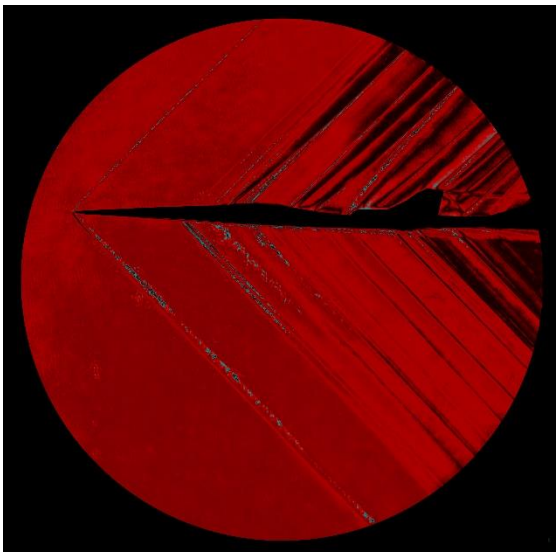
NASA Aeronautics

February 2022
No. 11

Monthly STEM Newsletter

INSIDE



This colorized schlieren image is of a small-scale model of NASA's X-59 Quiet SuperSonic Technology (QueSST) airplane taken inside NASA Glenn Research Center's 8- by- 6-foot Supersonic Wind Tunnel during a recent boom test. The multiple-week campaign produced data sets and shockwave visuals that engineers from the agency's Commercial Supersonic Technology project will use to validate boom-reducing technologies and sonic boom-predicting capabilities. The boom test at NASA Glenn was one of the final X-59 QueSST wind tunnel evaluations as the agency prepares for the aircraft's first flight later this year, leading to further low-boom validation in flight in 2023. Image: NASA

February 2022

While many of us battle the crazy weather of February, we invite you to hunker down and take a look at the many ways to engage your students in STEM and aeronautics. This month's newsletter includes new activities and videos, come exciting things coming soon, and lots of opportunities for K-12 and post-secondary alike.

Many of our folks are making travel plans to be in locations around the country this month and in the coming months as well—find out where we'll be! Not feeling the need to travel? No problem; we have lots going on in the virtual world as well.

Do you need to see more of something or have a new idea for upcoming newsletters? Let us know! Do you know someone else who needs this monthly update? Sign up for our monthly STEM newsletter. Do you have a question or want to be removed from the list? Send an email to: April.a.lanotte@nasa.gov.

Let's Fly!

Newly Released and "Coming Soon" K-12 STEM Items:

New!

- **X-57 Maxwell: Ohm's Law:** Our newest hands-on STEM activity to support teaching about electricity, circuits, and more asks students to create a variety of paper circuits then test those circuits and calculate voltage, current, and resistance.
- **Advanced Air Mobility Playbook: Emergency Response:** The first in a series of monthly episodes focused on the variety of ways AAM is and will be used in our society, we encourage you to share this 2-minute video with students and learn more about how NASA works with partners like the FAA to aid in disaster response.
- **The Quiet Crew: Joe Dussling:** In the latest "The Quiet Crew" episode, wind tunnel data engineer Joe Dussling talks about what he does with X-59 testing, his passions and hobbies, and how he came to NASA.

Coming Soon:

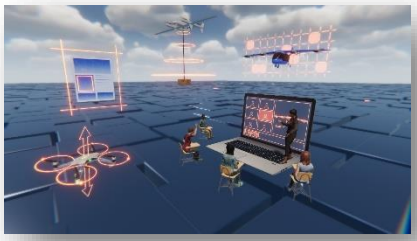
- **Flight Log Experience:** Our soon-to-be-released Flight Log Experience will debut soon!! Sign up to send your name with us on our X-plane flights and start building your virtual flight log--you can even bring your entire class!! Printable boarding passes, new and existing STEAM lessons and activities (and an ELA/Social Studies lesson on the history of flight logs), videos, and the opportunity to earn special endorsement stamps and virtual mission patches are a part of this interactive program. **Are you looking for a sneak peak at the elementary level STEM activities that focus on flight logs? Take a look or try them out!**

Engage with Aero!

Aeronautics is everywhere! Here are some of the places you can go (some in person, others virtual) to engage with us or our partners:

Feb. 3-5, 2022: Space Center Houston's Space Exploration Educators Conference (SEEC)

Come find one of several sessions focused on aeronautics. Can't travel? Virtual participation is also an option!



Feb. 25, 2022: AAM Academy Live

In collaboration with the West Virginia REC Foundation Aerial Drone (RAD) Tournament, we are excited to host our first **LIVE** and **in-person AAM Academy session** at Fairmont State University Falcon Center on The event is free but **registration** is required and space is limited.

About the Advanced Air Mobility Academy (AAM Academy):

The Advanced Air Academy (AAM Academy) is a year-long series devoted to ongoing student and educator opportunities to learn more about AAM and how it will change the airspace above us. Join these live events (or participate in them via recorded videos), and **apply to be an "AAM Academy Classroom of the Quarter"** to work directly with one of our

Post-Secondary and Funding Opportunities:

Summer Internships

As a NASA intern, you will be part of an amazing team that is dedicated to NASA's missions. You will work with leading experts and gain valuable experience as you participate in research and mission projects. Come dream with us and change the future. Applicants for this internship must be U.S. citizens. The deadline for applications is March 4th. If you have Spanish-speaking students, encourage them to watch NASA STEM Stars: Internships (Español) to see how they can join us, too.

ATM-X Digital Information Platform University Challenge

University Student Research Challenge (USRC): Amendment 2 to the NASA ARMD Research Opportunities in Aeronautics (ROA) 2021 NRA has been posted on the NSPIRES website.

University Student Research Challenge (solicitation NNH21ZEA001N-USRC) seeks to challenge students to propose new aeronautics ideas/concepts that are relevant to NASA Aeronautics. USRC will provide students, from accredited US colleges or universities, with grants for their projects and includes the challenge of raising cost-share funds through a crowdfunding campaign. The solicitation goal can be accomplished through project ideas such as advancing the design, developing technology or capabilities in support of aviation, by demonstrating a novel concept, or enabling advancement of aeronautics-related technologies.

Notices of Intent (NOIs) are not required for this solicitation. **Proposals for the next USRC cycle are due Feb. 24, 2022.** The due date for the third cycle is June 23, 2022.

MAIANSE CONNECT (MAIANSE CONNECTing Indigenous Culture and Science Through Co-design of STEM Ecosystems) fosters STEM Ecosystems that focus on building connections between indigenous cultures and NASA through community collaborations. Eligible institutions include Tribal Colleges and Universities (TCUs), Native American Serving Non-Tribal Institutions (NASNTIs), and Alaska Native/Native Hawaiian Serving Institutions (ANNHs), as identified by the U.S. Department of Education. **Proposals are due Feb. 15th, 2022.**

2021-2022 ARMD University Aeronautics Langley Challenge

Challenge Topic: "Extending Aviation's Public Benefit"

In this request for proposals (RFP), university teams explore the use of UAM/RAM vehicles in a firefighting scenario. Teams design

AAM experts. Participation is free but you need to register!

Access archived recording and presentation materials here. These include:

- "Package Delivery Drone Simulation"
- "The Science Behind Quadcopters"

Upcoming Sessions: (Live virtual events from 9-10am PT)

• March 9, 2022 "Air Taxi Design Challenge"
• May 11, 2022 (9-11am PT) AAM Middle and High School Career Day
• May 18, 2022 (time coming soon) AAM Future Workforce Seminar for post-secondary students.

March 1-3: ImaginAviation Registration Now Open!

Take a glimpse into the technologies of the future at our **imaginAviation** event taking place **March 1-3, 2022.** This all-virtual event celebrates the inspiration – that drives the opportunities being worked on today for infusion into the market tomorrow. Engage in real-time with Industry leaders, University students, and Pioneers transforming the future of aviation. New this year: K-12 materials, including the rollout of our "Dream with Us" design challenge for students ages 13-18.

a suite of vehicles that can collectively deliver 3000 gallons of water to a fire location in a single pass.

Notices of Intent are due Feb. 15th, 2022. Final design papers are due June 15, 2022. Find out more here.

X-59 in Ft. Worth for load testing:

For some of our NASA engineers and others on the X-59 team, the holidays brought us an aircraft with a bow on top. The image above shows the X-59, minus its nose, wrapped up as it waited patiently to be shipped to Lockheed Martin's load testing facility in Ft. Worth, TX. It is now wrapped up in a different way—enclosed in equipment that is conducting critical ground testing to ensure the aircraft will be able to withstand stresses and forces of flight. While in Texas, the team will also calibrate and test fuel systems before it makes its journey back to California for more tests, completion, and readiness for its first flight. *Image credits: Lockheed Martin*

April 2022: NASA in Your (TX) Neighborhood!

Join NASA Aeronautics in Texas April 22-24, 2022 for a series of educator, student, and public events focused on our X-59 aircraft. Hear from NASA researchers, pilots, STEM experts, and others as we share the story of the X-59.

- April 22-23: UT Arlington (Students, professors, K-12 educators: space is limited, registration is required.)
- April 24: Frontiers of Flight Museum (Open to everyone! No registration needed.)

**Please note that the events are currently scheduled as in-person events, but may change due to COVID restrictions.*

Professional Development:

Educator Professional Development Collaborative (EPDC): In addition to the many virtual and in-person professional development sessions at the SEEC conference, the month of February allows educators to participate in Explore Flight: Flying with Bernoulli's on Feb. 7th from 6-7pm ET, the Aeronaut-X: X-Plane Glider Design Challenge on Feb. 15th from 5-6pm ET, among others. Sessions are free, but registration is required.

Did you know??

- Feb. 6, 1914: Elena Caragiani-Stoenescu becomes the first Romanian woman to earn a pilot's license.
- Feb. 4, 1920: Charles Lindbergh (1920-1974) is born in Detroit, MI.
- Feb. 13, 1987: Kamin Bell becomes the first African American woman Navy helicopter pilot

Links to our Aeronautics STEM Resources:

Aeronautics Research Resources: (all ages) This link takes you to a wide variety of educator resources, Aeronautics@Home, ebooks, National Academies Reports, webinars, lithographs and mini posters, the NASA Aeronautics Research Institute, and more.

Aeronautics@Home: (K-12) This web page contains aeronautics-based activities, videos, games, and more that can be completed at home, in the classroom, or in any number of settings. Topic areas include: "Build It!" "Explore It!" "Watch It!" "Solve It!" "Color It!" and "Aero Educator Resources". Coming soon: "Read It!" and "Do It!"

NASA Express Sign-Up: (K-12, post-secondary) Have you signed up for NASA's NASA EXPRESS weekly newsletter? This newsletter contains the latest information for educators (K-12 and post-secondary) about new resources, design challenges, internships, and workshops. It is THE go-to for the latest STEM news.

NASA Educator Professional Development Collaborative: (K-12 educators) Where do you go for ongoing, free NASA educator professional development opportunities? To EPDC! Take a look at webinars, digital badging and CEU opportunities, STEM teaching tips, videos, and so much more.

Aeronaut-X: (K-12) Our Next Gen STEM: Aeronaut-X team provides new and exciting STEM activities that focus on cutting-edge aeronautics education and the future of flight.

Museum and Informal Education Alliance: (Informal Educators and Museums) Not in a classroom? Looking for informal education materials? Join NASA's Museum and Informal Education Alliance, where you have access to NASA resources—including aeronautics—for your program, organization, museum, science center, or library. Find out about events happening near you and in the virtual world, and let the MIE Alliance help you build your programs! Access to guest speakers, the latest announcements about grant programs, and an active community network allow you to connect with other like-minded people in a supportive, engaging, and aerospace-focused neighborhood.

NASA Aeronautics for Educators Facebook Page: (K-12, post-secondary) Join our NASA Aeronautics for Educators Facebook page, where the latest aeronautics updates, professional development opportunities, lessons and ideas are freely shared.

NASA STEM Stars: (students ages 13+) Webchats that connect students ages 13+ with NASA experts of all types. Each chat introduces a STEM career, addresses a STEM topic, and highlights a NASA mission. Webchats are streamed live at 2pm EST via YouTube, and students can ask questions via the chat feature in real time. Or, you can choose from a growing library of archived sessions.