The Weekly Dome Report

Upcoming Events

Friday, Oct. 30 6pm......Final Frontier Friday - *Habitable Planets*

Saturday, Oct. 31 2pm.....Stellar Saturday - Solar System Tour 7pm....Stellar Saturday - Earth Tour

Monday, Nov. 2 6pm......Mythology Monday *- Welsch Mythology*



WOMEN TO MARS



As we venture further into space, manned missions to Mars will soon be within our reach.

Such a mission would be costly and time consuming, meaning crew selection is of the utmost importance in ensuring that the mission goes as smoothly as possible. The merits of an all women mission are being weighed, as there are several benefits to an all women crew.

FREE HUMOR

The Astute Astronaut The Astute Astronaut The Coll that The Col

First, women typically weigh less and require less calories than men, and when it costs 10,000 dollars of fuel to launch one pound, every pound for crew and food counts. Another reason is that studies have shown that women as a whole typically communicate in a way that might mitigate any conflicts that may arise when being stuck with the same people for months on end.

In addition to this, studies also show that women typically perform better on long term goals as opposed to men.

One last crucial reason is the presence of galactic cosmic rays (GCR), which is a harmful type of deep space radiation. Earth's magnetic field shields us from these rays, but out in space there is no such protection. Studies of mice have shown that GCR's can cause a variety of mental issues of anxiety and impaired memory, but only in males. If women are truly immune then it would add to the safety of the crew as a whole if it were all female.

A possible solution for shielding men from these rays may also arise if we can isolate why women may be immune, which would allow us to modify future equipment accordingly. The minute details that go into space travel are vast, and

this is one such example of where every factor needs to be considered. It will be interesting to see who the first people sent to Mars are to say the least.

Original Story: https://blogs.scientificamerican.com/observations/we-shouldsend-women-on-a-mars-mission/

Keep up with the Dome:

planetarium.truman.edu @TrumanDome

HABITABLE PLANETS STARLINK IN ACTION



A new study has identified 24 possible "superhabitable" worlds, worlds that might support life better than the Earth itself.

Often in the search for other habitable planets we search for "Earth-like" planets when that might not be the best place to look. Superhabitable worlds are hypothetical, and are based off of factors like the mass and temperature of the planet, as well as the type of host star the planet orbits. More mass would indicate a larger planet that might hold more life and might have a denser and more protective atmosphere.

A hot and humid planet on the other hand might lend itself to a more tropical climate, which as seen on earth has some of the greatest biodiversity of any biome.

As for the optimal star, an orange dwarf would not give off too many solar flares that might damage life, but they also tend to have a much longer lifespan that stars like our sun, as our sun will expire in around 6 billion years versus the 20 to 70 billion year lifespan of an orange dwarf. This search stemmed in part from the Copernican Principle which states that Earth is not special in the universe. This thought got scientists thinking about the possibility that Earth is not the best possible supporter of life simply because it is the only proven supporter of life. Data on exoplanets is still incomplete and possibly inaccurate, so some of the 24 possible planets are most likely false positives. With this in mind though, as we discover more and more exoplanets we might discover planets that could host a wide array of lifeforms, or possibly support human colonization in the very far future. Expanding the criteria of possible life supporting planets will most assuredly aid in the search for extraterrestrial life forms as we continue examining the stars above.



As fires rage across the states such as Washington, emergency responders have begun using Starlink to aid in their efforts.

Starlink is the SpaceX initiative to have an array of roughly 12,000 low orbit satellites to provide reliable and expansive internet across the globe. There are over 800 satellites in orbit currently, but that is enough for SpaceX to provide some coverage in areas like the American northwest. Some of the benefits of Starlink for emergency responders is the reliability and time involved for setting up in the field.

In the field a typical satellite connection required to communicate in the field can take anywhere from half an hour to five hours depending on how long it takes to get a connection, with trucks hauling the large equipment being necessary. With Starlink it takes all of five to ten minutes to set up the Starlink terminal, and when set up its connection is much quicker and more reliable.

SpaceX has elected to not charge a service fee for use of Starlink and although coverage is still limited, emergency responders have gotten immense use out of more easily communicating in more rural areas. Amid controversies of harming astronomy efforts, Starlink is providing an early look into its effectiveness and why Elon Musk and SpaceX are pressing

Original Story: https://www.vice.com/en/article/m7j84a/scientists-haveidentified-24-possible-superhabitable-planets



forward in the endeavor of global satellite coverage.

Original Story: https://www.cnbc.com/2020/09/29/washington-emergency-responders-use-spacex-starlink-satellite-internet.html

SNOW ON PLUTO

Scientists discovered something in our solar system that has only been observed on Earth; snow capped mountains.

The frost that covers these mountains does not seem to be water based like Earth, but instead is composed of pure methane with trace amounts of nitrogen. That is not the only difference, as the researchers conducted a simulation to test if the snow formed in the same way it does on Earth. On Earth water vapor heats up closer to the surface and rises, and when it rises to higher parts of the atmosphere where it is colder it begins to condense, which forms snow on mountains that are closer to this part of the atmosphere.

Pluto on the other hand has a very thin atmosphere while the dwarf planet is very far from the sun. This creates a unique situation where the higher atmosphere is warmer than the lower atmosphere due to the sun's energy being able to only heat up the top layers. Warmer conditions lead to more gaseous methane which can then condense on the mountaintops that reach that layer of the atmosphere. An interesting implication of this finding is that very similar natural phenomena that we observe can be formed through very different means, which stands as a testament to the randomness of space.

Original Story: https://www.space.com/pluto-mountains-methanesnowcaps-form-reverse.html