



October 2018

Update

**Oklahoma Space
Alliance**

A Chapter of The
National Space Society

o Alliance

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

Lockheed Martin Unveils Plans for Huge Reusable Moon Lander for Astronauts



An artist's illustration of Lockheed Martin's crewed lunar lander, which is designed to let astronauts spend two weeks at a time on the moon's surface.

Credit: Lockheed Martin.

Article & Video: https://www.space.com/42011-lockheed-martin-unveils-huge-moon-lander.html?utm_source=sdn-newsletter&utm_medium=email&utm_campaign=20181004-sdn

**October 2018 OSA
Meeting**

Saturday, October 13, 2018

2:00 PM

Earl's Rib Palace

920 SW 25th, Moore, OK

405-793-7427

**Program— Space News
and Events,**

Quote of the Month

"Once you make a decision, the universe conspires to make it happen." Ralph Waldo Emerson

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Oklahoma Space Alliance

Update

October 8 , 2018

Editor David Sheely

Asst Editor David Sheely

david.sheely51@gmail.com

405-821-9077

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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.

OSA Officers for 2018

President & David Sheely

Update Editor

david.sheely51@gmail.com

405-821-9077(C)

Vice President Tom Koszru

405-366-1797

Secretary & Syd Henderson

Outreach Editor

sydh@ou.edu

405-321-4027(H)

405-365-8983(C)

Treasurer Tim Scott

ctsscott@mac.com

405-740-7549(H)

NSS Headquarters

1155 15th Street NW, Suite 500 Washington DC 20005

Exec Director Kirby Ikin

nsshq@nss.org

202-429-1600



NASA Solar Probe Flies By Venus on Its Way to 'Touch' the Sun



On Wednesday, NASA's Parker Solar Probe flew past Venus for a gravity assist, a maneuver that will nudge the spacecraft into its unprecedented journey to the sun. Overall, the probe will use Venus' gravity seven times over the course of mission to gradually bring itself closer to the Sun.

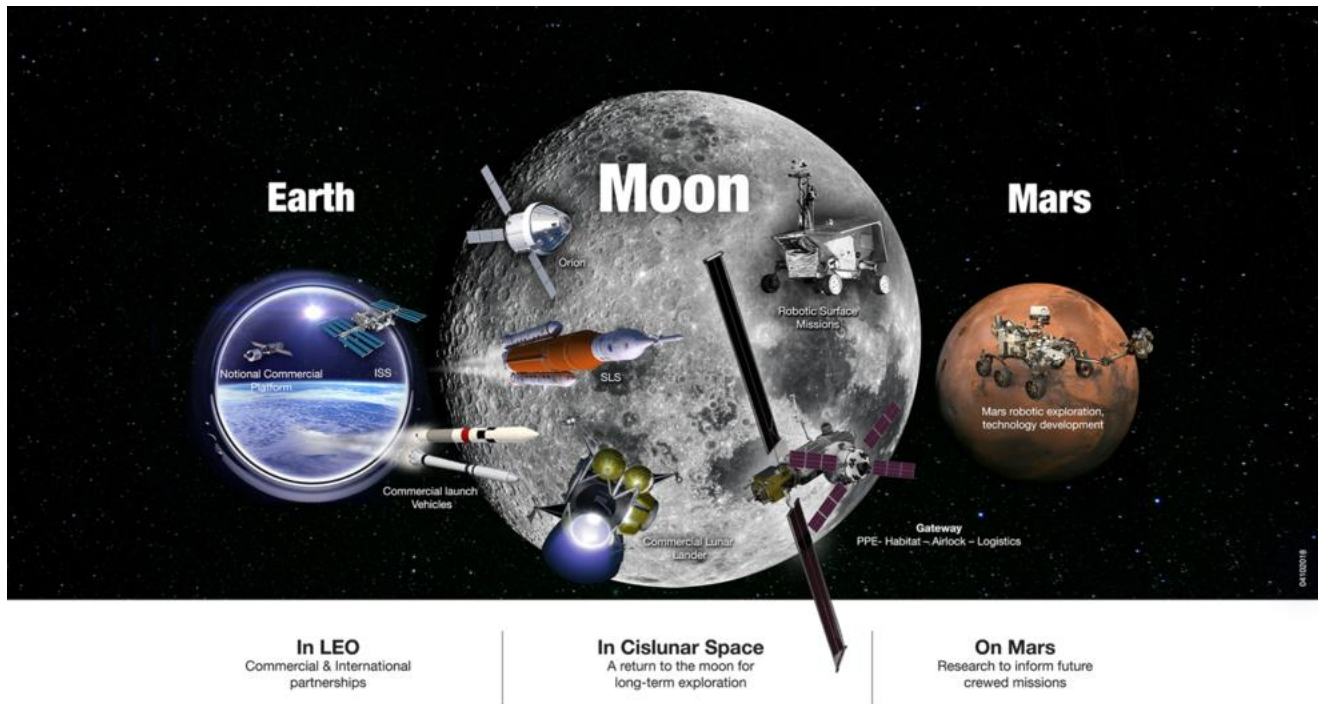
Explanatory video 2: 24 A NASA sun-studying spacecraft's first Venus flyby is in the books.

<https://amp.space.com/42015-nasa-parker-solar-probe-first-venus-flyby.html>

Parker Space probe website:

<http://parkersolarprobe.jhuapl.edu/index.php>

NASA Unveils Sustainable Campaign to Return to Moon, on to Mars



In December of 2017, President Donald Trump signed Space Policy Directive-1, in which the president directed NASA “to lead an innovative and sustainable program of exploration with commercial and international partners to enable human expansion across the solar system and to bring back to Earth new knowledge and opportunities.”

In answer to that bold call, and consistent with the NASA Transition Authorization Act of 2017, NASA recently submitted to Congress a plan to revitalize and add direction to NASA’s enduring purpose.

The Exploration Campaign has five strategic goals:

1. Transition U.S. human spaceflight activities in low-Earth orbit to commercial operations that support NASA and the needs of an emerging private sector market.
2. Lead the emplacement of capabilities that support lunar surface operations and facilitate missions beyond cislunar space.
3. Foster scientific discovery and characterization of lunar resources through a series of robotic missions.
4. Return U.S. astronauts to the surface of the Moon for a sustained campaign of exploration and use.

5. Demonstrate the capabilities required for human missions to Mars and other destinations.

NASA recently awarded 12 contracts to industry to investigate the best way to use the space station. The studies will include specific industry concepts with detailed business plans including the viability of habitable platforms, or separate free-flying structures.

Article: <https://www.nasa.gov/feature/nasa-unveils-sustainable-campaign-to-return-to-moon-on-to-mars>

National Campaign Report:

<https://www.nasa.gov/sites/default/files/atoms/files/nationalspaceexplorationcampaign.pdf>

Video Moon 101 :

<https://www.facebook.com/NASAGoddard/videos/2178181765787764/>

Space Robots in Antarctica - The Planetary Post with Robert Picardo



While Picardo speaks to Astronauts and fans on a Star Trek cruise ship, one of our other board members, Dr. Britney Schmidt toughs it out at the South Pole to research how one day robots could work underwater on ice moons.

video: <https://www.youtube.com/watch?v=nDSNS553WaE>

MILITARY SPACE

Astrophysicist Neil DeGrasse Tyson comments on the SpaceForce.



Astrophysicist Neil deGrasse Tyson says President Donald Trump's idea to create a "space force" is not a fundamentally flawed idea if the US Air Force, which currently manages all the US GPS and space capabilities, feels overwhelmed and can no longer handle the load as technology use in space evolves. CNN interview September 18, 2018

Video: <https://www.youtube.com/watch?v=4NEcxhPh7js>

Heather Wilson presents a budget for the Space Force Space Force could cost \$13 billion over 5 years



U.S Air Force Secretary Heather Wilson speaks to CNBC's Morgan Brennan about the Air Force's growth plans and objectives, as well as President Trump's proposal for building a Space Force. September 19, 2018

Video <https://www.youtube.com/watch?v=od-svloqDVw>

Trump May Fire Air Force Secretary Over Space Force Pushback: Report

Military.com October 4, 2018 [Air Force](#) Secretary Heather Wilson may be on the outs with President Donald Trump over the service's reluctance to advance his [Space Force](#) proposal, [according to a report from Foreign Policy published Thursday](#).

As a result, Trump is considering removing Wilson, who was confirmed as the 24th Air Force secretary last May, after the midterm elections next month, Foreign Policy reported, citing three anonymous sources with knowledge of the matter.

Top Pentagon official Mike Griffin proposes new space agency that 'disrupts' traditional procurement



WASHINGTON — Undersecretary of Defense for Research and Engineering Mike Griffin is recommending that the Pentagon create a Space Development Agency to take over next-generation space programs and transform how the military acquires space technologies.

Griffin's recommendations were in response to a Sept. 10 memo from Deputy Defense Secretary Patrick Shanahan in which he requested that Griffin and Air Force Secretary Heather Wilson submit separate proposals for how to create a Space Development Agency. The standup of a Space Development Agency is one piece of a broader effort to form a new military service for space.

Wilson submitted her plan in a Sept. 14 memo along with a detailed blueprint for how to organize a Space Force as a separate military department. Griffin's proposal, a copy of which was obtained by *SpaceNews*, is dated Sept. 20.

Griffin and Wilson take very different approaches.

In her memo, Wilson suggests the Space Development Agency should be organized under the existing Space Rapid Capabilities Office and that it should be geographically and organizationally connected to U.S. Space Command. She recommends using "existing structures designed and chartered to acquire capabilities rapidly, rather than establishing new structures."

Griffin is proposing a new D.C.-based agency with a staff of 112 government personnel that would report to him initially, but eventually would shift to the control of a new assistant secretary of defense for space, an office that would first have to be approved by Congress.

Full Article: <https://spacenews.com/top-pentagon-official-mike-griffin-proposes-new-space-agency-that-disrupts-traditional-procurement/>

SPACE Exploration

Astronomers discover 'Vulcan' exoplanet

It might even be habitable.



MICHELLE STARR 19 SEP 2018 www.sciencealert.com

So far, astronomers have identified thousands of exoplanets out there beyond the reaches of the Solar System, but only a rare few are the stuff of legend. Such is the case with an Earth-like exoplanet, found orbiting a star called 40 Eridani A - Star Trek creator Gene Roddenberry's preferred location for Vulcan, the home planet of Mr Spock.

video https://www.youtube.com/watch?v=-XPsWz0iL_k

Space Tango to form hemp subsidiary



SAN FRANCISCO - Space Tango, a Kentucky startup that develops microgravity research platforms, announced plans Oct. 4 to form a subsidiary focused on the plant biology and properties of hemp.

The new startup, which has not been named, will look for ways to enhance and bioengineer hemp for biomedical applications on Earth. Space Tango attracted new partners for the venture, including Atalo Holdings, a Winchester, Kentucky, company that develops and distributes hemp seeds, and Anavii Market, a Lexington, Kentucky, firm that sells hemp-derived cannabidiol therapeutics.

Some research shows cannabidiol, often called CBD, derived from hemp, offers effective treatment for various medical conditions, including pain and insomnia. Unlike tetrahydrocannabinol or THC, the psychoactive chemical in hemp's cousin, marijuana, CBD is not a hallucinogen.

Through microgravity research Space Tango seeks to better understand hemp plants. "When we send plants to the International Space Station, we eliminate one core, constant force to which plants are well-adapted - gravity," Joe Chappell, who chairs the University of Kentucky's College of Pharmaceutical Sciences and is a member of Space Tango's Science Advisory Team, said in a statement. "When plants are 'stressed' they pull from a genetic reservoir to produce compounds that allow them to adapt and survive. Understanding how plants react in an environment where the traditional stress of gravity is removed can provide new insights into how adaptations come about and how researchers might take advantage of such changes for the discovery of new characteristics, traits, biomedical applications and efficacy."

Space Tango is raising money for its hemp subsidiary from outside partners and investors. Kimel declined to comment on fundraising goals, but said Space Tango is supporting the subsidiary's initial work.

Full Story <https://17ok.org/technology/space-tango-form-hemp-subsiary-68200460>

AI Is Kicking Space Exploration Into Hyperdrive—Here's How

Artificial intelligence in space exploration is gathering momentum. Over the coming years, [new missions](#) look likely to be turbo-charged by AI as we voyage to comets, moons, and planets and explore the possibilities of mining asteroids.

"[AI](#) is already a game-changer that has made scientific research and exploration much more efficient. We are not just talking about a doubling but about a multiple of ten," Leopold Summerer, Head of the [Advanced Concepts and Studies Office at ESA](#), said in an interview with *Singularity Hub*.

Examples Abound

The history of AI and [space exploration](#) is older than many probably think. It has already played a significant role in research into our planet, the solar system, and the universe. As computer systems and software have developed, so have AI's potential use cases.

The [Earth Observer 1 \(EO-1\) satellite](#) is a good example. Since its launch in the early 2000s, its onboard AI systems helped optimize analysis of and response to natural occurrences, like floods and volcanic eruptions. In some cases, the AI was able to tell EO-1 to start capturing images before the ground crew were even aware that the occurrence had taken place.

Other satellite and astronomy examples abound. Sky Image Cataloging and Analysis Tool ([SKICAT](#)) has assisted with the classification of objects discovered during the second Palomar Sky Survey, classifying thousands more objects caught in low resolution than a human would be able to. Similar AI systems have helped astronomers to identify 56 new possible [gravitational lenses](#) that play a crucial role in connection with research into dark matter.

AI's ability to trawl through vast amounts of data and find correlations will become increasingly important in relation to getting the most out of the available data.

ESA's [ENVISAT](#) produces around 400 terabytes of new data every year—but will be dwarfed by the [Square Kilometre Array](#), which will produce [around the same amount of data that is currently on the internet](#) in a day.

Full Article: <https://singularityhub.com/2018/10/07/ais-kicking-space-exploration-into-hyperdrive-heres-how/#sm.00001toicle9refq5qp123mcog3r>

Elon Musk Is Sending a Japanese Billionaire to the Moon, and He's Taking a Group of Artists With Him



Yusaku Maezawa hopes to recruit six to eight artists for the week-long mission, which is expected to launch as early as 2023

On Monday, tech giant Elon Musk announced that Maezawa had signed up to be the first commercial passenger on the Big Falcon Rocket (BFR), a nearly 387-foot-tall vehicle currently under development by the Tesla founder's astronomical-centered start-up, SpaceX. Maezawa, who has a net worth of roughly \$3 billion and is listed by Forbes as the 18th richest person in Japan, not only secured his own place on BFR's inaugural space trip, but purchased all of the seats on the rocket, ensuring that he's free to hand-pick the people who will accompany him on the one-week journey.

Read more: <https://www.smithsonianmag.com/smart-news/elon-musk-sending-japanese-billionaire-moon-and-hes-taking-group-artists-him-180970333/#3lq7bOpC2H0KlBrK.99>

Week at NASA!

Review of the weekly videos release by NASA.

September 15 , 2018 NASA weekly video 3:04

https://www.nasa.gov/sites/default/files/atoms/video/nhq_20180915_thisweekatnasa.mp4

September 21 NASA weekly video 4:02

https://www.nasa.gov/sites/default/files/atoms/video/nhq_20180921_thisweek_nasa_1.mp4

September 28 NASA weekly video 3:19

https://www.nasa.gov/sites/default/files/atoms/video/nhq_20180928_thisweek_nasa_1.mp4

October 5 NASA weekly video 3:38

https://www.nasa.gov/sites/default/files/atoms/video/nhq_2018_1005_thisweek_nasa_1.mp4

Launches in the past month

The SpaceX Rocket launch took some Californians by surprise while others were out with their cameras ready, October 7

CBS 13 Sacramento News Video: 1:09 <https://www.youtube.com/watch?v=YLgOSd-HA6k>

Air Force Video: 1:29 https://www.youtube.com/watch?v=bBwY_TZms-I

Rocket Launch Compilation 2018 – September

A summary of July Rocket Launches :

1. Date: 10 September 2018 Rocket: Falcon 9 Block 5 Payload: Telstar 18V LSP: SpaceX
2. Date: 15 September 2018 Rocket: Delta II 7420 - Final Flight Payload: ICESat-2 LSP: ULA
3. Date: 16 September 2018 Rocket: PSLV Payload: SSTL S1-4 & NovaSAR-S LSP: ISRO
4. Date: 22 September 2018 Rocket: H-IIB Payload: HTV-7 LSP: MHI
5. Date: 25 September 2018 Rocket: Ariane 5 ECA Payload: Intelsat 38 (Azerspace-2) & Horizons-3e LSP: Arainespace

<https://www.youtube.com/watch?v=cUqQ0abgVh8>

Minutes of September Meeting

National Space Society's Oklahoma Space Alliance chapter held its regular monthly meeting on September 8, 2018 at Earl's Rib Palace in Moore, Oklahoma. Attending were OSA President David Sheely, Mike Hopkins, Tom Koszoru, Claire and Clifford McMurray, John Northcutt, Michael Smith-Antonides, Steve and Karen Swift, Bryan Swift and Syd Henderson. David Sheely presided over the meeting.

Most of the "What's Happening in Space" segment was in last month's *Update*, so I'll just cover the highlights. *Update* is on our website, <http://osa.nss.org/Update1809.pdf>.

We went to the website for the Parker Solar Probe and watched a video about it. It takes fifty-five times more energy to go to the Sun than to Mars, which is why the Parker Solar Probe has to make seven flybys of Venus and twenty-four orbits total to achieve its closest approach of 3.7 million miles (.04 au). [The first Venus flyby was on October 3.]

We watched a video made from photographs from the Lunar Reconnaissance Orbiter set to Debussy's *Clair de Lune*. This included the movement of the terminator across the Moon's surface.

We watched a video of Rocket Launches on the *Planetary Post* hosted by Robert Picardo of *Star Trek: Voyager* fame. This included footage of the launch of the Parker Solar Probe.

The United Launch Alliance was answering questions about the Orion rocket.

We watched a video in which NASA Administrator Jim Bridenstine spoke NASA's space priorities and about the potential Space Force.

We watched a video on ARCA' progress with the Aerospike engine.

Watched a video, "Is Space Worth it?"

We watched several weeks of "This Week at NASA," including the launch of the Parker Solar Probe, engine tests for the Space Launch System, and the final approach of *OSIRIS-REx* to the asteroid Bennu.

We watched a video of the Russian launch to the ISS, and a compilation of launches during August.

Business:

OSA is moving its website for chapters.nss.org to osa.nss.org. This involves changing that URL everywhere it appears in the webpages [which was not as difficult as it sounds, because Jim Plaxco was able to change it wherever it appeared in the HTML pages. I still have to do it for the pdf files, but since the old URL redirects to the new, it's not urgent. Website is completely relocated.]

We can celebrate the arrival of the *New Horizon* space probe at MU₆₉, which will be on New Year's Day.

We watched a video of Gerard O'Neill's widow giving opening remarks before giving Jeff Bezos the Space Pioneer Foundation Award.

We looked at proposed Space Force Uniform images. I demand a beret.

Tom Koszoru has volunteered to host the Christmas Party.

--Minutes by OSA Secretary Syd Henderson

That's All Folks

