



October 2022

Update

**Oklahoma Space
Alliance**

A Chapter of The
National Space Society

A free email newsletter of the Oklahoma Space Alliance

Artemis 1 and Its Destination



Credit: NASA

October 2022 OSA Meeting

Saturday, October 22, 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

"There's a silly notion that failure's not an option at NASA. Failure is an option here. If things are not failing, you are not innovating enough." – Elon Musk

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Oklahoma Space Alliance Update

October 22, 2022

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33 and Counting



Credit: NASA/JPL-Caltech/ASU/MSSS

Mars helicopter Ingenuity made its 33rd flight on September 24, staying aloft just over 55 seconds. The 4-pound rotorcraft lifted itself to roughly 33 feet altitude and translated about 365 feet before landing. Baby steps...

Article: <https://www.space.com/ingenuity-mars-helicopter-33rd-flight-september-2022>

The DART Slams Home



Credit: NASA/Johns Hopkins APL

On the evening of September 26, NASA's Double Asteroid Redirection Test (DART) spacecraft scored a bulls-eye, ramming into Dimorphos at 6.5 km/sec. Dimorphos is a mini-moon just 160 meters across orbiting the larger asteroid Didymos. The final reported miss distance on a fully-automated approach was only 17 meters from the center of the moonlet. Light Italian Cubesat for Imaging of Asteroids (LICIACube) accompanied DART, deployed from the larger spacecraft two weeks earlier, and returned images after the impact. Both the Hubble and Webb Space Telescopes (the first time the two telescopes performed in sync), and many ground-based telescopes observed the impact. These observations show the moon's orbital period changed by half an hour.

Articles: <https://spacenews.com/dart-on-track-for-asteroid-collision/>

<https://spacenews.com/dart-collides-with-asteroid-in-planetary-defense-test/>

<https://www.space.com/dart-asteroid-crash-first-photos-liciacube>

<https://www.space.com/dart-asteroid-impact-what-happens-next>

<https://www.space.com/dart-asteroid-impact-telescope-videos>

<https://www.space.com/dart-asteroid-impact-spacecraft-last-photos>

<https://www.space.com/webb-hubble-observe-dart-didymos-asteroid-crash>

<https://www.space.com/dart-asteroid-mission-planetary-defense-importance>

No Extra Charge for the Adrenaline



Credit: Blue Origin

NS-23 was the first uncrewed New Shepard mission in more than a year, carrying three dozen payloads and using a different capsule and booster from the flights that carry people. This vehicle was making its ninth flight on September 12, but a minute after launch the booster suffered an as-yet-undetermined anomaly, and the abort system was triggered. The capsule landed safely after reaching a peak altitude of 11.4 km; the booster was destroyed. Given that New Shepard is a commercial crew launcher, Congress is intensely interested in what caused the accident. Leaders of the House Science Subcommittee on Space and Aeronautics issued a letter on September 15 calling for more transparency from the FAA in the ongoing investigation, and calling for a briefing to the subcommittee within 10 days of the letter.

Articles: <https://spacenews.com/new-shepard-suffers-in-flight-abort-on-uncrewed-suborbital-flight/>

<https://www.space.com/blue-origin-ns-23-mission-launch-preview>

<https://spacenews.com/blue-origin-says-still-super-early-into-new-shepard-launch-failure-investigation/>

<https://spacenews.com/congress-asks-for-more-transparency-into-new-shepard-failure-investigation/>

<https://www.space.com/blue-origin-launch-failure-congress-faa-transparency>

You Can't Take the Sky From Me



Credit: Everyday Astronaut/Firefly Aerospace

Almost a year after its unsuccessful first launch, Firefly's Alpha launcher made it all the way to orbit on October 1. Its payload was three small satellites, including one from the nonprofit organization Teachers in Space called Serenity. The payloads were placed in a lower orbit than had been advertised before launch, and reentered quickly, leading to some debate as to how successful the launch actually was. Just hours before the launch, U.S. Space Force's Space Systems Command announced the award of a launch contract to Firefly Aerospace for a responsive launch demonstration called Victus Nox, using a spacecraft that will be built by Millennium Space. Victus Nox aims to mate satellite to launcher and place it in orbit within 24 hours. Neither the value of the contract nor a projected launch date were disclosed.

Articles: <https://spacenews.com/firefly-alpha-rocket-reaches-orbit-on-second-launch/>

<https://www.space.com/firefly-aerospace-alpha-rocket-launch-success>

<https://spacenews.com/firefly-says-alpha-launch-a-success-despite-payload-reentries/>

<https://spacenews.com/after-successful-first-launch-firefly-sets-sight-on-national-security-market/>

<https://spacenews.com/firefly-millennium-space-selected-for-u-s-space-force-rapid-launch-demonstration/>

It's Dead, Jim



Credit: ISRO

After eight years in Mars orbit, India's first Mars orbiter, Mangalyaan, has fallen silent. Exact cause is yet unknown; the spacecraft may have run out of fuel, its battery may have drained, or some other cause. India was the fourth nation to put a spacecraft into Mars orbit.

Articles: <https://www.space.com/india-mars-orbiter-mission-loses-contact>

<https://www.cbsnews.com/news/india-mars-orbiter-mission-mom-ended-after-eight-years-space-research/>

<https://www.cnet.com/science/space/why-the-death-of-indias-groundbreaking-mars-orbiter-is-a-big-deal/>

Return to Europa



Credit: NASA/JPL-Caltech/SwRI

On Sept. 29, NASA's Juno probe made a close flyby of Europa, skimming over the surface at a distance of about 256 miles (412 km). It was the first close look at Europa in 22 years, since the Galileo probe last imaged the Jovian moon.

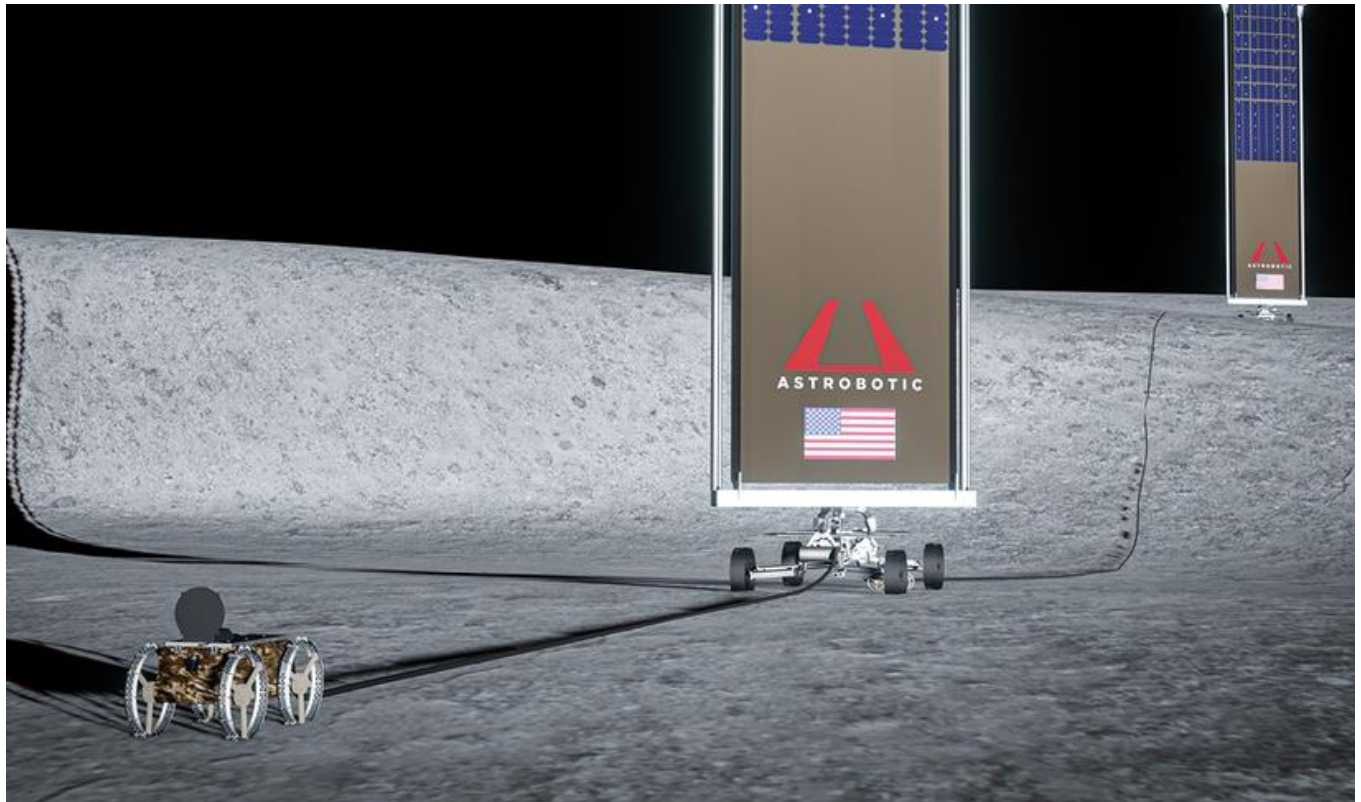
Articles: <https://www.jpl.nasa.gov/news/nasas-juno-gets-highest-resolution-close-up-of-jupiters-moon-europa>

<https://www.space.com/juno-photo-europa-jupiter-moon-most-detail>

<https://www.space.com/juno-close-flyby-jupiter-moon-europa-photo>

<https://www.space.com/juno-europa-flyby-image-gallery>

Astrobotic Buys Masten's Assets, Plans Lunar Power Service



Credit: Astrobotic

Masten had a good run, but it's really gone for good. On September 8, the federal bankruptcy court in Delaware approved the results of an auction conducted two days earlier where Astrobotic submitted a high bid of \$4.5 million for "substantially all" the assets of Masten Space Systems. Intuitive Machines and Impulse Space bit for pieces of the company, but their combined bids were less than Astrobotic's bid for the whole enchilada, so Astrobotic won the auction. Lawyers for both Masten and Astrobotic said Astrobotic planned to hire at least some of Masten's employees; most of them had been laid off by the time Masten filed for Chapter 11 bankruptcy on July 28. Meanwhile, at the International Astronautical Congress on September 18, Astrobotic announced its LunaGrid project, which will combine solar arrays with tethered rovers to deliver uninterrupted power to customers on the lunar surface.

Articles: <https://spacenews.com/court-approves-sale-of-masten-assets-to-astrobotic/>
<https://spacenews.com/astrobotic-bids-for-masten-space-systems-assets/>
<https://spacenews.com/astrobotic-announces-plans-for-lunar-power-service/>

When the Cargo Needs to Be There Yesterday



Credit: Sierra Space

On September 8, Sierra Space announced it signed a cooperative research and development agreement (CRADA) with the U.S. Transportation Command to develop concepts for using Dream Chaser space planes for “timely global delivery of Department of Defense logistics and personnel.” Sierra Space CEO Tom Vice said, “We plan to leverage these technologies to reach anywhere on the globe within three hours.”

Articles: <https://spacenews.com/sierra-space-and-u-s-military-to-explore-using-dream-chaser-for-point-to-point-cargo-delivery/>

<https://www.space.com/dream-chaser-space-cargo-shipment-military>

Another Hubble Servicing Mission?



Credit: NASA/SpaceX

NASA announced on September 29 that it's conducting a joint study with SpaceX to look into sending a Dragon capsule to Hubble, to boost the telescope's orbit and perhaps perform some servicing operations. Currently it's just a feasibility study; NASA is participating via an unfunded Space Act Agreement. Just boosting Hubble from its current altitude of about 335 miles (roughly 38 miles lower than its initial orbit) could extend its life by a couple of decades.

Article: <https://www.space.com/nasa-spacex-possible-dragon-mission-hubble-space-telescope>
<https://spacenews.com/nasa-and-spacex-to-study-possible-private-hubble-servicing-mission/>

SPACs Aren't Dead



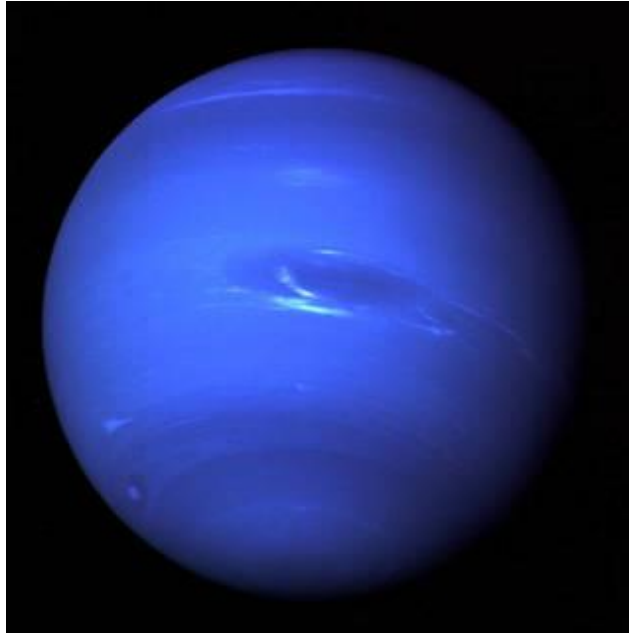
Credit: Intuitive Machines

Intuitive Machines, another company developing lunar landers, announced on September 16 that it will go public through a merger with Inflection Point Acquisition Corp., a SPAC trading on Nasdaq. Intuitive Machines has three missions on the books that are part of NASA's CLPS (Commercial Lunar Payload Services) program. The first of those missions, IM-1, is scheduled to launch early next year. IM is also developing a lunar comsat network. It expects earnings breakeven in 2024.

Article: <https://spacenews.com/intuitive-machines-to-go-public-in-spac-merger/>

<https://spacenews.com/space-companies-face-difficult-investment-environment/>

China Headed for the Gas Giants



Credit: NASA

At the International Astronautical Congress 2022 in Paris on September 21, China announced an ambitious robotic mission to the outer planets. The Tianwen 4 mission will send a large probe to explore the Jupiter system and eventually enter orbit around Callisto, and smaller spacecraft weighing a few hundred kilos to make a flyby of Uranus. The probes will launch on a Long March 5 around 2030.

Article: <https://www.space.com/china-probes-jupiter-uranus-same-launch>

Pleeeez Take Our Money!



Credit: SpaceX

The crowdfunding platform Spaced Ventures recently asked investors which private space company's stock they would most like to own. Surprise, surprise – more than 80 percent of respondents picked SpaceX. So Spaced Ventures created a page and began accepting nonbinding commitments on September 14. As of Sept. 21, the pledges amounted to \$11,4M, with a median commitment of \$1,000 (an average boosted significantly higher thanks to three \$1M pledges). The platform hopes to get SpaceX's permission to come aboard if it raises \$25M. Good luck.

Articles: <https://spacenews.com/spaced-ventures-spacex-petition/>

<https://www.bizjournals.com/orlando/inno/stories/news/2022/09/21/florida-space-tech-investment-spacex-elon-musk.html>

Artemis Accords Members Hold First Meeting



Credit: U.S. State Department

There are 21 countries that have signed the Artemis Accords so far (Saudi Arabia is the most recent signatory, joining in July). Representatives of those countries met on the sidelines of the International Astronautical Congress in Paris on September 19. The meeting was primarily an organizational one, with no major announcements or other findings emerging from it. One day earlier, at the same conference, director general of ESA Josef Aschbacher announced that he and NASA Administrator Bill Nelson signed a joint statement on lunar cooperation activities. The text was not released, but NASA described the agreement as a “non-binding joint statement” about current and prospective future cooperation in Artemis.

Articles: <https://spacenews.com/artemis-accords-signatories-hold-first-meeting/>
<https://spacenews.com/nasa-and-esa-sign-lunar-cooperation-statement/>

Lead, Follow, or Get Out of the Way

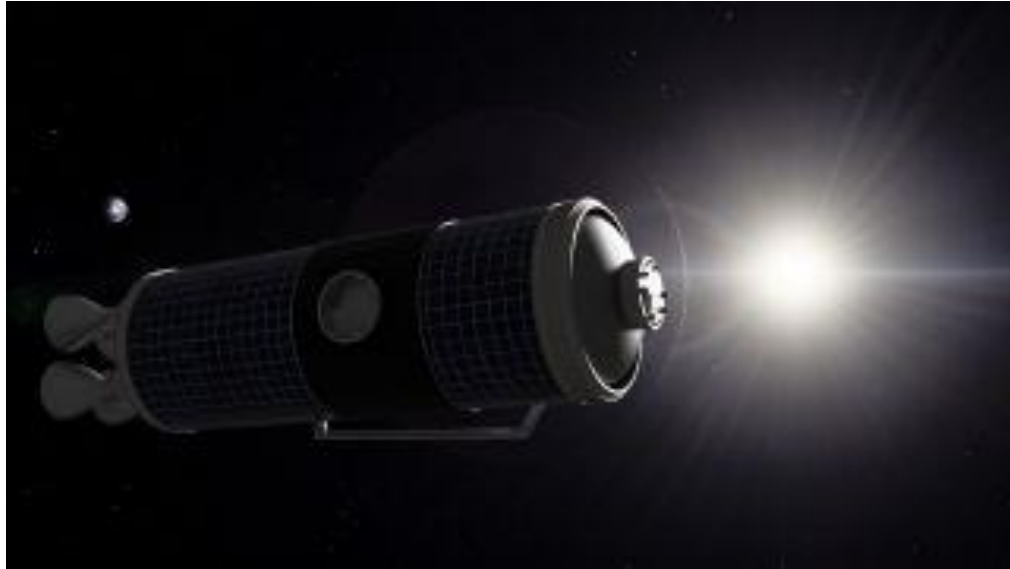


Credit: Palomar Observatory

At their September 29 open meeting, the FCC commissioners approved a new rule that requires spacecraft that end their missions in or passing through LEO (defined as altitudes below 2,000 km) be disposed of through reentry as soon as practicable and no more than five years after the end of their mission. The rule applies to satellites launched two years after the rule is adopted, and includes both U.S.-licensed satellites as well as those licensed by other jurisdictions but seeking U.S. market access. Bold, but is it within their authority? “Although I certainly congratulate them on the depth of their intellectual work,” said director of the Office of Space Commerce Richard DalBello, “a lot of the things that they articulated are probably, arguably, outside their job jar.” Before the 4-0 vote, the FCC commissioners had received a letter from the bipartisan leadership of the House Science Committee calling on the FCC to delay consideration of the rule, citing questions about the FCC’s authority to regulate orbital debris and concerns about a lack of coordination with other agencies.

Articles <https://spacenews.com/fcc-to-set-five-year-deadline-for-deorbiting-leo-satellites/>
<https://spacenews.com/fcc-approves-new-orbital-debris-rule/>
<https://spacenews.com/office-of-space-commerce-fcc-aggressively-pushing-limits-of-authority-with-orbital-debris-rule/>

Space Debris Removal Gathering Momentum



Credit: Nanoracks

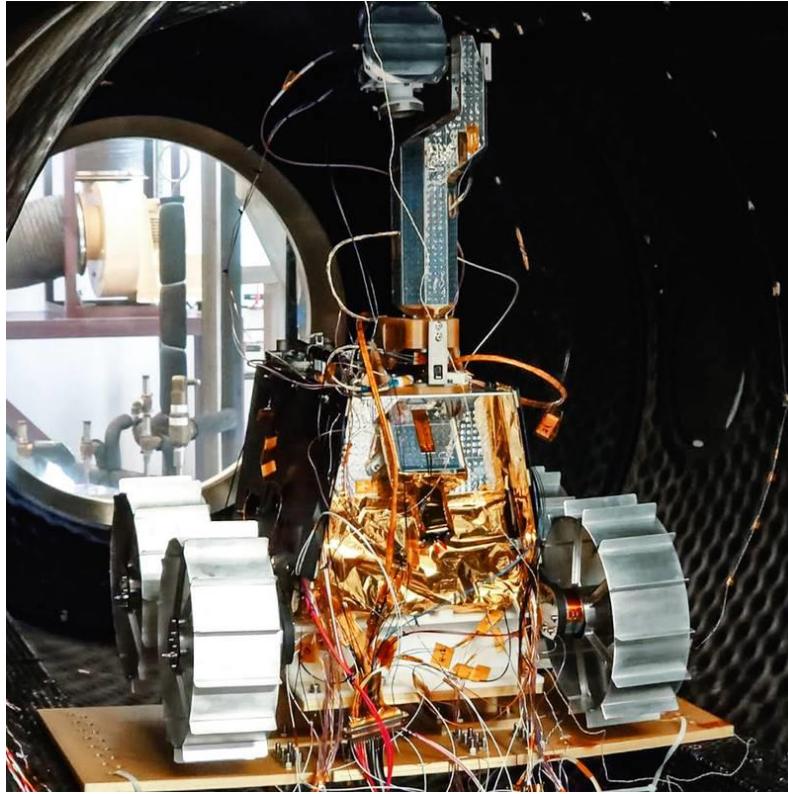
As a step towards its goal of developing a series of Outpost stations that would host payloads aboard expired rocket stages, Nanoracks conducted an experiment aboard a SpaceX rideshare flight launched in May: they used a robot that softened up metal through friction in order to cut up the metal. The mission met its goal in cutting up a single "coupon" or sample of corrosion-resistant steel similar to what is found on the outside of a United Launch Alliance Vulcan Centaur rocket. This technique could recycle space debris into usable structures. Also, the Spinnaker drag sail concept to deorbit small satellites, similar to the drag sail tested by China earlier this year, received seed funding from the investment firm Manhattan West, which NASA will match under a SBIR Phase II-E contract. The combined \$750K will allow Vestigo Aerospace to proceed with commercial manufacturing, with the first sales expected in 2023. Finally, the UK Space Agency (UKSA) announced it has down-selected groups led by Astroscale and ClearSpace for a demo mission to remove two spacecraft from low Earth orbit in 2026.

Articles: <https://www.space.com/space-debris-cutting-method-orbit-test>

<https://www.space.com/satellite-deorbiting-drag-sail-spinnaker-funding>

<https://spacenews.com/uk-shortlists-astroscale-and-clearspace-for-multi-debris-removal-mission/>

UAE's Second Moon Rover to Launch With Chang'e 7

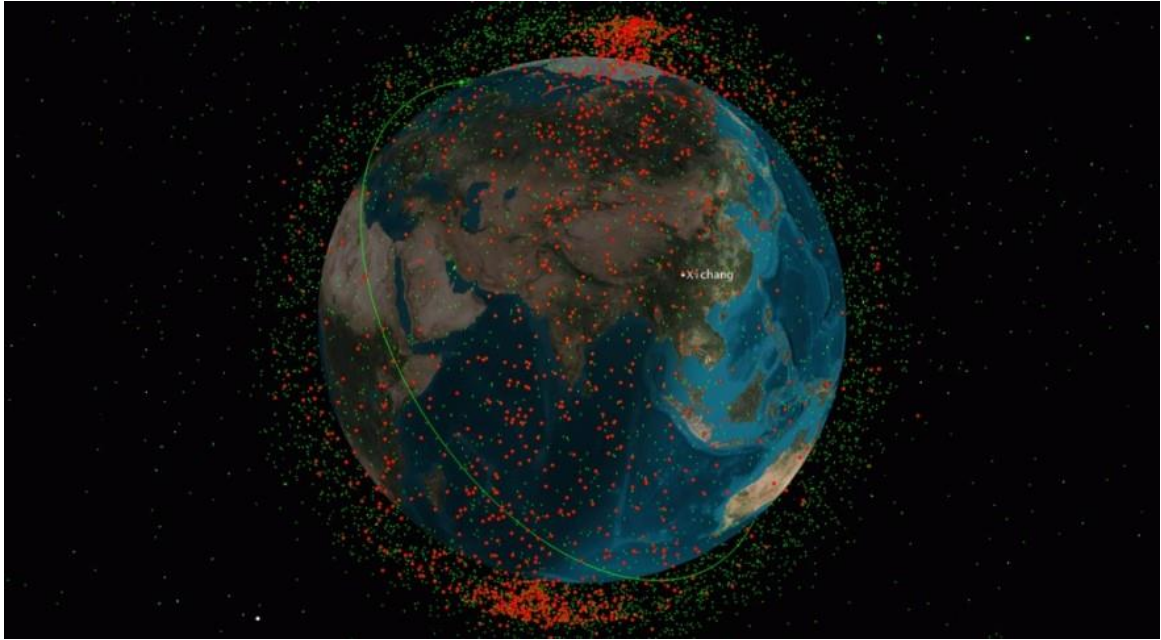


Credit: Mohammed bin Rashid Space Centre

The UAE hasn't gotten its Rashid 1 rover to the moon yet, but it already has plans for a second rover. In first instance of cooperation between the two nations for a space mission, the UAE has signed an MOU with China to piggyback its Rashid 2 rover on China's Chang'e-7, a complex multi-spacecraft mission involving an orbiter, lander, rover and a small, repetitive movable lander for investigating shadowed craters. That mission is set for launch in late 2006. The Rashid 1 rover, named for Dubai's late ruler Sheikh Rashid bin Saeed Al Maktoum, will be launched later this year by a Falcon 9 rocket and transported to the lunar surface by the Hakuto-R lander developed by Japanese firm ispace.

Articles: <https://spacenews.com/uae-rover-to-fly-on-chinas-change-7-lunar-south-pole-mission/>

The Debris is Gone, But the Thrill Lingers On



Credit: AGI

Nearly two-thirds of the debris tracked from last November's Cosmos 1408 Russian anti-satellite (ASAT) test (1,122 of 1,783 trackable fragments) has since deorbited, but it could take more than a decade for the rest to reenter. Space Force's 19th Space Defense Squadron generates 53,000 conjunction data messages a day that are Cosmos 1408-related. As of July, there had been 560 conjunction notifications between Cosmos 1408 debris and ISS. The United Kingdom and South Korea are the most recent countries to pledge not to conduct direct-ascent anti-satellite (ASAT) missile testing, joining the U.S.-driven initiative launched in April. This brings the total to seven nations, and more countries are expected to join as the U.S. ramps up efforts to promote the ban. Air Force Secretary Frank Kendall says preventing a conflict over space assets is going to become increasingly difficult, due to the strategic value of satellites and the proliferation of satellite-destructive technologies. "A characteristic of space, unfortunately, is that it's a sort of a no man's land where each side has the other side under observation, and there's instability associated with that, because whoever moves first could have a significant advantage,"

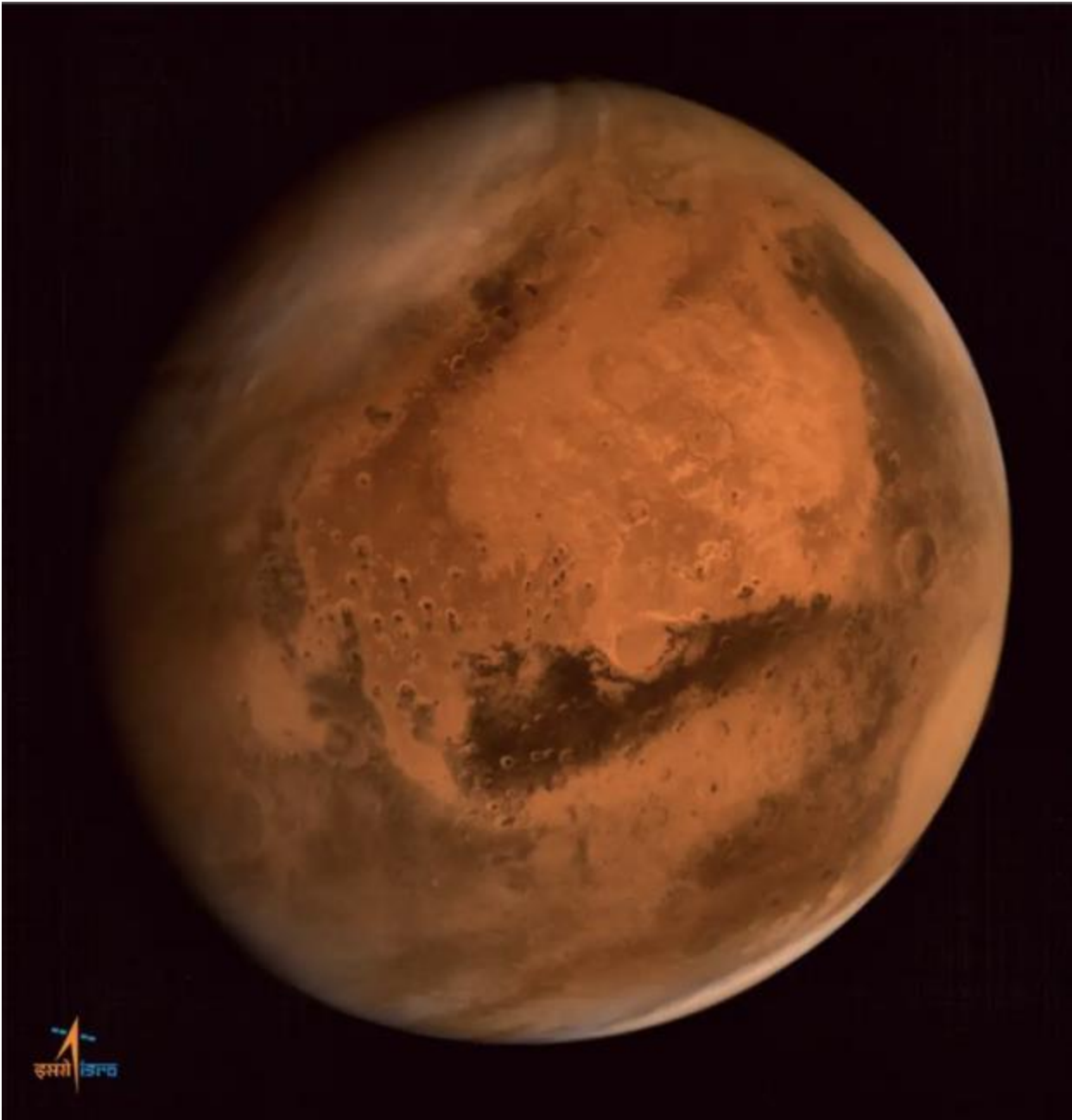
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<https://spacenews.com/uk-south-korea-join-asat-test-ban-raising-like-minded-countries-to-seven/>
<https://spacenews.com/kendall-power-competition-in-space-becoming-more-destabilizing/>

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

That's All Folks





Credit: ISRO