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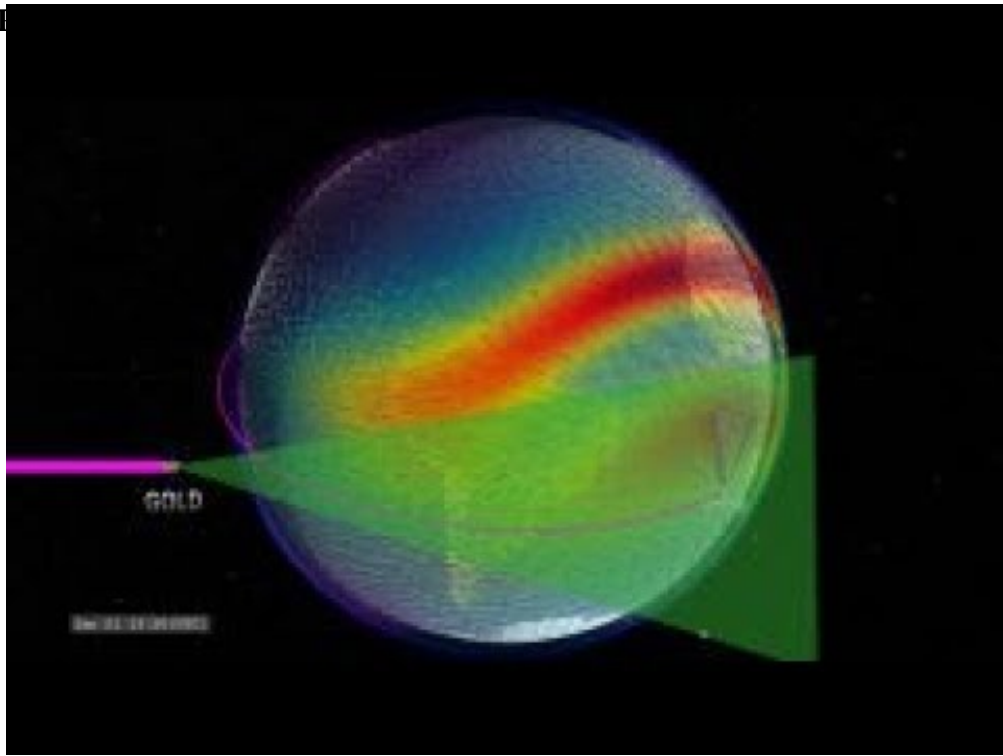
NASA -

[Engineering Design Process](#)

[NASA Educator Guide to the Engineering Design Process](#)

Resources at the Library of Congress can be used alone or in conjunction with NASA images to promote STEM and space education. Materials can be used as a form of research and inspiration for design challenges. The resources also help students connect to the past of space exploration and the people who made it possible. Students can examine the evolution of space exploration by analyzing past and present documentation. They can then take the next step in imagining the future.

'THE UPPER ATMOSPHERE AND SPACE WEATHER'



'Sarah Jones discussed two of NASA's newest missions, GOLD (Global-scale Observations of the Limb and Disk) and ICON (Ionospheric Connections Explorer), which will determine how weather shapes the Earth's interface to space. At the boundary between Earth and space, charged particles and fields co-exist with Earth's neutral atmosphere and cause a continual tug of war between the neutral and ionized gases. Events like hurricanes create waves that can travel up to this region, while the Sun frequently releases blasts of solar material to impact it. This changes the shape of the boundary between Earth and space and can garble signals being transmitted from satellites.

Speaker Biography: Sarah Jones is a research astrophysicist for the Space Weather Laboratory at NASA Goddard Space Flight Center.

For transcript and more information, visit http://www.loc.gov/today/cyberlc/feature_wdesc.php?rec=8349

'SEARCH

MANITY?'



'The outgoing and incoming Baruch S. Blumberg NASA/Library of Congress Chairs in Astrobiology -- David H. Grinspoon and Steven J. Dick -- discuss the societal implications of the search for life in the universe.

Speaker Biography: David H. Grinspoon held the inaugural astrobiology chair position at the Library of Congress from November 2012 to October 2013. His successful tenure included a day-long symposium on the longevity of human civilization and speaking appearances at the Library, NASA headquarters, NASA Goddard Research Center, the Philosophical Society of Washington, the Carnegie Institute, the National Academy of Sciences and the American Association for the Advancement of Science. Grinspoon's research at the Library of Congress examined the history of the Earth from an astrobiological perspective, and the consequences for life on Earth in the "Anthropocene Era," the name given by some scientists to the current era in the Earth's history. An internationally known planetary scientist, funded by NASA to study the evolution of Earth-like planets elsewhere in the universe, Grinspoon serves as an adviser to NASA on space-exploration strategy. He is involved with many space missions and is a trained suborbital astronaut. He has been published widely in popular magazines, scholarly journals, and blogs.

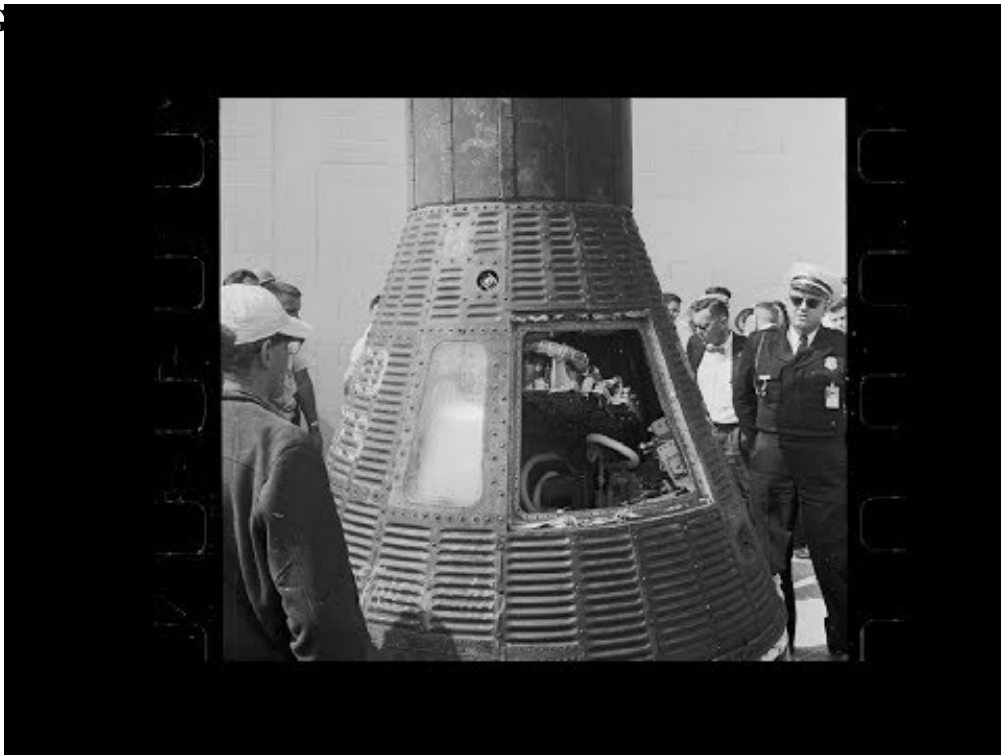
Speaker Biography: Steven J. Dick is an a well-known astronomer, author, and historian of science. His research at the Library of Congress investigates the human consequences of searching and potentially discovering life beyond Earth. Dick most recently testified before the House Committee on Science, Space, and Technology about astrobiology and the search for bio-signatures in our solar system. Prior to holding the astrobiology chair at the Kluge Center, he was the chair in aerospace history at the Smithsonian's National Air and Space Museum. He served as the chief historian for the National Aeronautics and Space Administration (NASA) from 2002 to 2008.



For more information, visit http://www.loc.gov/today/cyberlc/feature_wdesc.php?rec=6194

'HIDDEN FIG

SHETTERLY'

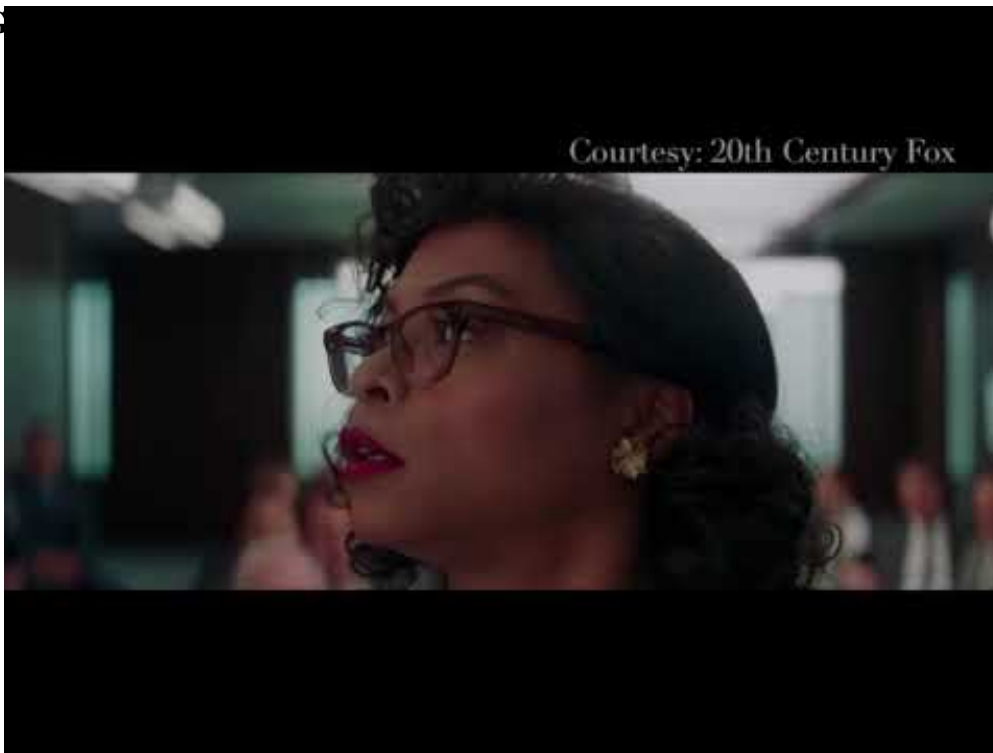


'The Library of Congress commemorates Women's History Month with a special interview about the women of NASA, their courage, leadership and super powers in the history of the American space program. Librarian of Congress Dr. Carla Hayden will lead a discussion with Margot Lee Shetterly, author of "Hidden Figures" and Donna Gigliotti, the producer of the film "Hidden Figures"

Learn more about this event, <https://www.loc.gov/item/prn-18-016/womens-history-month-events-at-the-library-of-congress/2018-02-22>.'

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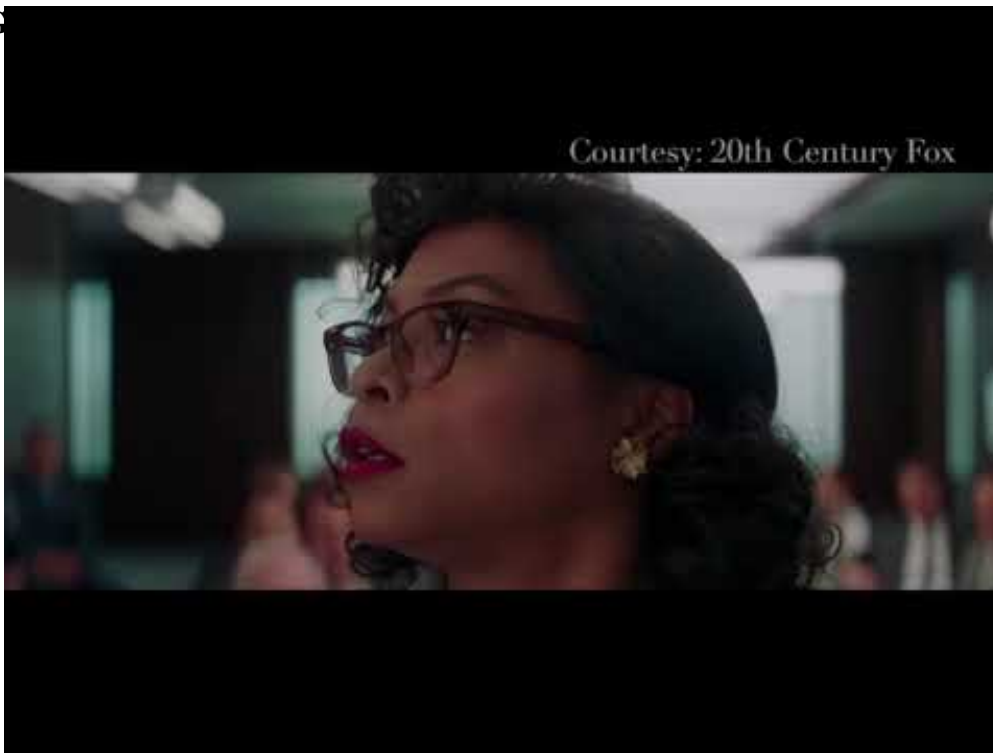
Speaker Biography: Margot Lee Shetterly is the author of the book "Hidden Figures."

Speaker Biography: Carla Hayden is the 14th Librarian of Congress.

For transcript and more information, visit http://www.loc.gov/today/cyberlc/feature_wdesc.php?rec=8311

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'HURRICANE HUNTING NASA STYLE: USING SPACE-BASED AND AIRBORNE

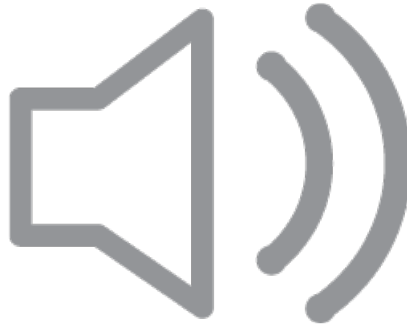


'NASA's Scott Braun discussed our current understanding and the suite of tools that NASA provides to improve understanding of hurricanes and similar storms. Millions of people worldwide are exposed to the potential hazards of these storms. Advances in observation systems and modeling have led to advances in storm track prediction and storm intensity forecasting. However rapid changes in storm intensity, storm structure, precipitation and storm surge have introduced new challenges.

- Dr. Scott A. Braun, a research meteorologist at NASA's Goddard Space Flight Center in Greenbelt, Md., specializes in the area of hurricanes. He is an expert at using satellite and aircraft data, along with computer modeling, to investigate how hurricanes form and intensify, including their interaction with the Saharan Air Layer. Braun is project scientist for the Global Precipitation Measurement (GPM) mission and the Time-Resolved Observations of Precipitation structure and storm Intensity with a Constellation of Smallsats (TROPICS) mission. He is also the Goddard co-lead for the Decadal Survey Designated Observable Study for Clouds, Convection and Precipitation.

For transcript and more information, visit <https://www.loc.gov/item/webcast-8766>

BUZZ ALDRIN: BOOK FEST 05



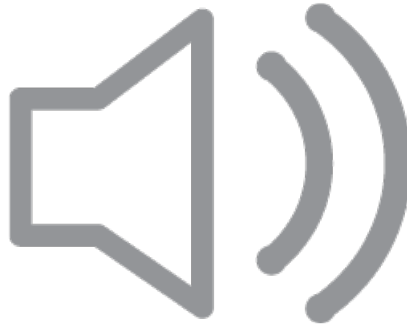
AUDIO

Reference Link: <https://www.loc.gov/item/webcast-3810/>

Summary: Author and former Apollo astronaut Buzz Aldrin at the 2005 National Book Festival

Notes: - Buzz Aldrin, selected by NASA as one of the early astronauts, made the historic Apollo XI moon walk with Neil Armstrong in 1969. Recipient of the Presidential Medal of Freedom, he lectures and travels throughout the world to pursue and discuss the latest concepts and ideas for exploring the universe. He founded a rocket design company, Starcraft Boosters, Inc., and the Share Space Foundation, a nonprofit organization for pursuing space tourism. His books, which share his vision for the future of space travel, include the children's book "Reaching for the Moon" (HarperCollins, 2005) with paintings by Wendell Minor. Aldrin lives in California.

LELAND MELVIN: 2017 NATIONAL BOOK FESTIVAL



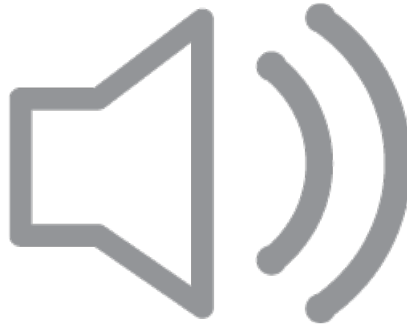
AUDIO

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Summary: Leland Melvin discusses "Chasing Space: An Astronaut's Story of Grit, Grace and Second Chances" at the 2017 Library of Congress National Book Festival in Washington, D.C.

Notes: - Leland Melvin is an engineer, NASA astronaut and former wide receiver for the Detroit Lions. He served on the space shuttle Atlantis as a mission specialist and was named the NASA associate administrator for education in October 2010. He also served as the co-chair of the White House's Federal Coordination in Science, Technology, Engineering and Mathematics (STEM) Education Task Force committee, developing the nation's five-year education plan. He is the host of the Lifetime show Child Genius and a judge for ABC's BattleBots. He holds four honorary doctorates and has received the NFL Player Association Award of Excellence. His new book "Chasing Space: An Astronaut's Story of Grit, Grace and Second Chances," tells his personal story of perseverance, dedication and taking whatever life throws at you.

THE RAY BRADBURY EFFECT: NATIONAL BOOK FESTIVAL 2020

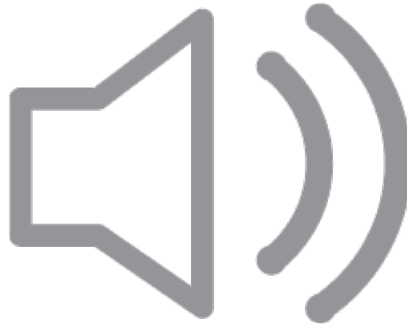


AUDIO

Reference Link: <https://www.loc.gov/item/webcast-9427/>

Summary: Ann Druyan, "Cosmos: Possible Worlds" (National Geographic), and Leland Melvin, "Chasing Space: An Astronaut's Story of Grit, Grace and Second Chances" (Amistad), talk about Ray Bradbury's effect on their lives and their work. The Bradbury centennial is currently being celebrated by fiction writers, astronomers, astronauts and readers throughout the world. Melvin is one of NASA's first African American astronauts. Ann Druyan, widow of astronomer Carl Sagan, is a space exploration writer and the producer of many documentaries on the space age. Moderated by Jonathan Eller, director of the Center for Ray Bradbury Studies.

NEEMO: NASA EXTREME ENVIRONMENT MISSION OPERATIONS



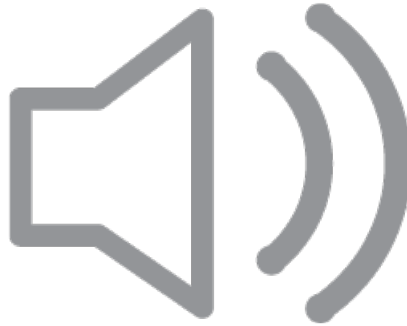
AUDIO

Reference Link: <https://www.loc.gov/item/webcast-7878/>

Summary: Kelsey Young discussed NEEMO (NASA Extreme Environment Mission Operations), a mission that sends groups of astronauts, engineers and scientists to live and work in Aquarius, an undersea research station and an analog for space exploration.

Notes: - Dr. Kelsey Young is a research scientist who works both at NASA's Johnson Space Center in Houston and at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Her research interests include using sites on Earth as testing grounds for advancing planetary field geology and developing the technology needed to carry out geologic and geochemical observations on other planetary surfaces, whether on the moon, Mars or asteroids. She served both as a science backroom member and as a geologist crew member for the 2010 Desert RATS mission, living in the Space Exploration Rover for one week with astronaut Stephanie Wilson.

HOME ALONE IN A SIMULATED MARS

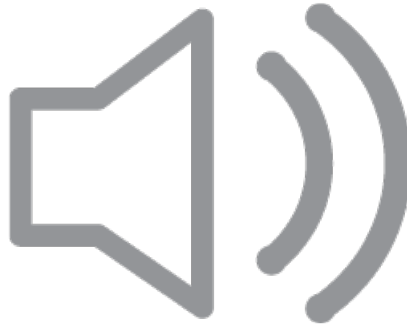


AUDIO

Reference Link: <https://www.loc.gov/item/webcast-9174/>

Summary: NASA astronaut and scientist Kate Greene discusses her forthcoming book, "Once Upon a Time I Lived on Mars: Space, Exploration and Life on Earth," with the Library's Marie Arana. Greene lived in a simulated Martian environment located on the slopes of Mauna Loa in Hawai'i and spent several months in isolation, doing research. She has a lot to say about the stress, loneliness and other challenges of sequestration -- all from a novel and unique perspective.

AERONAUTICS AT THE LIBRARY OF CONGRESS: FORTY YEARS OF ONE USER'S EXPERIENCE



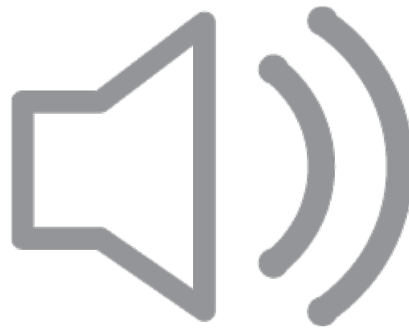
AUDIO

Reference Link: <https://www.loc.gov/item/webcast-4217/>

Summary: A nationally known aviation historian and biographer of the Wright brothers, Tom Crouch has been mining the treasures of the Library of Congress for more than four decades. Crouch discussed the Library of Congress collections, and his many hours searching through materials, in a lecture titled "Aeronautics at the Library of Congress: Forty Years of One User's Experience" in a program sponsored by the Science, Technology and Business Division. The occasion of the lecture was to celebrate the publication of a Library of Congress book titled "Aeronautical and Astronautical Resources of the Library of Congress: A Comprehensive Guide."

Notes: - Tom Crouch, senior curator of the Division of Aeronautics at the National Air and Space Museum, is the author or editor of more than a dozen books and many articles for both magazines and scholarly journals. Most of his publications are based on research in the many divisions of the Library of Congress. Some of Crouch's books that draw most heavily on the Library's collections include "Rocketeers and Gentlemen Engineers: A History of the American Institute of Aeronautics and Astronautics and What Came Before" (2006); "The Bishop's Boys: A Life of Wilbur and Orville Wright" (1989); "The Eagle Aloft: Two Centuries of the Balloon in America" (1983); and "A Dream of Wings: Americans and the Airplane, 1875-1905" (1981). Since 1974, Crouch has served both the National Air and Space Museum and the National Museum of American History in a variety of curatorial and administrative posts. In the fall of 2000, President Clinton appointed him chairman of the First Flight Centennial Federal Advisory Board. Crouch holds a Ph.D. in American history from Ohio State University, and an honorary degree in Doctor of Humane Letters from Wright State University. He has won several major writing awards.

LOOKING HOMEWARD TOWARDS EARTH: THE POWER OF PERSPECTIVE



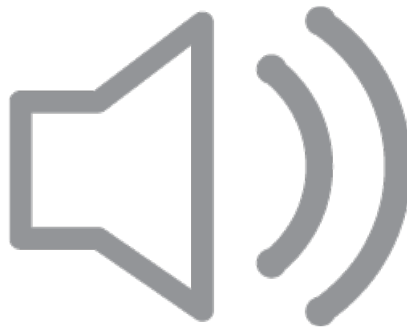
AUDIO

Reference Link: <https://www.loc.gov/item/webcast-5773/>

Summary: In 1968, Apollo 8 astronaut William Anders took an image of planet Earth as it emerged from the lunar horizon. The picture, "Earthrise," changed forever society's view of our celestial home, according to NASA Chief Scientist Waleed Abdalati. The image of Earth--beautiful and vulnerable, and suspended in dark stillness--inspired an appreciation that there is one human race, whose fate hinges delicately on mankind's collective actions. Abdalati demonstrates the tremendous power of the space-based perspective in science, exploration and in daily life.

Notes: - Waleed Abdalati was appointed NASA chief scientist on Jan. 3, 2011, serving as the principal adviser to NASA Administrator Charles Bolden on NASA science programs, strategic planning and the evaluation of related investments. He left NASA at the end of 2012.

LELAND MELVIN AND JONATHAN ELLER LIVE Q&A: 2020 NATIONAL BOOK FESTIVAL

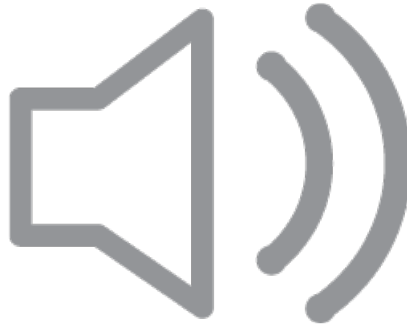


AUDIO

Reference Link: <https://www.loc.gov/item/webcast-9579/>

Summary: Leland Melvin and Jonathan Eller answer questions from the virtual audience about their work at the 2020 Library of Congress National Book Festival.

PREPARING FOR THE NEXT GENERATION OF CREWED PLANETARY SURFACE EXPLORATION



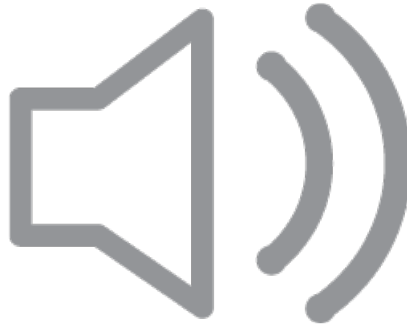
AUDIO

Reference Link: <https://www.loc.gov/item/webcast-7665/>

Summary: Kelsey Young discussed her work at analog sites on Earth to prepare for a new generation of crewed planetary exploration missions that use new tools and technologies to collect and interpret geochemical and geophysical data.

Notes: - Kelsey Young is a planetary geologist at NASA Goddard Space Flight Center.

**APOLLO AT 50: THE LASTING EFFECT OF EXPLORATION OF THE LUNAR SURFACE ON
OUR CURRENT EXPLORATION OF THE MOON**



AUDIO

Reference Link: <https://www.loc.gov/item/webcast-8742/>

Summary: The Apollo missions to the Moon provided the first ever samples from a planetary body that were collected in a geologic context. Now with data from Lunar Reconnaissance Orbiter (LRO), Noah Petro discussed re-evaluating those samples in a local and regional context which provides improved understanding for what those samples represent.

Notes: - Noah Petro, research space scientist at NASA's Goddard Space Flight Center, is a planetary geologist who studies the surface of airless bodies in space, primarily focusing on the Moon.