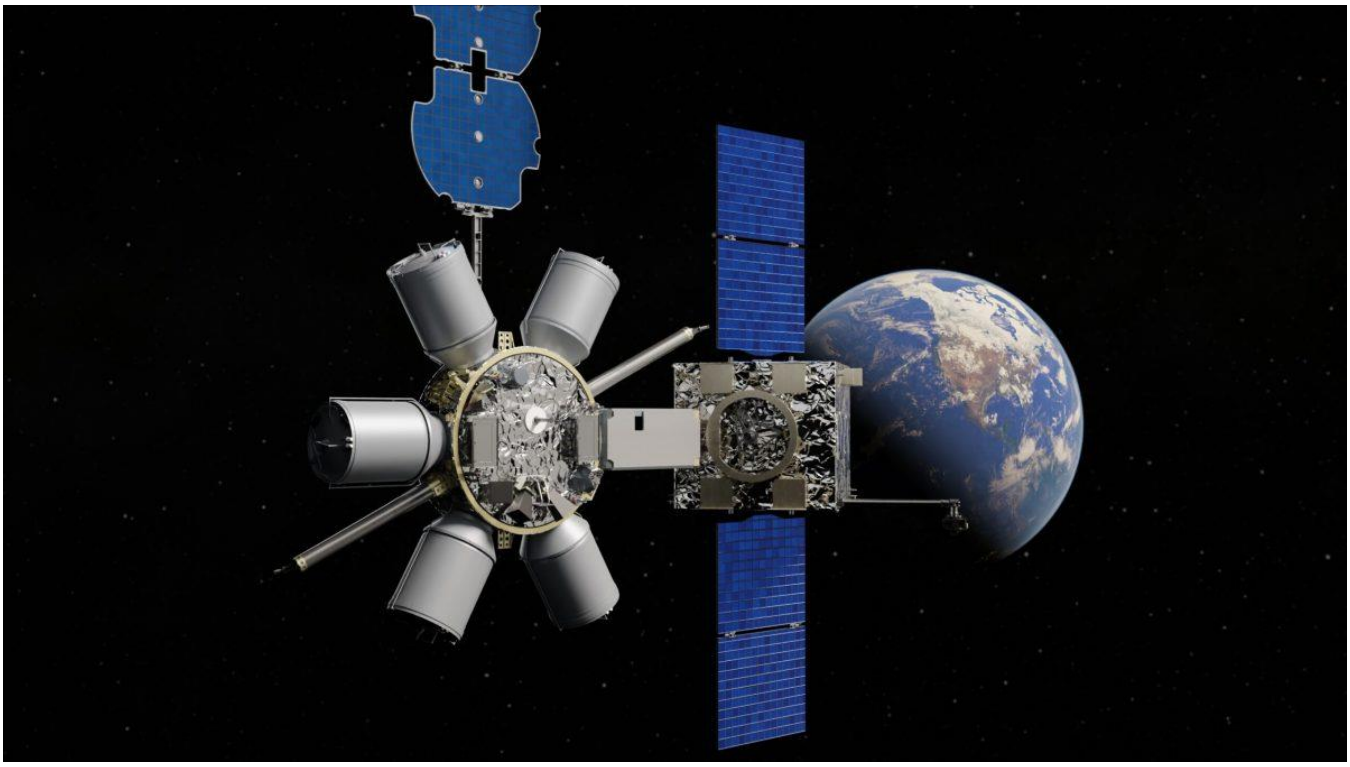
Credit: ClearSpace and Orbit Fab

On-orbit refueling startup Orbit Fab and in-space servicing specialist ClearSpace announced they will work together to pair an Orbit Fab fuel depot with a ClearSpace shuttle to deliver fuel from the depot to other satellites. It's the first step in a longer-term plan for Orbit Fab and ClearSpace to work together on mission extension, transportation and other mobility and logistics services. Australian in-space servicing startup Space Machines Company (SMC) is also working with Orbit Fab to validate and demonstrate key technologies associated with Orbit Fab's fiducial alignment markers. Painted on the target spacecraft, "These fiducial markers really simplify the process of having our Orbit Fab fuel shuttles approach a spacecraft and prepare and align for secure docking and refueling in space," says Orbit Fab CEO (and NSS member) Daniel Faber.

Articles: https://spacenews.com/orbit-fab-and-clearspace-to-develop-in-space-refueling-service/

https://spacenews.com/orbit-fab-and-australias-space-machines-company-cooperate-on-in-orbit-servicing/

Going Steady, But Not Engaged



Credit: Northrop Grumman

Orbit Fab's competitor, Northrop Grumman's SpaceLogistics subsidiary, is still the only commercial firm to have successfully serviced satellites in GEO. NG recently announced that the U.S. Space Force's Space Systems Command has designated Northrop Grumman's Passive Refueling Module (PRM) as a favored interface to enable future in-space refueling of military satellites. Space Force was quick to emphasize that this is not an exclusive arrangement, and other interfaces such as Orbit Fab's Rapidly Attachable Fluid Transfer Interface (RAFTI) may also be used. Industry standards are still in flux.

Articles: https://spacenews.com/northrop-grummans-orbital-refueling-port-selected-for-u-s-military-satellites/

https://spacenews.com/space-force-seeks-to-clear-up-confusion-over-selection-of-northrop-grummans-refueling-tech/

The Landers are Coming Along

Credit: NASA

Still no word about even potential dates for first test flights, but at least Blue Origin now has a full-scale mockup of the uncrewed version of its Blue Moon lunar lander, due to launch on a couple of the early New Glenn flights. NASA has also announced that it exercised options in Human Landing System (HLS) awards made to Blue Origin and SpaceX to begin initial design and development work of versions of their crewed landers that can carry large amounts of cargo to the lunar surface.

Articles: https://spacenews.com/blue-origin-reveals-mockup-of-blue-moon-lunar-lander-prototype/

https://spacenews.com/blue-origin-and-spacex-start-work-on-cargo-versions-of-crewed-lunar-landers/

No Moon for Us This Year

Credit: NASA

Who could possibly have seen this coming? Everybody, but NASA made it official on January 9: the circumlunar Artemis mission, the first to send Americans (or anybody else) beyond LEO in more than 50 years, will have to wait a little longer. Citing crew safety and hardware preparedness issues, NASA Administrator Bill Nelson said Artemis 2 will be delayed from November 2024 until September 2025. The Artemis 3 moon-landing mission will be delayed by a corresponding interval, from late 2025 to September 2026. The Government Accountability Office (GAO) is even more pessimistic; it doesn't think Artemis 3 is likely to fly before 2027.

Articles: https://spacenews.com/nasa-delays-artemis-2-and-3-missions/

https://www.space.com/nasa-artemis-2-moon-mission-delay-september-2025

https://www.space.com/artemis-3-2027-nasa-gao-report

https://spacenews.com/gao-report-warns-artemis-3-landing-may-be-delayed-to-2027/

Suit and Countersuit

Credit: NASA/Aubrey Gemignani

The Biden administration keeps picking a fight with the wrong guy. SpaceX, aka Musk, won a court order in November 2023 blocking the US Justice Department from pursuing allegations that SpaceX illegally discouraged people granted asylum or refugee status from applying for jobs and refusing to consider those who applied. Now it's the National Labor Relations Board's turn. The NLRB issued a formal complaint on January 3 against SpaceX, consolidating eight cases filed by individual ~~crybabies~~ employees against the company in November 2022 who said their internal politicking against Musk that got them fired were activities protected under the National Labor Relations Act. SpaceX promptly filed a countersuit against the NLRB, requesting that the court rule that its "structure violates the separation of powers under Article II of the Constitution, and permanently enjoin the NLRB and its General Counsel from pursuing unfair labor practice charges against SpaceX before agency officials that are unconstitutionally insulated from presidential oversight." Given recent signals from the Supreme Court that it's willing to consider arguments like this, Musk just may win again. And did Biden really want to pick a fight with Elon's mother?

Articles: https://spacenews.com/national-labor-relations-board-issues-complaint-over-spacex-employee-firings/

https://www.theblaze.com/news/spacex-sues-to-dismantle-unconstitutional-us-labor-board-after-it-accused-company-of-illegally-firing-workers?utm_source=theblaze-breaking&utm_medium=email&utm_campaign=20240105ActiveTrending-CNN&utm_term=ACTIVE%20LIST%20-%207%20Day%20Engagement

https://news.bloomberglaw.com/daily-labor-report/spacexs-bid-to-upend-nlrb-follows-signals-from-supreme-court

https://www.theblaze.com/news/maye-musk-furious-president-biden?utm_source=theblaze-breaking&utm_medium=email&utm_campaign=The%20Blaze%20PM%20Trending%202023-12-14&utm_term=ACTIVE%20LIST%20-%207%20Day%20Engagement

Stars and Stripes on Starship?

Credit: SpaceX

The U.S. Department of Defense currently uses SpaceX as a launch service provider, meaning SpaceX retains ownership of its rockets. But the DOD recently floated the idea of using Starship on its own, flying the massive rocket as a "government-owned, government-operated" asset on "sensitive and potentially dangerous missions." One of the potential military applications for Starship is rapid point-to-point delivery of military assets. The Air Force Research Laboratory and SpaceX have been looking at this for the past couple of years, and the AFRL's chief research scientist on the project says it's conceivable that if Starship is ready, a demonstration could be performed as early as 2026.

Articles: https://www.space.com/spacex-starship-pentagon-military-missions

https://spacenews.com/air-force-rocket-cargo-initiative-marches-forward-despite-questions-about-feasibility/

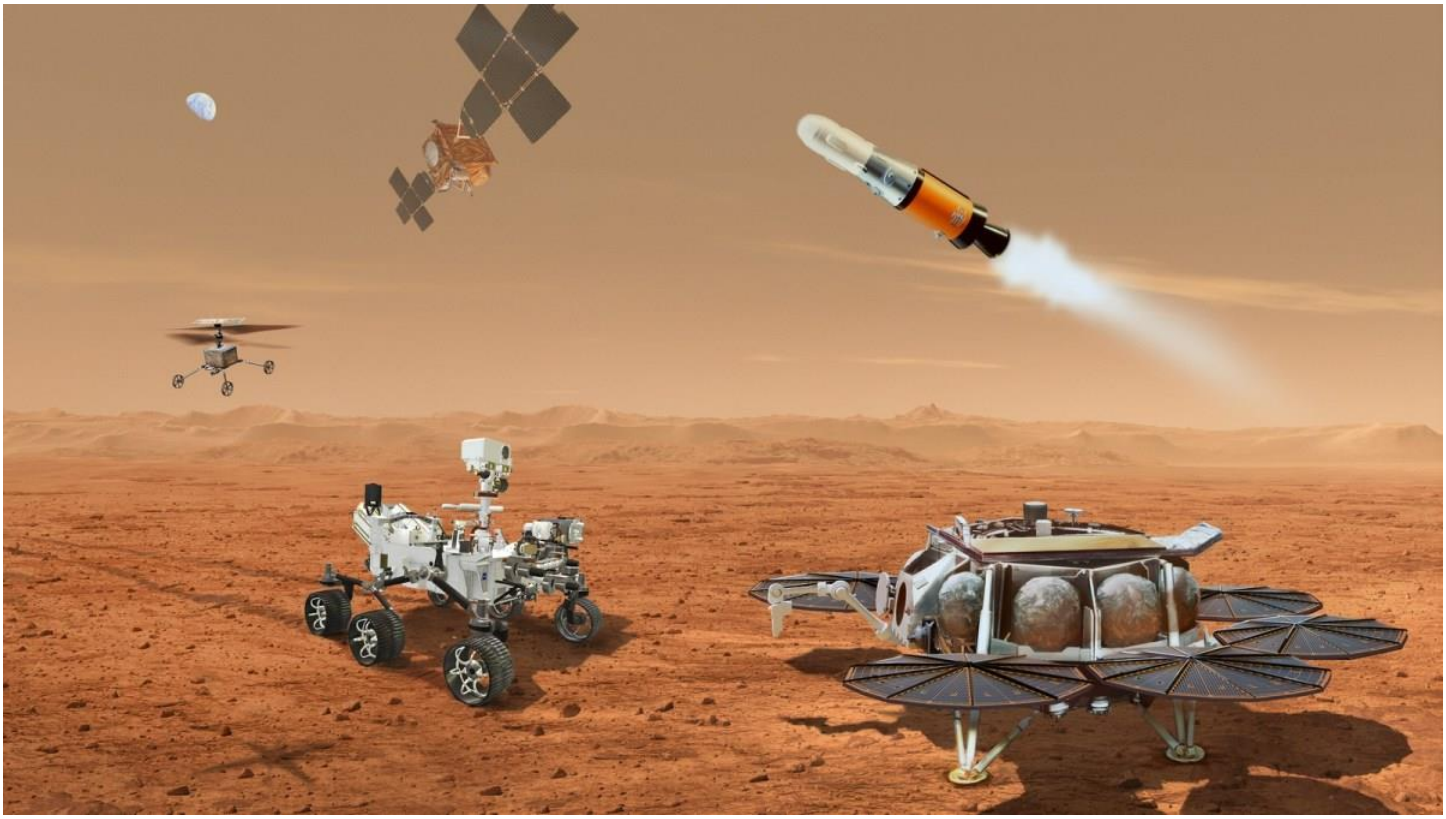
First Guardian to Fly

Credit: Space Force/SpaceX

Col. Nick Hague, veteran of two previous spaceflights before his transfer from USAF to Space Force, will be the first Space Force Guardian to fly. He was recently named the pilot for the SpaceX Crew-9 mission, set to launch to the International Space Station (ISS) this August.

Article: https://www.space.com/spacex-space-force-guardian-astronaut-crew-9-nasa-launch

Just Let It Die!



Credit: NASA/JPL-Caltech

It's the monster that would not die. In a letter dated February 1 and addressed to Shalanda Young, director of the White House's Office of Management and Budget, 42 members of the California congressional delegation requested that the Biden administration undo NASA's decision to slow down spending on Mars Sample Return pending program review and budget approval. "This short-sighted and misguided decision will cost hundreds of jobs and a decade of lost science, and it flies in the face of Congressional authority," they say. Easy to see why. JPL recently laid off 530 employees (about 8% of its staff), citing MSR budget uncertainty as a primary cause. But in a Spacenews op-ed, Robert Zubrin cites historical statistics of Mars missions to show that the odds of success with current mission architecture are about one in three.

Articles: https://spacenews.com/members-of-congress-seek-increase-in-mars-sample-return-funding/

https://spacenews.com/congressional-letter-asks-white-house-to-reverse-msr-spending-cuts/

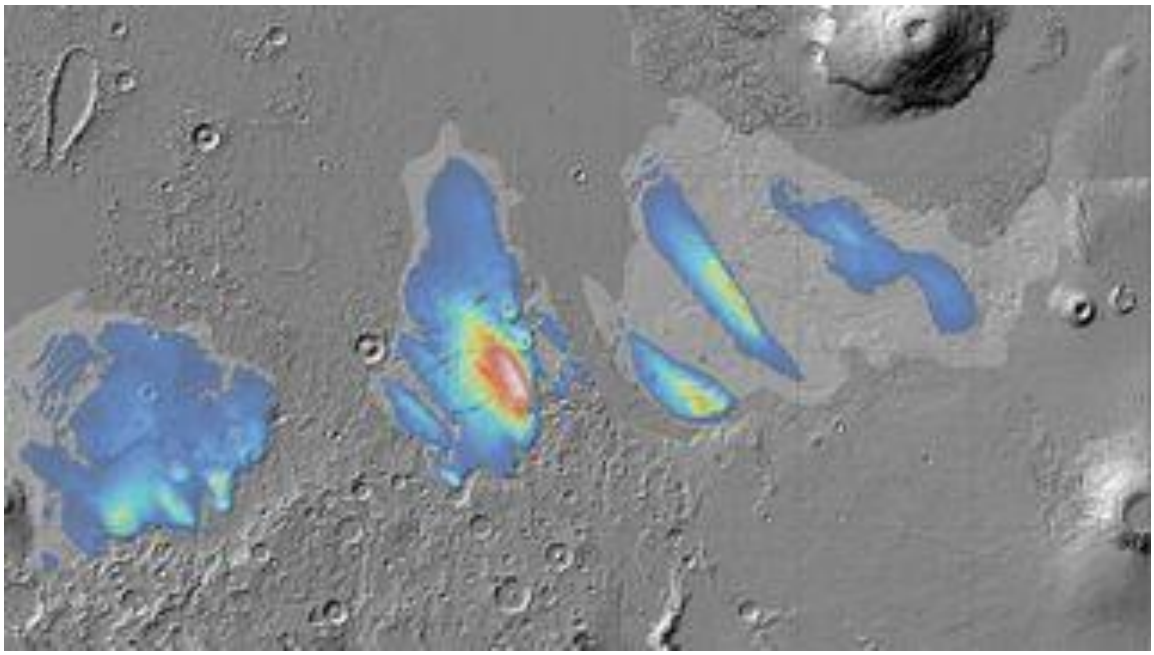
https://spacenews.com/house-bill-would-fully-fund-mars-sample-return-block-cooperation-on-exomars/

https://spacenews.com/nasa-slows-down-work-on-mars-sample-return-due-to-budget-uncertainty/

https://spacenews.com/jpl-to-lay-off-8-of-workforce/

https://spacenews.com/rethink-the-mars-program/

Mars' Underground Ocean



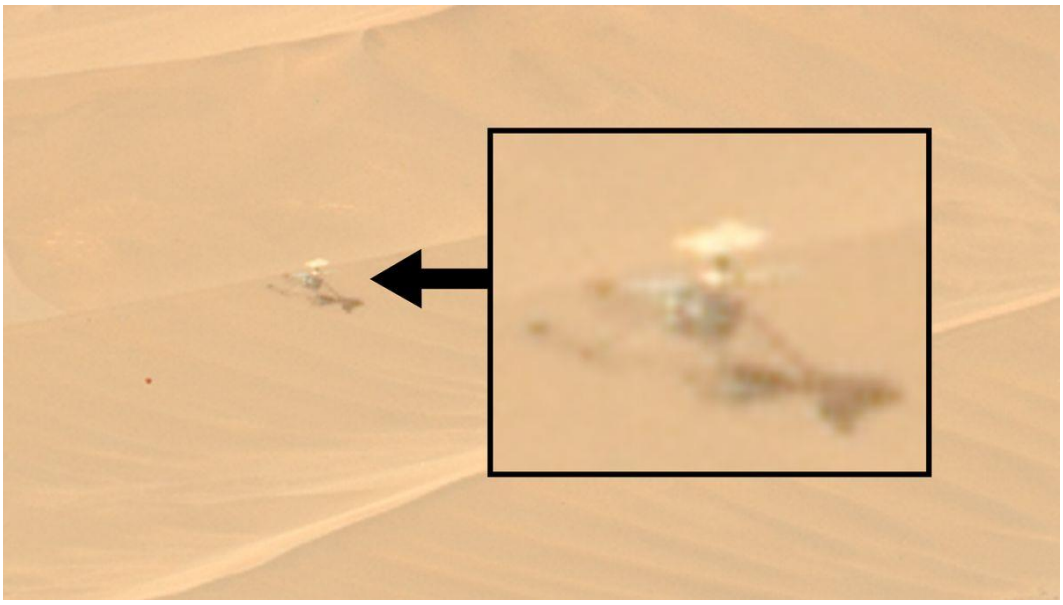
Credit: Planetary Science Institute/Smithsonian Institution

ESA's Mars Express probe has found ice deposits up to 3 km thick, buried in the form of dusty ice beneath Mars' equator. That's enough water to cover Mars in an ocean between 4.9 and 8.9 ft. (1.5-2.7 m) deep. Great news for water miners. In another recent discovery, China's Zhurong Mars rover has found physical evidence of the dramatic shift in Mars' climate 400,000 years ago, when Mars' last major ice age ended.

Articles: https://www.space.com/mars-water-ice-equator-frozen-ocean

https://www.space.com/mars-climate-shift-china-mars-rover-zhurong

Breaking Point



Credit: NASA/JPL-Caltech

The 72nd flight turns out to have been the last one. NASA announced on January 25 that at least one of Ingenuity's rotor blades sustained damage on its flight of January 18. It will remain seated on the sand dune where it landed. Meanwhile Spirit and Opportunity rovers have celebrated their 20th anniversaries on the Martian surface.

Articles: https://www.space.com/nasa-ingenuity-mars-helicopter-mission-ends

https://spacenews.com/ingenuity-mars-helicopter-mission-ends-after-72-flights/

https://www.space.com/mars-ingenuity-helicopter-perseverance-rover-photo-red-planet-surface

https://www.space.com/mars-rovers-spirit-opportunity-20th-anniversary

Getting the Beans Out of the Can

Credit: NASA/Erika Blumenfeld/Joseph Aebersold

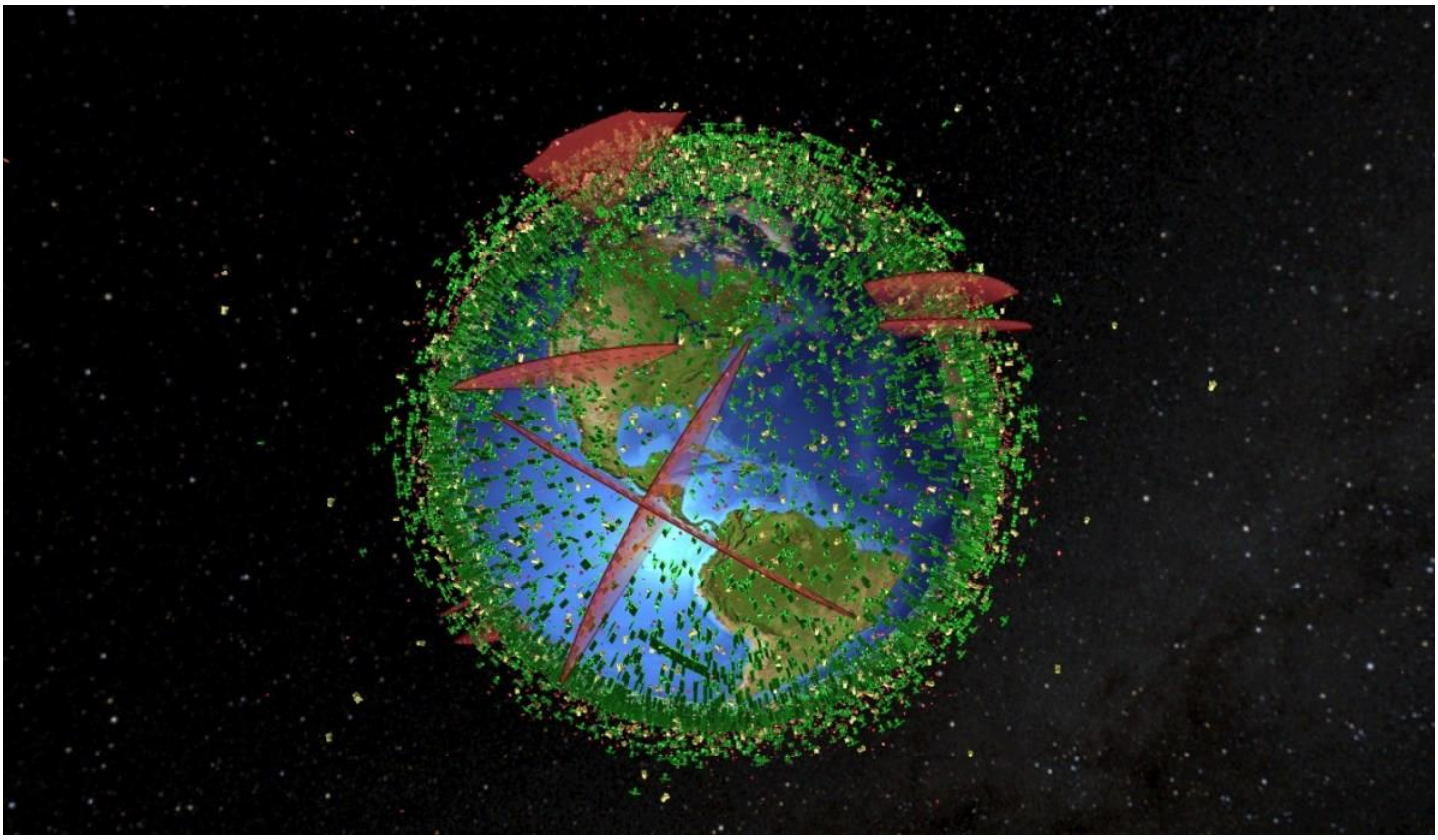
On January 10, NASA technicians finally removed the stuck fasteners from the sampler head, called the Touch-and-Go Sample Acquisition Mechanism (TAGSAM) in the sample return capsule of its OSIRIS-REx spacecraft.

Articles: https://www.space.com/nasa-removes-stuck-fasteners-osiris-rex-asteroid-samples

https://www.space.com/nasa-osiris-rex-asteroid-sample-canister-open

https://www.space.com/asteroid-bennu-osiris-rex-samples-1st-look-surprises

A Moore's Law for Space?



Credit: LeoLabs

Since 2015, the number of spacecraft launched annually has doubled every two years. Is it too soon to call this a law?

Article: https://spacenews.com/moores-law-space/

This Week At NASA

Videos: https://www.youtube.com/watch?v=WqPSN-P-y-o&list=PL1D946ACB21752C0E

That’s All Folks

Credit: SpaceX