



February 2023

Update

**Oklahoma Space
Alliance**

A Chapter of The
National Space Society

A free email newsletter of the Oklahoma Space Alliance

Shenzhou 15 Night Launch



Credit: CCTV

February 2023 OSA Meeting

Saturday, February 11, 2023

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

“Far from feeling lonely or abandoned, I feel very much a part of what's taking place on the lunar surface. I know that I would be a liar or a fool if I said that I have the best of the three Apollo 11 seats, but I can say with truth and equanimity that I am perfectly satisfied with the one I have. This venture has been structured for three men, and I consider my third to be as necessary as either of the other two.” – Michael Collins

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Oklahoma Space Alliance Update

February 11, 2023

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They're Coming to America



Credit: Rocket Lab/Brady Kenniston

On January 24, Rocket Lab successfully performed its long-anticipated first launch from American soil. Riding the Electron booster from the Mid-Atlantic Regional Spaceport (MARS) on Wallops Island, Virginia, to orbit were three HawkEye 360 satellites. The launch had been delayed by two years because of problems developing and certifying a NASA autonomous flight termination system. That hurdle passed, Rocket Lab expects to conduct four to six Electron launches from Wallops in 2023, out of 14 total. MARS hopes to get busier still in the future.

Articles: <https://spacenews.com/rocket-lab-launches-first-electron-from-virginia/>

<https://spacenews.com/nasa-and-rocket-lab-ready-for-first-electron-launch-from-wallops/>

<https://spacenews.com/wallops-officials-look-for-growth-in-launch-activity-with-rocket-lab/>

(Not So Many) More Starlink Satellites



Credit: SpaceX/Elon Musk via Twitter

SpaceX had applied to the FCC for permission to deploy 29,988 Starlink 2.0 satellites to LEO, on top of the 12,000 they already had approval for. On December 1 they got a partial victory; the FCC will allow them to deploy 7,500 Starlink 2.0 satellites, but will defer approval of the rest for now. That partial approval was conditioned on SpaceX working with the astronomy community to limit the impact of the sats on ground-based astronomy. As part of an agreement with the National Science Foundation announced on January 10, SpaceX promises to continue to work to dim its satellites to no brighter than the 7th magnitude (which would make them invisible to the naked eye and reduce, but not eliminate, their effect on more sensitive astronomical instruments) and agrees their satellites will not transmit when they pass over major radio observatories.

Articles: <https://www.space.com/spacex-fcc-approval-7500-starlink-satellites>

<https://spacenews.com/fcc-grants-partial-approval-for-starlink-second-generation-constellation/>

<https://spacenews.com/nsf-and-spacex-reach-agreement-to-reduce-starlink-effects-on-astronomy/>

NASA Joins DARPA Nuclear Rocket Demo



Credit: DARPA

“NASA will partner with our longtime partner, DARPA, to develop and demonstrate advanced nuclear thermal propulsion,” NASA Administrator Nelson announced on January 24. “Our goal is to launch and demonstrate a successful nuclear thermal engine as soon as 2027.” DARPA was already working on DRACO (Demonstration Rocket for Agile Cislunar Operations). Now, per a non-reimbursable agreement signed by the two agencies, NASA will be responsible for the development of the nuclear thermal engine, and DARPA will integrate that engine into a spacecraft and launch it. Hopefully it will fly in 2027.

Articles: <https://www.space.com/nasa-darpa-nuclear-thermal-rocket-2027>

<https://spacenews.com/nasa-and-darpa-to-partner-on-nuclear-thermal-propulsion-demonstration/>

Dance With the One That Brought You



Credit: ESA

If ESA's new astronaut class of 2022 is flying anywhere, it won't be to the Chinese space station. For the time being, ESA has given up its flirtation with the idea of flying its astronauts aboard Tiangong. Some joint training activities looking forward to that were conducted back in 2015, but "For the moment, we have neither the budgetary nor the political, let's say, green light or intention to engage in a second space station — that is, participating on the Chinese space station," says ESA Director General Josef Aschbacher.

Articles: <https://www.space.com/europe-not-send-astronauts-china-tiangong-space-station>

<https://spacenews.com/esa-is-no-longer-planning-to-send-astronauts-to-chinas-tiangong-space-station/>

https://www.esa.int/Science_Exploration/Human_and_Robotic_Exploration/ESA_presents_new_generation_of_astronauts

Virgin Orbit Is in Trouble



Credit: Virgin Orbit

Virgin Orbit's first launch from foreign soil failed on January 9, when the upper stage engine shut down before reaching orbit. The failure of the "Start Me Up" mission, flown from Spaceport Cornwall in England, was the first for LauncherOne since an inaugural demonstration mission in 2020, sandwiching two successful operational flights. A .500 batting average isn't good enough, and VO is hemorrhaging money. The \$10M it got in stopgap funding in January from affiliate Virgin Investments Limited is the third one since November, and even that may not keep it solvent past Q2 of this year unless it finds additional money somewhere.

Articles: <https://spacenews.com/virgin-orbit-preparing-for-first-u-k-launch/>

<https://www.space.com/virgin-orbit-first-united-kingdom-launch-failure>

<https://spacenews.com/first-virgin-orbit-u-k-launch-fails/>

<https://spacenews.com/virgin-orbit-blames-launch-failure-on-upper-stage-anomaly/>

<https://spacenews.com/virgin-orbit-raises-10-million-as-financial-stopgap/>

Call It Whatever You Like; It's a Race



Credit: Chinese Academy of Sciences

A couple of new indications that China is serious about putting taikonauts on the moon: 1) the Wenchang Satellite Launch Center, which became operational in 2014, is being expanded to accommodate (among other things) Long March 9 in manned lunar missions, and 2) will launch Queqiao-2, a second lunar comsat to support missions to the lunar farside, sometime early next year. The master plan moves forward...

Articles: <https://spacenews.com/china-is-expanding-its-wenchang-spaceport-to-host-commercial-and-crewed-moon-launches/>

<https://spacenews.com/china-to-launch-relay-satellite-next-year-to-support-moon-landing-missions/>

<https://spacenews.com/china-sets-out-clear-and-independent-long-term-vision-for-space/>



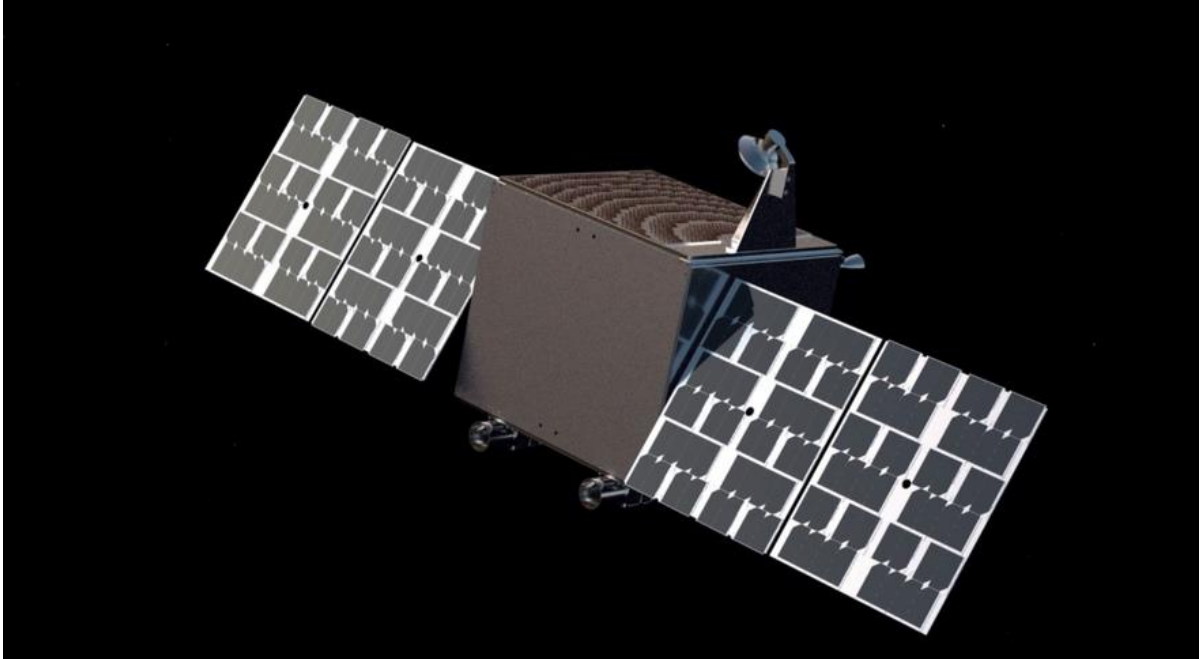
Credit: SpaceX

SpaceX's first flight of 2023, on January 3, was designated Transporter-6; it was a smallsat rideshare mission with 114 smallsats, the second highest number flown on a single flight. It was also SpaceX's 200th flight and the company's 161st successful rocket landing. That first stage was flying for the 15th time, tying another F9 first stage for most trips downrange. SpaceX performed its 200th Falcon 9 launch on February 2. It was the eighth launch of 2023, and the fourth carrying Starlink satellites as payload (53 on this flight). Its first stage booster stuck the landing for the fifth time. Since the beginning of the year, SpaceX has launched on average once every four days.

Articles: <https://www.space.com/spacex-transporter-6-mission-launch-success>

<https://www.space.com/spacex-starlink-group-5-3-launch>

Asteroid Mining is Getting Serious

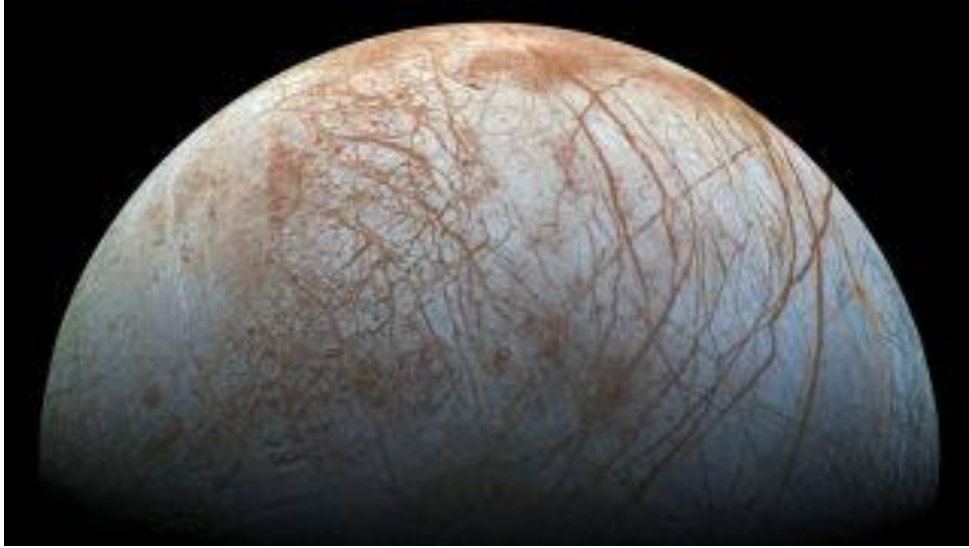


Credit: AstroForge

AstroForge is a startup asteroid mining company that's got more than just vaporware. It's got two missions that are booked to launch this year. The first, a 6U cubesat called Brokkr-1, will launch to LEO in April on SpaceX's Transporter-7 rideshare mission. Brokkr-2 will launch in October as a secondary payload on IM-2, the second lunar lander mission by Intuitive Machines, and during a two-year flight will visit and characterize a Near Earth Asteroid, looking for platinum-group metals. Deep space missions are getting cheaper: the first two missions are funded by a \$13 million seed round that AstroForge raised in May 2022. The company currently has only 15 employees, and outsourced the spacecraft construction.

Article: <https://spacenews.com/asteroid-mining-startup-astroforge-to-launch-first-missions-this-year-2/>

NIAC's Latest Group of Wild Ideas

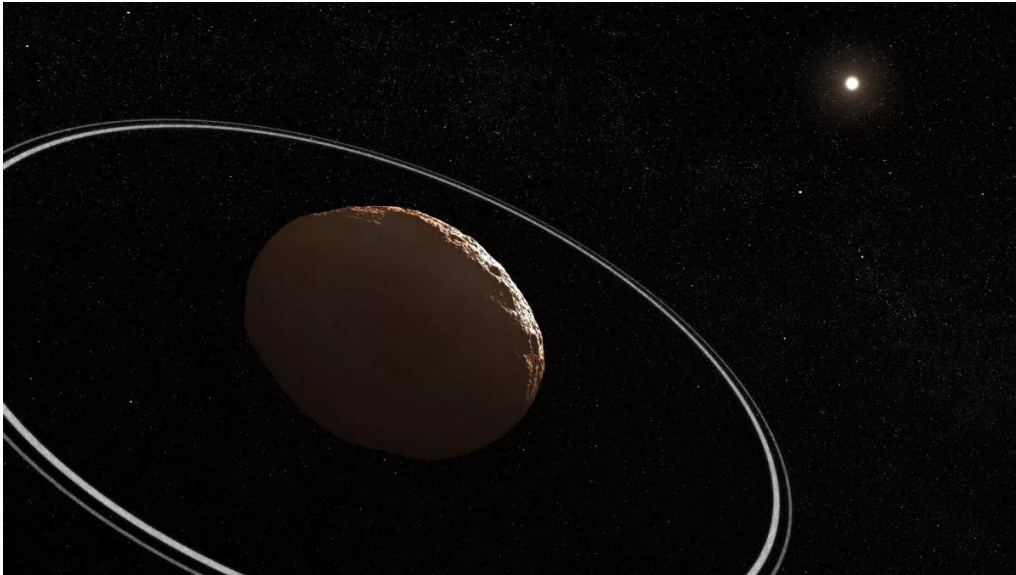


Credit: NASA/JPL-Caltech/SETI Institute

The NASA Innovative Advanced Concepts (NIAC) program, which provides funding for early-stage studies into bleeding-edge technologies that could support future missions, has announced its latest batch of Phase 1 grants worth \$175,000 awarded to 14 researchers. Among the concepts being studied: using fluidic shaping in microgravity to create a 164-foot-wide (50 meters) unsegmented mirror for a new generation of space telescopes, a flying boat for exploring Saturn's moon Titan, and pellet-beam propulsion.

Articles: <https://www.space.com/nasa-space-technology-niac-grants-2023>

Latest News from L2



Credit: ASA, ESA, CSA, Leah Hustak (STScI)

An asteroid with rings! JWST discovered on, serendipitously, on October 28, on its very first stellar occultation observation. Chariklo is a Centaur, i.e. an object with both asteroid and comet features and situated between Jupiter and Neptune; it's 160 miles (250 km) in diameter and orbiting about two billion miles out. In other news, JWST is haplessly functioning as a micrometeoroid flux detector for its neighborhood. And in yet another serendipitous accident, it found a small (100-200 m) asteroid it wasn't looking for, prompting hope that it will find more.

Articles: <https://www.space.com/james-webb-space-telescope-chariklo-water-ice>

<https://www.space.com/james-webb-space-telescope-micrometeoroid-environment>

<https://www.space.com/james-webb-space-telescope-asteroid-accident-smallest-object>

Working at Full Capacity



Credit: NASA

NASA ISS chief scientist Kirt Costello says NASA has achieved full capacity for utilization of its share of ISS resources for scientific research. With the advent of commercial crew vehicles NASA has four astronauts aboard instead of three, so the limiting factor is no longer crew time, but upmass/downmass and space limitations on the cargo vehicles servicing the space station.

Article: <https://spacenews.com/nasa-hits-limits-of-space-station-utilization/>

Not So Fast, Professor



Credit: NASA

Remember CERISS (Commercially Enabled Rapid Space Science), NASA's new program to allow scientists to fly to the ISS to supervise their own experiments? Congress didn't fund it in the FY 2023 budget, so it won't be happening, at least for now.

Article: <https://spacenews.com/nasa-scales-back-project-to-send-scientists-to-iss/>

Cleaning Up the Front Yard



Credit: ClearSpace

Swiss startup ClearSpace announced on January 19 its Series A financing round raised about \$29 million to support ClearSpace-1, its first space debris removal mission scheduled to pluck part of a Vega C upper stage out of the sky in 2026. ESA is paying 110M euros for the demonstration mission. ESA Director General Josef Aschbacher told a World Economic Forum audience in Davos he hopes to have a “zero debris” policy for European spacecraft in place in the next few years, and would like to see that standard adopted globally. “By 2030, we aim to consistently and reliably remove all European satellites from valuable orbits around Earth immediately after they cease operation,” he said last year in a video. On December 21, late in the last session, the U.S. Senate passed by unanimous consent the Orbital Sustainability (ORBITS) Act to establish a program to remove orbital debris, but since it didn’t pass the House before the end of that congressional term, its supporters will have to try again in this Congress to get it enacted into law.

Articles: <https://spacenews.com/senate-passes-orbit-debris-cleanup-bill/>

<https://spacenews.com/esa-seeks-global-adoption-of-zero-debris-policy/>

<https://spacenews.com/clearspace-raises-29-million-ahead-of-first-debris-removal-mission/>

UNOSAT Responds to Turkey Earthquake



Credit: ESA (SkySat)

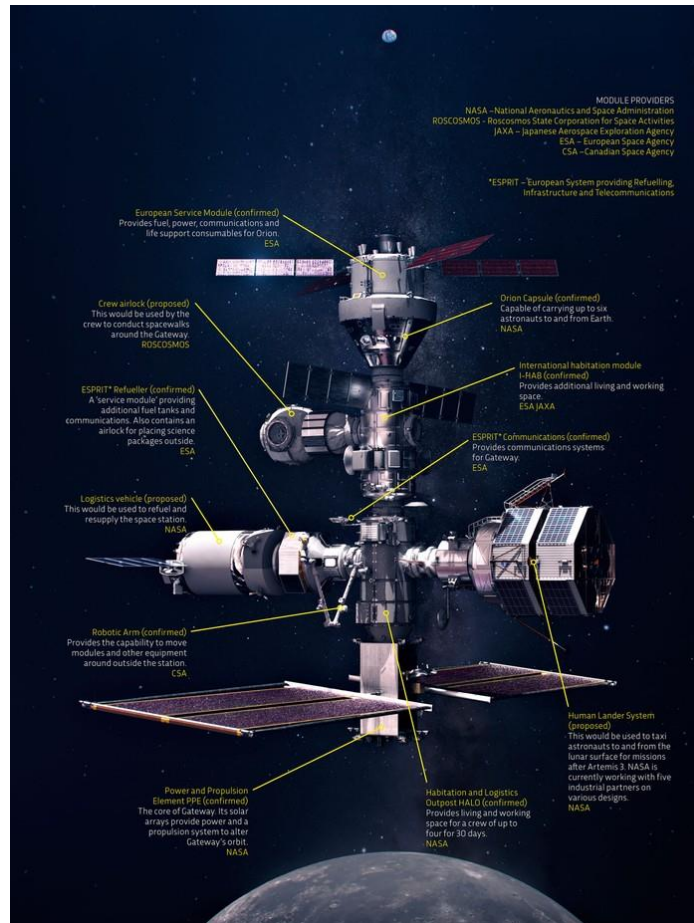
At least 11,200 people are reported dead in the magnitude 7.8 earthquake struck overnight in Turkey and Syria on February 6, and a second quake of magnitude 7.5 that shook those countries a few hours later. In response, the United Nations Satellite Centre (UNOSAT) announced via Twitter on the same day that it had activated its emergency mapping service, which "provides satellite image analysis during humanitarian emergencies related to disasters, complex emergencies and conflict situations." In addition to UN offices and agencies, agencies of national governments and relief organizations such as the Red Cross and Red Crescent and humanitarian NGOs can all request access to the imagery collected by UNOSAT, which is gathered from member's governmental agencies and private satellite firms.

Articles: <https://www.space.com/turkey-earthquake-united-nations-emergency-mapping-satellite>

<https://www.space.com/turkey-earthquake-space-satellite-photos-february-2023>

<https://www.space.com/turkey-earthquake-satellite-images-200-mile-rupture>

Japan Formalizes Its Contribution to Lunar Gateway



Credit: NASA/Alberto Bertolin

A Japanese astronaut will visit the Lunar Gateway on a NASA mission, and Japan will provide a resupply mission and components for the Gateway (notably the life support system, thermal controls, camera and batteries for the International Habitation module being developed in cooperation with ESA). The agreement was signed in a virtual ceremony on November 17, which also included Japan's commitment to support ISS through 2030. NASA's Office of Inspector General (OIG) issued a report on January 17 saying NASA needs to better coordinate all the Artemis agreements it's been signing (54 of them, with JAXA, ESA and 14 other countries, so far).

Article: <https://spacenews.com/japan-agrees-to-space-station-extension-and-gateway-contributions/>

<https://spacenews.com/reports-calls-on-nasa-to-improve-coordination-of-artemis-international-partnerships/>



Credit: SpaceX

The Starship first-stage prototype Booster 7 ignited 31 of its 33 Raptor engines during a "static fire" test on February 9 at SpaceX's Starbase facility in Boca Chica. That was 2 engines short (aborted) during the 7-second test, but 31 is enough to get to orbit, so SpaceX is calling the test successful. Next stop: orbit.

Articles: <https://spacenews.com/spacex-performs-starship-static-fire-test/>
<https://www.space.com/spacex-starship-33-engine-static-fire>

The Big Sky Wasn't Big Enough



Credit: meteorites-for-sale.com

You never know what will turn up in musty old records. A group of Turkish researchers looking through Turkish state archives has discovered the first documented case of a person killed by a meteorite. As reported to Abdul Hamid II, the 34th sultan of the Ottoman Empire, on August 22, 1888, a space rock barreling into a hill in what is now Sulaymaniyah, Iraq killed one man and injured two others.

Article: <https://www.space.com/earliest-evidence-meteorite-killed-person.html?fbclid=IwAR1euA06v-lcDI5Ww4WVIVtu-tzBYGN4wl8qx2vhhcb6erc1jZvFd-ZIW7Q>

This Week At NASA

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

That's All Folks



Credit: NASA

Credit: NASA