

# NASA Aeronautics

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## Monthly STEM Newsletter

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*NASA Administrator Bill Nelson, NASA Deputy Administrator Pam Melroy, and Deputy Chief of Mission for the Embassy of Israel Eliav Benjamin, place wreaths at the Space Shuttle Columbia Memorial during a ceremony that was part of NASA's 2024 Day of Remembrance that took place Jan. 25, 2024, at Arlington National Cemetery in Arlington, Va.*

## January 2025

Happy New Year, Aeronauts! Can you believe it's already 2025?! There are so many exciting projects NASA is working on, and we invite you and your students to be with us for all of our milestones this year! This month we focus on remembrance so that we can move forward by standing on the shoulders of those who came before us. A tribute to former President Jimmy Carter, honoring our fallen air and space exploration heroes during NASA's Day of Remembrance, the celebration of a hero for civil justice, Martin Luther King Jr. and our Aero Crew Highlight honoring those test pilots we lost in their pursuit for the future of aviation. Help keep all of this history alive with our youth by applying for a NASA artifact to display within your organization or institution—find out how in this issue. NASA STEM also has new activities released just in time for the new year with more to come! Educators, sign up through NASA Engages, NASA SPARX, or Aero Fair to give students a chance to engage with NASA experts. The X-59 has started its engines and will be air bound for its first flight in 2025, so sign up for Flight Log today so you don't miss it!

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? Share the good news and [sign up for our monthly STEM newsletter](#). Have questions or want to be removed from the list? Send an email to [april.a.lanotte@nasa.gov](mailto:april.a.lanotte@nasa.gov) or [holly.o.gutierrez@nasa.gov](mailto:holly.o.gutierrez@nasa.gov).

## Remembering those who came before us: NASA's Day of Remembrance, Remembering former President Jimmy Carter, and Martin Luther King, Jr.

### Remembering former President Jimmy Carter



On December 29<sup>th</sup>, 2024, former President Jimmy Carter died at the age of 100. Among the ways he contributed to NASA's rich history, including supporting funding for the Space Shuttle Program through its inaugural launch in 1981 during a tough time for the US economy, NASA's Voyager 1 spacecraft carries a message from Jimmy Carter, *"If one such civilization intercepts Voyager and can understand these recorded contents, here is our message: This is a present from a small distant world, a token of our sounds, our science, our images, our music, our thoughts, and our feelings. We are attempting to survive our time so we may live into yours. We hope someday, having solved the problems we face, to join a community of galactic civilizations. This record represents our hope and our determination, and our good will in a vast and awesome universe."*

In a [tribute to Jimmy Carter](#) by NASA Administrator Bill Nelson, Nelson said, "He embodied the very best of humanity and his life and legacy are an example to the United States and the world."

Jimmy Carter awarded the first six of only 30 [Congressional Space Medal of Honors](#) to date on Oct. 1, 1978 to Neil Armstrong, Frank Borman, Charles "Pete" Conrad, Jr., John Glenn, Virgil "Gus" Grissom (posthumously), and Alan Shepard.

The Space Shuttle Program may have ended and Voyagers 1 and 2 have left the Solar System, and other programs have come and gone but you can keep NASA's legacy and history alive through the NASA Artifact Program. **The [next application period](#) is open January 6<sup>th</sup>-31<sup>st</sup>, 2025, so request an artifact(s) for your school or qualified organization now!**

### NASA's Day of Remembrance

NASA's [Day of Remembrance](#) is honored on the fourth Thursday in January each year. On this day we remember those we have lost during the journey to the discovery of aeronautics pursuits and space exploration. Specifically, the crews of Apollo 1 and Space Shuttles Challenger and Columbia are remembered for their bravery and dedication to the mission.



The Apollo 1 was to be the first crewed flight of the Apollo program, which aimed to put the first person on

the moon and bring them home safely, meeting the needs for future space exploration. During a pretest flight on January 27, 1967, a fire broke out in the command module while on the crew was on the launch pad at Cape Kennedy. The fire tragically took the lives of the three-man crew. On NASA's Day of Remembrance, we honor Astronauts Virgil I. Grissom, Edward H. White II, and Roger B. Chaffee. The investigation of the fire helped engineers make necessary improvements to the spacecraft for safer space travel for future missions. Read the [Apollo 1 crew biographies](#) to learn about their journey from pilot to astronaut and their hopes for the future of space exploration.

The Challenger Shuttle was to be the 25th flight for NASA's Space Shuttle Program and the 10th flight for the Challenger Shuttle. The scheduled six-day mission would deploy a large communication satellite, deploy and retrieve a payload to study Halley's Comet, and Christa McAuliffe would have been the first teacher in space to teach a science lesson from orbit. 73 seconds after launch, one of the solid rocket boosters carrying Challenger suffered a major malfunction with an O-ring that resulted in the loss of the seven-person crew and the craft. Today we remember Astronauts Ellison S. Onizuka, S. Christa McAuliffe, Michael J. Smith, Francis R. "Dick" Scobee, Judith A. Resnik, Ronald E. McNair, and Gregory B. Jarvis. Read more about [the Challenger Shuttle crew](#) and how NASA used this investigation to further improve safety measures and checks and balances to ensure the safest flights possible.



The nation's first reusable shuttle, Columbia, made its debut in 1981 and successfully completed many missions to and from space, marking many more milestones including the first European Space Agency astronaut and the first woman from the



Japanese Space Agency to fly in space. Columbia delivered the Spacelab, the space-based science lab and the Chandra X-ray Observatory, still viewing deep space objects to this

day! On January 16, 2003, Columbia lifted off to complete a 17-day science mission to conduct microgravity experiments. Columbia returned to earth on February 1, 2003, but upon reentry there was a breach when a piece of falling foam hit the reinforced carbon panels on the underside of the left wing causing the loss of life of the entire crew onboard. They were 15 minutes from home. Let's take this time to remember Astronauts Rick D. Husband, William C. McCool, Michael P. Anderson, David Brown, Kalpana Chawla, Laurel B. Clark, and Ilan Ramon. Learn more about [the Columbia Shuttle](#)

[and the dedicated crew](#) onboard. Upon completion of the accident investigation, recommendations for updated designs were put into action to keep our astronauts safer on their journey to space.

Take a moment on this day to remember these brave individuals and others who gave their expertise to further the journey of discovery of space and how we can be a part of it.

## **Martin Luther King Day**

*January 20th*

Each year NASA and the US celebrates the life and legacy of Reverend Dr. Martin Luther King Jr., a civil rights leader who believed we are all created equal no matter the color of our skin or the origin of our story. Dr. King fought for equality for others through peaceful means at the ballot box, the pulpit, and with peaceful protests to bring awareness of the injustices and make them right. His focus on breaking barriers and pushing boundaries is something we also do at NASA every day and is a focus to be celebrated.

To this day, Martin Luther King Jr. is a symbol to all to keep up the fight to defend and protect our democracy and remember we are all part of the same country. In his legacy, he continues to encourage us to love, befriend, and respect one another.

On this day, remember "we the people" are all part of this great nation, and we must remember to stand up to injustice, respect each other's individuality, and continue to love one another. Hear this quick word from the good Reverend himself [HERE](#).

## **Aeronautics Crew Highlight** *NASA Test Pilots Remembered*

This month we also take time to remember the aeronautics test pilots who lost their lives in the pursuit of flight advancements. They dedicated their time and expertise to learning and gathering data about how to make improvements to make flight more accessible, sustainable, and safer for everything and everyone in the sky and on the ground.



Howard C. "Tick" Lilly was the first NACA test pilot to die in the line of duty in the journey of aviation advancement.



Lilly first trained as a naval aviator and joined NACA in October 1942 with the

Langley Memorial Aeronautical Laboratory, now known as NASA's Langley Research Center, in Virginia. Shortly after, Lilly transferred to NACA's Lewis Flight Propulsion Laboratory, now NASA's Glenn Research Center, in Cleveland, Ohio where he flew many different aircraft like the P-38 Lightning and P-47 Thunderbolt. In 1947, Lilly transferred to Muroc Flight Test Unit, today known as NASA's Armstrong Flight Research Center, where he flew the Douglas D-558-I transonic research aircraft and the Bell X-1 making him the fourth person to break the sound barrier in an experimental aircraft. Howard C. Lilly perished on May 3, 1948 when components of his aircraft's engine compressor failed, severing control cables causing the airplane to crash. Learn more about "Tick" [HERE](#).

Joseph A. "Joe" Walker joined NACA's Aircraft Engine Research Laboratory, now NASA's Glenn Research Center, in Cleveland, Ohio in 1945. Before coming to NACA, Walker flew a P-38 aircraft for the Army Air Force in North Africa during World War II. He



worked on many projects while with NACA such as the Bell X-1 mission, research flights with the Douglas C-558-I and piloted the X-15 twenty-four times reaching its highest altitude at 354,200 feet on August 22, 1963. In 1964, Walker made the first flight in the Lunar Landing Research Vehicle that is still used today as the Lunar Landing Training Vehicle in Houston, Texas to train astronauts to land on the moon. Joseph A. Walker perished on June 8, 1966 while he was flying an F-104N chase plane for the Air Force's experimental bomber, the North American XB-70A, when the two planes

experienced a mid-air collision. Learn more about "Joe's" journey [HERE](#).



Richard E. "Dick" Gray joined NASA as an aerospace research pilot in November 1978 with the Johnson Space Center in Houston, Texas. Gray transferred to Dryden Flight

Research Center, now known as NASA's Armstrong Flight Research Center, in California serving as a chief project pilot on the WB-57F high-altitude research aircraft and as a chase pilot in a T-38 aircraft. Before joining NASA, Gray served in the United States Navy from 1969 until his retirement in 1978, flying 48 combat missions in F-4s over Vietnam during his time as a naval aviator. During his flight career, Gray had over 3,000 hours in more than 30 types of aircraft. On November 8, 1982 Richard E. Gray perished from a fatal injury during a pilot proficiency test in a T-37 jet aircraft. Read more about "Dick's" journey with NASA [HERE](#).

From these tragedies, NASA has taken the lessons learned to make the future of flight and space discovery as safe as possible for the next generations of pioneers. Check out [this article](#) to learn how NASA remembers our lost pilots and the honor we give them for their sacrifice. Safe flying, aeronauts!

## Student Opportunities

### **Notice of Funding Opportunity! NASA's Minority University Research and Education Project (MUREP)–Aeronautics Environmental Impact**

NASA's MUREP is now accepting proposals from MSIs to team up with the Aeronautics Community & Environment Impact Research (ACEIR) team. The



ACEIR team is on a mission to research the environmental and societal impacts of future air transportation technology and infrastructure on overburdened communities through development of practices and radical innovation. Do you have an

innovative idea, but need help putting it together? Partner with the MUREP ACEIR team and head to [NASA NSPIRES](#) to submit your proposal by **March 3, 2025**. Join the upcoming webinar on **January 7, 2025 at 3 pm EST** to learn more and about how to submit your proposal today!

### **Deadline this Month! Virginia Space Grant Consortium**



Virginia Community College students don't miss this opportunity to join the Virginia Space Grant Consortium this summer to work on hands-on research projects at NASA's Wallops Facility or at NASA's Langley Research Center. The deadline is **January 13th, 2025**, so don't wait! Register and submit your application [HERE](#). Need more information? Head to the [Virginia Space Grant Consortium website](#) or reach out to Nicole Shaw at [lnshaw@odu.edu](mailto:lnshaw@odu.edu) with your questions.

### **Applications Open Soon! University Student Research Challenge (USRC)**

The NASA Aeronautics Research Institute's (NARI) University Student Research



Challenge for post-secondary students challenges them to think like an entrepreneur. The application window opens soon for proposals due **March 13, 2025**. Head to [NSPIRES](#) to sign up for notifications. Are you ready to get into the business of changing the world with positive sustainable solutions? USRC will hold a Q&A session to learn how to develop a proposal and send it to NASA! Join the workshop on **January 27th, 2025, at 2 pm EST/11 am PST**. Head to the [NARI website](#) for more information.

### **Don't Wait, Apply Today! NASA Internships**

Kickstart your students' (or your) NASA journey with an internship this summer! Explore [NASA Internship](#) opportunities and get your application in for Summer 2025 by **February 28th, 2025**, to be considered for a summer internship. Students 16 years and older are eligible to apply and there are also educator internships available, too!

Join the latest NASA Internship webinar on **Thursday January 23, 2025, 4-5 pm ET** to hear current interns share their experiences. Stay to explore internship opportunities, eligibility, and application requirements, and a Q&A session. Register today on [NASA STEM Gateway](#) to join the webinar.



## **NEW NASA STEM Activities!**

### **Drones to the Rescue**

Did you hear that NASA STEM has released new aeronautics activities?! The [Drones to the Rescue activity](#) challenges learners to use block coding programs to create a simulation of a drone navigating through a wildland fire scenario to deliver needed services. NASA's Advanced Capabilities for Emergency Response Operations (ACERO) project researches the capabilities of uncrewed aerial vehicles (UAVs) in assisting emergency personnel during wildland fire situations. Check out this activity to show students how to code your way safely through a wildland fire.

### **Air Traffic Management**

Do you ever wonder if there's traffic in the sky like we have on the highways here on the ground? Not as much as the highway, but you bet there's traffic in the sky! NASA's System Wide Safety (SWS) project studies the aerospace industry to understand the impacts of the future of aviation with increased traffic from different kinds of aircraft. The newest [Air Traffic Management activity](#) asks students to use block programming to create a simulation of a UAV navigating through the crowded airspace to make a delivery.

## Aeronautics Cross-Stitch Activity



Did you ever do cross-stitching as a kid with your mom or grandma? Now is the time to get your needle out and work with your students because the new [Aeronautics Cross-Stitch activity](#) is just what you're looking for to share this skill with the next generation! Use this fun pattern of a computer-generated schlieren image of the X-59 to create a beautiful design to hang on your wall or give to someone as a gift.

## Professional Development

Are you interested in other professional development opportunities? Create a new account to join [NASA CONNECTS](#) or log into [NASA's STEM Gateway](#) to find a session that interests you. Check out [NASA Engages](#), a program that connects NASA experts with community engagements to share NASA missions and content.

**[NASA Space Exploration Educators Conference \(SEEC\)](#)**: Feb. 6-8, 2025, Houston, TX. Join the NASA Aeronautics crew on Feb. 7<sup>th</sup> at the SEEC conference for our "Design Your Own X-Plane with NASA!" session. This 90-minute session will bring high- and low-tech together to show ways you can teach your students to design aircraft.

## NASA in Your Classroom

### **Prepare for Takeoff! NASA Aero Fair**

Get ready to launch your students' imaginations with the NASA Aero Fair **March 10<sup>th</sup> - May 16<sup>th</sup>, 2025**.

Registration opens January 6<sup>th</sup> for this STEM program, which is aimed at inspiring underrepresented and underserved youth in

aeronautics! Over the course of one exciting week, students will engage in three dynamic one-hour sessions led by NASA's own Aeronautics experts. They'll explore cutting-edge projects, discover key scientific concepts, and connect with local NASA centers—all while aligning with the Next Generation Science Standards.



### **Registration Details:**

- Registration opens **January 6th, 2025**
- Available to middle school educators across California.

### **Ready to sign up and inspire your students?**

Discover more [HERE](#). For inquiries, send us an email at: [arc-aero-fair@mail.nasa.gov](mailto:arc-aero-fair@mail.nasa.gov). Let's do STEM together!

### **Classroom Connect with NASA Experts! NASA SPARX**



#### **[Next Gen STEM SPARX](#)**

(Sparking Participation and Real-world eXperiences in STEM) emphasizes engineering to connect students to STEM in a way only NASA can! SPARX is a virtual opportunity for K-12

teachers to connect their students with NASA missions through standards-aligned content and live virtual classroom connections with NASA scientists and engineers. Registration is now open, and participation is limited to the first 240 teachers, so email us at [SPARX@mail.nasa.gov](mailto:SPARX@mail.nasa.gov) to express interest today!

## **New Year, New Sign-Ups, New Flights! NASA Aeronautics Flight Log**

It's a new year, flight log family! Be sure to sign up today so you don't miss any of the new flights coming in 2025.



Join Flight Log individually or as a group to learn all about NASA Aeronautics, its research aircrafts, pilots, crew, and new flights coming soon. Complete activities or attend a NASA Aeronautics event to collect endorsement stamps and earn mission patches. Stay connected on our [contact list](#) so you don't miss a thing. We look forward to flying with you!

More STEM activities have been added to allow students to earn even more endorsement codes and mission patches! A new section about pilots has also been added, so see what's new!

### **Did you know?**

**January 4th** is National Trivia Day. This is the holiday that celebrates factoids about all kinds of topics like science, math, history, pop culture, and anything else you can think of to test one's knowledge of random facts. NASA loves trivia which is why we have a Kahoot! channel that you will love! Check out [NASA's](#)

[Kahoot! quizzes](#), and don't miss the X-59 Kahoot! quiz to test your knowledge of NASA's quiet supersonic research aircraft.

**January 21st** is National Squirrel Appreciation Day.

Let's give our bushy-tailed rodent friends some love today. NASA Aeronautics honors our favorite flying squirrel, Orville D.

Squirrel, NASA's Flight Log ambassador who loves to share his travels and all things Aeronautics. Celebrate Orville and his friends with some color on



his [coloring page](#) or work with him to [create your own flight logbook](#). Want more? Check out NASA's Jr. Pilot Program to learn about the [X-59](#) and [Sustainable Aviation](#) with Orville D. Squirrel.

**January 28th** is Christa McAuliffe Day. Christa McAuliffe made history as the first teacher and civilian to go to space. Unfortunately, McAuliffe was aboard the Challenger shuttle when it experienced a catastrophic event taking the lives of the entire crew on January 28, 1986. She has inspired teachers, civilians, and the next generation of explorers to continue the journey of discovery. Learn more about the women of NASA who have inspired future generations [HERE](#).



## 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!"

[Aeronautics Innovations Challenges](#): Keeping up with our many design challenges and opportunities for both post-secondary and K-12 can be tough. In response, we created a "one-stop shop" to pull them all together in one location.

[Flight Log Experience](#): (K-12, post-secondary, general public) Sign up to send your name with NASA Aeronautics on X-planes, UAS flights, and more as you build your virtual NASA flight log. Earn virtual endorsement stamps and mission patches and access aeronautics STEM activities and resources. Educators can sign up their entire class.

[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.

[Space to Learn](#): (K-12, post-secondary, educators, general public) Need more resources from a variety of contents? NASA has a page full of learning resources from all projects and programs at NASA.

[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 Connects](#): (K-12, post-secondary) NASA Connects is a network of educators who come together to collaborate, share NASA resources, and create personal collections of materials that can then be shared with others. Members can join groups tailored to their specific interests.

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