



Minnesota Mission Log



Newsletter: Fall 2015

Challenger Learning Center of Minnesota Receives Formal Application Approval

The Challenger Learning Center of Minnesota was notified in September 2015 that our formal application was approved by the Challenger Center Headquarters. After receiving a \$5,000 grant from Dakota Electric for the application fee, we submitted our formal application on July 1, 2015. We are now the only officially approved center for this area. Now that the application is accepted, the Board of Directors will continue to work with community partners to gather support for the center, including raising the funds necessary to open and operate the center.

Lance Bush, President & CEO of the national Challenger Center states: "Taking this formal step demonstrates the commitment of your board to inspire students in science, technology, engineering and math and a dedication to creating a talented workforce for your community."

Visit our website or Facebook page for more information, updates and contact information if you would like to get involved: www.challengermn.org  www.facebook.com/challengermn

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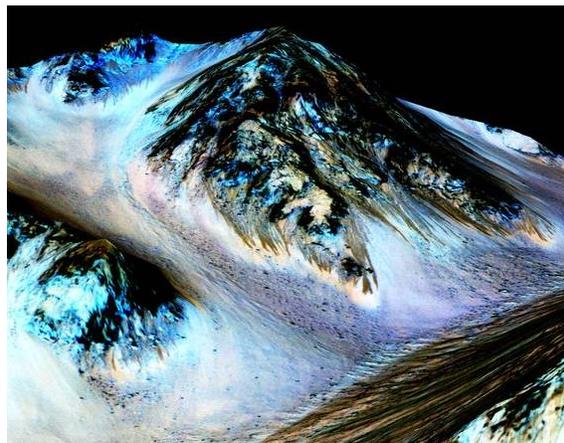
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(National)

Water on Mars!

But don't break out your swimsuit just yet... While NASA's Mars Reconnaissance Orbiter (MRO) did detect seasonal flowing saltwater on the mountains of Mars, it only flows during the "warmth" of the Mars summer. Unfortunately for any interstellar swimmers it's only -10 degrees Fahrenheit during these warm spells! The salt content in the water (probably much saltier than our oceans) allows the water to remain fluid enough even in the cold temperatures to appear and flow as they do in the dark streaks on our image above.



Credits: NASA/JPL/Univ. of Arizona

So why is this so important? The reasons are many, but these areas with water are prime targets to explore on future missions to look for life on the Red Planet. Additionally this water could perhaps even be used to as part of a manned mission to Mars. Water can be broken down into its basic elements, Oxygen and Hydrogen, both of which are key components of rocket fuel. Even the salt could be used as a part of a solid rocket fuel propellant. Very important to getting our Mars Explorers back home! Cool!!!

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Touching the future through STEM education.



Did You Know?

Astronaut Scott Kelly Grew Veggies in Space!

The trip to Mars will take an amazing spacecraft. An amazing crew. A brilliant plan. It will require many, many things – including food! We need to be able to send along enough food to sustain the crew for the whole journey. But what if we don't have to pack lunches for the whole trip? What if the crew can grow some of their own food along the way?!

That is just one of the many things Astronaut Scott Kelly and NASA are working on during his year-long stay on the International Space Station. Kelly is utilizing the Veggie "plant growth facility" system designed by Orbital Technologies Corp. in nearby Madison, WI. The Veggie system uses two rooting "pillows" that are lit by red, green, and blue LED lights. Precise amounts of water and light are added to get the seeds started. It takes the Veggie system just 33 days to bring the seeds to life and fresh red romaine lettuce to Kelly's salad bowl!



Credit: NASA

This is actually the second time Lettuce has been grown in the International Space Station. The Veggie system was first used in 2014 but rather than being used for a tasty Caesar Salad, the lettuce leaves were brought back to Earth for analysis – NASA had to first ensure these tasty lettuce leaves grown in space were safe for our astronauts. Safety First!



Credit: NASA



Tech Bits

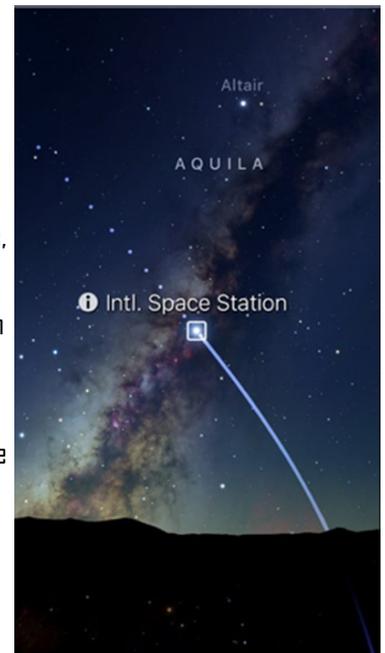
Sky Guide App



Looking for a night exploring the stars from your own backyard with your own personal astronomer? Wondering if that "star" in the sky is really Jupiter, a Star in another solar system, or even a Comet? Want to know when you can "wave" to Scott Kelly as he scoots over your backyard in the International Space Station?

No problem. Sky Guide, by Fifth Star Labs LLC, is a truly brilliant nugget of Tech offered on both iPhone and iPad devices and can be your personal little portal to the heavens. This nifty app is really set up to offer a nearly augmented reality-type experience where your mobile device can "sync" up with your view of the sky. Once "synced" simply pan the sky and touch objects on screen to discover information about the night sky around you.

Sky Guide is currently only available for Apple devices. We are big fans of free apps, but the \$2.99 price tag on this one has been well worth the hours of learning enjoyed during this beautiful Minnesota Summer! Be sure to ask your parents first!



Sky Guide Tips:

- We've found it works best on devices with internal GPS like all iPhones and some iPads.
- Be sure to check out the satellites section of the app – kids (and parents!) love tracking down the various objects in orbit around the earth. You'll be surprised at what's up there!
- If you enable alerts for the app, your device will give you a 3 minute heads up before the ISS passes over your neighborhood—Giving you plenty of time to get outside and spot it!



Orion Update



Next Mission Scheduled!

Orion Next Flight: Exploration Mission 1 (EM-1)

Unmanned Mission of the Orion Spacecraft around the Moon and back. This launch will require NASA's new megarocket – the Space Launch System, or SLS. The world has not seen a rocket of this strength since the Apollo spacecraft in the 1960/70's. EM-1 will be the test flight of this new rocket and the second mission for the Orion spacecraft. Planned launch of this mission is set for 2018. Stay Tuned!!



Artists concept of the SLS Rocket that will evolve to be used on future Mars missions

Credits: NASA/MSFC

Check with your parents before viewing this sneak peek of the video animation of the EM-1 mission here: <https://www.youtube.com/watch?v=qdxeDdwmEb0>

How Can You Help?

- > Visit our website for more information and contact us to learn how you can get involved.
- > Sign up for an Individual or Family Membership, or consider a donation - information on the website: www.challengermn.org/membership.html
- > Help us get the word out!



Challenger Learning Center Opens Near Spaceport America

The newest Challenger Learning Center opened in Las Cruces, New Mexico in September 2015. The center is part of the Las Cruces Public School District, located close to Spaceport America. Every sixth grade student will attend the Challenger Center twice throughout the year, each time they will carry out a unique mission. New Mexico State Representative Bill

McCamley said "It's giving these kids a real experience, and showing them that science is more than writing something on a page or doing a math equation. It's about discovery. It's about seeing things that no one else has seen, and making your world a better place in a really tangible way".

"Your vision is not limited by what your eyes can see, but by what your mind can imagine."

**-Ellison Onizuka,
Challenger
Astronaut**



Out to Launch!!

Did you know that NASA and the United States government currently use launch sites in four different states to launch vehicles into space?

- ◆ Kennedy Space Center / Cape Canaveral Air Force Station (Florida)
- ◆ Pacific Missile Range Facility (Hawaii)
- ◆ Vandenberg Air Force Base (California)
- ◆ Wallops Island (Virginia)

The NASA channel and website typically broadcasts most launches – Tune in for the excitement of launch! 3...2...1... Liftoff!!!!



Atlas 5 ■ GPS 2F-11

Launch window: October 30th, 1:17-1:35 p.m.

Launch site: SLC-41, Cape Canaveral Air Force Station, Florida

Launch Vehicle: A United Launch Alliance Atlas 5 rocket

Payload: U.S. Air Force's 11th Block 2F navigation satellite for the Global Positioning System.

Falcon 9 ■ SES 9

Launch window: November 17th, TBD.

Launch site: SLC-40, Cape Canaveral Air Force Station, Florida

Launch Vehicle: A SpaceX Falcon 9 rocket

Payload: SES (Luxembourg) SES 9 communications satellite

Family Science Experiment: Giant Gummy Bears!

As Halloween approaches what is spookier than Giant Gummy Bears?!? OK, well they may not be too scary but they are fun and can help us illustrate an interesting science phenomena called osmosis.



Recipe:

- Fill a cup with water.
- Drop in your favorite Gummy Bears.
(Note: there are some types that will dissolve—we've found Haribo and Brach's work well)
- Set aside and check your Gummy Bear after 24 hours - Did they change in size?
- Don't eat your gummies after this experiment. They taste bad and could get contaminated during the test.

More Exploration: Try experimenting with lengths of time? Does the Gummy continue to grow bigger over time? —Say 2 days or 2 weeks? What happens if you use salt water (add a few teaspoons of salt to your cup and mix—then add gummy bear) instead of fresh water?

What's really happening? Osmosis is a process that happens daily all around us. Specifically, it's the mechanism by which molecules in a fluid move from an area of higher concentration to an area of lower concentration (through a membrane) to achieve equilibrium. In this case, the Gummy Bear is our membrane and also an area of lower concentration of water. Over time, fresh water permeates into the Gummy Bear until the Gummy is sufficiently hydrated. As the Gummy is hydrated, expansion occurs resulting in your new Super Sized Gummy Bear!