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# SMSC October 2021 Newsletter

## News This Month

### NASA Ambassadors!

We are happy to announce that during the next five years we will be working with teacher ambassadors at high schools and middle schools in our service area. If you are an educator in Jackson or Macon Counties, please let us know if you are interested in being an Ambassador for your school!

### Space Apps Challenge with PARI!

**Oct. 1-3** Registration is now open - [see our website](#) to sign up. It's Free! Teams can spend Saturday working at PARI, but the event is entirely virtual. **The prize for the winning team is a weekend at PARI.** If you have questions contact [r\\_neff@southwesterncc.edu](mailto:r_neff@southwesterncc.edu)

## Local Events

**October 26th [12-1]** - Hybrid event on the James Webb Space Telescope @ SCC Myers Auditorium & online - A recording will be available

**October 29th** - Online STEM-E Conference for High School students

**November 16th** - *Save the Date!*

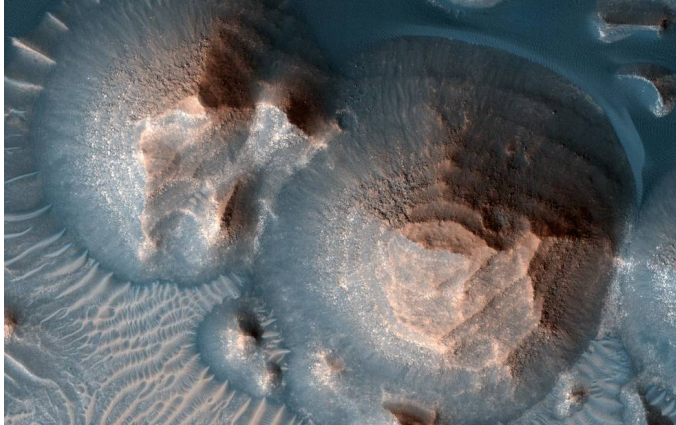
Live stream of NASA science experts giving a Virtual Tour of NASA's Meteorite Lab and Astromaterials 3D.



## NASA NEWS

**Returning to the Moon** – We're ramping up efforts for a long-term presence on the Moon. This week, we selected five U.S. companies to help us refine human landing system concepts for trips to the lunar surface under Artemis.

<https://www.nasa.gov/press-release/nasa-selects-five-us-companies-to-mature-artemis-lander-concepts>



### **Volcanoes on Mars?**

Scientists found evidence that a region of ancient Mars experienced thousands of volcanic “super eruptions.” Each would have blasted the equivalent of 400 million Olympic-sized swimming pools of molten rock and gas.

This image shows several craters in Arabia Terra that are filled with layered rock, often exposed in rounded mounds. The bright layers are roughly the same thickness, giving a stair-step appearance. The process that formed these sedimentary rocks is not yet well understood. They could have formed from sand or volcanic ash that was blown into the crater, or

in water if the crater hosted a lake. The image was taken by a camera, the High Resolution Imaging Experiment, on NASA's Mars Reconnaissance Orbiter. **Credits: NASA/JPL-Caltech/University of Arizona**

- Read more about the science here:  
<https://www.nasa.gov/feature/goddard/2021/nasa-confirms-thousands-of-massive-ancient-volcanic-eruptions-on-mars>
- <https://mars.nasa.gov/resources/25559/stepping-it-up-in-arabia-terra/>

### **NASA Astronaut Gets Extended Stay in Space, Sets U.S. Record**

With the plans for Russian spaceflight participants to visit the space station in October 2021, NASA astronaut Mark Vande Hei and Roscosmos cosmonaut Pyotr Dubrov will remain aboard the station until March 2022. Upon return to Earth, Vande Hei will hold the record for longest single spaceflight for an American. A potential benefit to this extension is gaining deeper insight into how the human body adapts to life in microgravity for longer periods of time. This research helps prepare for Artemis missions to the Moon and eventually long-duration missions to Mars. Read more here:

<https://www.nasa.gov/astronauts/biographies/mark-t-vande-hei>

**Career Connections** - <https://nasaclips.arc.nasa.gov/careerconnection>



**Downlinks with Astronauts** [Oct. 2021 - April 2022] In-flight education downlinks are opportunities for students and educators to interact with astronauts aboard the International Space Station during a live, 20-minute question-and-answer session. The [planning guide](#) offers information about the process and requirements to host an In-flight Education downlink. Proposals open May 3rd and are due on June 30th for the opportunity to participate in this program. Email [JSC-Downlinks@mail.nasa.gov](mailto:JSC-Downlinks@mail.nasa.gov) for opportunities.

## K-12 Curriculum Materials



**The Nature of Science** - [NASA eClips](#) has a new video out with extension information and activities. Join NASA scientists to see the work they do, whether they're in the lab or at home. See the [latest eClips newsletter](#) for even more resources.

### **Virtual Field Trip with NASA's Chandra X-ray Observatory**

As NASA's premier X-ray telescope, Chandra gives us a powerful tool to investigate hot regions of the Universe, from black holes, to exploding stars, colliding galaxies and more. Get a backstage pass to Chandra's Operations Control Center, tour the Chandra spacecraft through virtual reality, and take a (virtual) quick trip to some exploding stars in our own galaxy. This virtual field trip is part of the Code.org CS Journeys. Multiple dates to choose from. Register here:

<https://chandra.si.edu/fieldtrip/registration.html>

### **Speaking in Phases:** [https://www.nasa.gov/sites/default/files/atoms/files/dsn\\_signal\\_mod\\_web.pdf](https://www.nasa.gov/sites/default/files/atoms/files/dsn_signal_mod_web.pdf)

How do spacecraft put actual information into the radio signals they send back to Earth? Beat out rhythms on drums or desks and send messages using the same principles used in space exploration. Published with permission of JPL's "Space Place" and the International Technology Teachers Association. **Related disciplines:** physics (EM wave modulation), math (binary codes), space technology, music!

### **NASA STEM Stars**

"NASA STEM Stars" is a webchat series that gives students ages 13+ the opportunity to connect with subject matter experts at NASA. Each chat introduces a STEM career, addresses a STEM topic or highlights a NASA mission. The episode also features a STEM activity that students can do at home or in the classroom. After the interview, students can ask the NASA experts questions and share their completed activities on social media using #NextGenSTEM. More info here:

<https://www.nasa.gov/stem/nextgenstem/nasa-stem-stars/index.html>

### **What Type of NASA STEM Student Are You?**

[NASA STEM Engagement](#) provides unique opportunities for a diverse set of students to contribute to NASA's work in exploration and discovery. Personality traits offer a fun map to self-discovery and personal growth. Here are common personality types we've found in successful NASA STEM students. Which one resonates most with you? Find out here:

<https://www.nasa.gov/stem/feature/what-type-of-nasa-stem-student-are-you/>

*REPOSITORY ALIGNED TO NC STATE STANDARDS (currently under revision)*

<https://www.southwesterncc.edu/stem/stem-repository>

*MATERIALS FREE to CLASSROOMS (They're doing no good sitting in an office)*  
(send an email to [r\\_neff@southwesterncc.edu](mailto:r_neff@southwesterncc.edu) to claim these for your classroom)

- [Mosquito mapper guide and materials](#)
- The GLOBE Program information guide & activity [connections to NGSS](#)
- Astrobiology Curriculum guide and graphic story books
- Far Out Math Activities for grades 9-12
- Far Out Math Activities for grades 5-12

## Professional Development for K-12 Educators

**10/04/2021 - [4:30 pm ET] Bringing NASA into the Classroom: Innovative Tools and Resources to Enhance Student Engagement for Educators** - Learn about NASA's Next Gen STEM curricula and explore a wealth of NASA educational resources designed to stimulate student interest in STEM learning and help inspire, motivate, and engage students both at home and school. Register Here: <https://origin-www.eventscloud.com/ehome/index.php?eventid=640920&>



**10/06/2021 - [4:30 pm ET] Explore Flight: NASA Gliders** - The scientific, technological, engineering, and mathematical foundations of aeronautics provide exciting classroom opportunities for authentic hands-on, minds-on experimentation, prediction, data collection and interpretation, teamwork, and problem solving. Attendees will have access to instructional powerpoint, videos, and resources ready to use in the classroom.

Register Here: <https://origin-www.eventscloud.com/ehome/index.php?eventid=640182&>

**10/11/2021 - [4:30 pm ET] Explore Earth Systems: Leaf Litter Ecology** - The activity provides both visual and tactile demonstrations of the interconnectedness of all components of an ecosystem and explains that they are dependent on each other for survival. Start a discussion on leaf litter and the carbon cycle. Register Here: <https://origin-www.eventscloud.com/ehome/index.php?eventid=635680&>

**10/14/2021 - [6:00 pm ET] Aeronaut-X: Wiring Integration, Coding, and the X-57 Maxwell** - Join us to explore the X-57, NASA's **all-electric x-plane**. Leave with a classroom ready PowerPoint that works great for an in-person, at home or virtual presentation. It includes embedded videos, links and aligns to the Next Generation Science Standards. Register Here: <https://origin-www.eventscloud.com/ehome/index.php?eventid=622964&>

**10/15/2021 - [2:00 pm ET] Space Weather: Connections Between the Sun and the Solar System** - What would you do if your GPS stopped working properly or if your power went out? Space Weather is a relatively recent term that refers to conditions in space, which may have detrimental impacts on Earth's technology as well as our astronauts. Space weather can cause power blackouts (happened in 1989), radio disruptions, GPS inaccuracies, satellite image degradation, and even corrosion in pipelines. At the end of this webinar, you will understand how government and civilian preparations for space-weather impacts will enable us to "weather the storm". Register Here: <https://origin-www.eventscloud.com/ehome/index.php?eventid=642212&>





**10/20/2021 - [1:00 pm ET] NASA's Four Forces of Flight** - NASA's Museum in a Box program brings the physical sciences of flight alive to students in grades K-12 using interactive activities. Each lesson is centered around aeronautics with a goal to inspire future scientists, mathematicians and engineers. The content inside **Museum in a Box** may be used by educators to supplement curriculum during the school day or as activities for after school programs/clubs.

Join in for an hour to learn how you can use the

materials as a set or as individual activities. The Museum in a Box program contains **activities for three grade groups: K-4, 5-8, and 9-12.**

Register Here: <https://origin-www.eventscld.com/ehome/index.php?eventid=638930&>

**10/20/2021 - [4:30 pm ET] Robotics & the International Space Station Session 4: Build Your Own Robotic Arm** - Join us to explore NASA's "Teacher Toolkits" that focus on research and activities related to the International Space Station and NASA robotics! Attendees will have access to instructional powerpoint, content videos, and resources ready to use in the classroom, virtual learning, and STEM learning at home.

Register Here: <https://origin-www.eventscld.com/ehome/index.php?eventid=640169&>

**10/25/2021 - [4:30 pm ET] Problem Based Learning: Flying in Formation** - Explore flight with kinesthetic and coding activities. Multiple NASA STEM resources and lesson plans will be presented featuring Biomimicry, Force and Motion and Coding. **Spheros** ( a small spherical robot) will be used to demonstrate the engineering and **math required to understand flying in formation.**

Register Here: <https://origin-www.eventscld.com/ehome/index.php?eventid=635695&>

**10/28/21 (9:00pm Eastern) - EXOPLANETS: FINDING LIFE IN THE GALAXY** What is an exoplanet? An exoplanet is any planet beyond our solar system. Most orbit other stars, but free-floating exoplanets, called rogue planets, orbit the galactic center and are untethered to any star. Most of the exoplanets discovered so far are in a relatively small region of our galaxy, the Milky Way. We know from NASA's Kepler Space Telescope that there are more planets than stars in the galaxy. The event will be streaming live on YouTube at this Link: [https://youtu.be/S7oyMo7Z\\_Sw](https://youtu.be/S7oyMo7Z_Sw) The recording will be uploaded to the [NSN YouTube](#) page for folks that are unable to attend this evening's session.

## Opportunities For Libraries & Community Groups

The Space Science Institute is pleased to announce a new exhibit opportunity for public libraries. **'From Our Town to the Moon, Mars and Beyond'** will launch in March 2022, traveling to 8 libraries across the country. All public and tribal libraries are welcome to apply. The application will open on September 15th, and will close November 15th. See this website for more information:

<https://www.starnetlibraries.org/from-our-town-to-the-moon-mars-and-beyond-exhibit-opportunity-announcement/>



### **October 31st!**

Begin preparing for Dark Matter Day 2021 by familiarizing yourself with these resources.

<https://www.darkmatterday.com/event-starter-kit/>

### **October skies**

The highlight this month is dazzling Mars, which dominates the night sky, rising in the east after sunset. Mars will be closest to Earth on Oct. 6, when it will outshine Jupiter. We will not see Mars this bright again until 2035.

Looking south, brilliant Jupiter is joined by dimmer, golden colored Saturn. These two gas giants continue to get closer, now at 7 degrees at the beginning of October and 5 degrees at month's end.



Source: <https://www.beaconjournal.com/story/news/2020/09/26/whats-up-sky-night-sky-october/3526190001/>

We have a slack channel - if you would like to be added to the channel to discuss ways to use NASA resources locally, or if you have questions about how we can help you meet your goals, please send an email to [r\\_neff@southwesterncc.edu](mailto:r_neff@southwesterncc.edu).