



# GRAA NEWSLETTER

P.O. Box 1184, Greenbelt, MD 20768-1184

May 2023 <https://goddardretirees.org> 39th Year of Publication

**UPCOMING LUNCHEONS:** We meet at 11:15 AM on the 2<sup>nd</sup> Tuesday of each month at the American Legion Post #136 at 6900 Greenbelt Road. **Reservations are required;** please contact [graalunch@gmail.com](mailto:graalunch@gmail.com) (preferred) or call (410)-709-8889 **before Thursday, May 4th.**

May 9		<b>Dr. Joanna Joiner</b> , Atmospheric Chemistry and Dynamics Branch, winner of the 2020 William Nordberg Memorial Award, will preview her pandemic-delayed June Nordberg Lecture. The subject is “How do we make and improve satellite data products that enable breakthrough science? Journeys through solar backscatter observations”
June 13		<b>Dr. Scott Braun</b> , Research Meteorologist in Code 612 and Project Scientist for ESO-AOS missions will discuss “The Atmosphere Observing System (AOS): Future Space-Based and Suborbital Observations for the Study of Coupled Aerosol-Cloud-Precipitation Interactions.”

## COMMENTS FROM TONY COMBERIATE AND ARLIN KRUEGER

Our April speaker was **Michael Johnson**, Chief Technologist in Goddard’s Engineering and Technology Directorate (ETD), Code 500. Michael substituted for Deputy Director of ETD, Joanna Hill-Kittle, who attended to her grandchild’s birth. The presentation, entitled “The Future of Goddard Engineering,” described how Goddard is evolving to keep ahead of the rapidly changing world of engineering and technology, necessary to compete and lead now and in the future. Goddard’s major achievements over the past decade include Webb, Landsat 9, Lucy, and the Laser Relay Communications Demonstration. ETD’s future thrust areas include Distributed System Missions; Quantum Sensing and Crosscutting Quantum Technologies; Robotic In-Space Assembly, Servicing, and Manufacturing; and Digital Engineering Infusion. To prepare its workforce, ETD is developing a strategy that will map science goals for the next decade to the engineering capabilities and technology needs in the areas of Artificial Intelligence (AI), Machine Learning, Automation, Data Integration, and Robotics.

Goddard is a partner in the mid-Atlantic “Capital of Quantum” ecosystem of academia, quantum companies, and federal labs. Michael described how noiseless quantum sensors, like a gravity gradiometer can provide breakthrough earth science by increasing the accuracy and resolution of ice sheets and glaciers to understand climate change and to help with local water resource management.

Artemis-related areas include developing GPS and Search and Rescue capabilities, and AI to guide the path of exploration based on topographic data from Goddard’s Lunar

Reconnaissance Orbiter. Lunar explorers will also have to deal with visibility problems because, unlike the Earth, solar illumination is stark, and distances are hard to judge without Rayleigh and dust scattering to give perspective.

Robotic servicing of spacecraft will be tested with the OSAM-1 (On-orbit Servicing, Assembly, and Manufacturing) program, planned to demonstrate the extension of a satellite's lifespan by refueling Landsat-8. New servicing technologies under development include an autonomous real-time relative navigation system, servicing avionics, dexterous robotic arms, advanced tool drive and tools, and a propellant transfer system. Future OSAM missions could assemble Moon to Mars spacecraft in lunar orbit. These technologies will be made available for commercial space applications.

Goddard Engineering envisions end-to-end digitization and connectivity of models that can optimize every phase of a mission to accelerate scientific discovery and enable mission success. ETD's "Integrated Everything" approach uses workflow automation, which removes human-in-the-loop inefficiencies and optimized system solutions. AI and robots can enable an order of magnitude improvement in faster/cheaper development of spaceflight structures. Extended Reality (XR) will be an essential tool in implementing ETD's vision of the future in enabling a fault mitigation architecture for next-generation spacecraft. Michael left us with the concept that Goddard is putting the "T" back in ETD.

**DIRECTORIES AND NEWSLETTERS:** We depend on retirees to furnish their home addresses to be listed in the biennial **GRAA Membership Directories**, which are only available as mailed hardcopies to members. Multi-month **abstracts of Newsletters** are also mailed by USPS to our retirees with only mail addresses in our files. These are supported by donations to GRAA, P. O. Box 1184, Greenbelt, MD 20768-1184.

Retirees need to register their email addresses to get our monthly **Newsletters**, which include synopses of the talks, special community announcements, and obituaries. Please send your email address to [goddardretirees@gmail.com](mailto:goddardretirees@gmail.com) Past Newsletters and videos are on our website <https://goddardretirees.org/>.

**TREASURER'S REPORT:** Jackie Gasch received tax-deductible donations from the following: Rex Elliott, Carmie Peavler, and Ellen Herring.

**FROM THE GODDARD ARCHIVES:** On May 7, 1975, Scout launched SAS-C/Explorer 53 from the San Marco platform in the Indian Ocean off the coast of Kenya. It was an X-ray astronomy satellite with four instruments. Its mission was to measure the X-ray emission of extragalactic sources. It provided scientific data for four years.

#### **REMEMBERING OUR FORMER COLLEAGUES:**

**David E. Perreten**, 86, of Henning, MN, died on Tuesday, April 11, 2023, at his residence. David Earl was born in Wadena, MN on August 19, 1936. After serving in the U.S. Army and the NASA Manned Space Center at Cape Canaveral, Dave transferred to Goddard's Networks Directorate

where his work involved world travel, testing the tracking site's computer systems. In 1984, at the age of 48, Dave took early retirement and worked for several Goddard contractors.

**Edward J. Danko**, 87, of Millsboro DE died on March 31, 2023 after complications from surgery. He was born on January 30, 1936, in Windber, PA. He was a USAF veteran and an ordained Permanent Deacon in the Catholic Church. After working as an FAA Air Traffic Controller, he came to Goddard's Networks Directorate, where he was part of many launch teams that included the Apollo moon missions in the 1960s and 1970s. His name is listed on monuments in the Space Walk of Fame in Titusville, FL, each for his contributions to Project Gemini, the Apollo Program, and the U.S. Space Shuttle Program.

**Charles E. White**, 100, of Silver Spring died peacefully of natural causes on March 27, 2023. He was born July 1, 1922, in Washington, DC. After earning a BS from the University of Maryland in aeronautical engineering, he joined the Army Air Corps during WWII, then worked at Goddard for many years as the Deputy Project Manager for International Projects, AMPTE and Rosat Spacecraft, and as a Goddard Contractor until his retirement at age 82. He was a regular GRAA attendee for many years.

**Louis (Lou) J. Stief**, Ph.D., 89, of Southwest Washington D.C. died on January 7, 2023. Lou was born in Pottsville, PA in 1933, graduated with a BA degree from La Salle College, Philadelphia, PA, and earned his Ph.D. in chemistry from Catholic University of America. He joined the Astrochemistry Branch in the Laboratory for Extraterrestrial Physics of Goddard in 1968 and served as Branch Head for fourteen years, 1976-1990. Lou established a very successful experimental research program to measure gas phase reactions. Through the publication of over 120 peer-reviewed papers, his research directly benefited NASA's Upper Atmosphere Program and the Planetary Atmospheres Program. Many of his studies provided the first experimental measurements of rate constants, product yields, and branching patterns. These laboratory results have aided in the understanding of observations from Voyager, Galileo, Cassini, and other spacecraft as well as from ground-based telescopes. Lou retired from Goddard in 2004.

**John Edward Moore**, 85, of Olney, MD and Naples, Florida, passed away on Sunday, March 19, 2023. Born on July 17, 1937, in Richmond, Virginia, he graduated from Virginia Military Institute and served in the U.S. Army and Army Reserves. His 30-year NASA career started at Goddard Space Flight Center where he was a Resources Manager in Code 268 and Procurement Officer in Code 280B before transferring to NASA Headquarters. The family will be holding a funeral mass on May 20, 2023 at 11:00 AM at Our Lady of Grace Catholic Church, 15663 Norbeck Boulevard, Silver Spring, Maryland 20906. The visitation will begin at 10:00 AM and a reception is being planned for after the mass.