

Assessment of Technical and Scientific Capabilities at NASA Goddard Space Flight Center

Committee

David S. Chu

Chair

DAVID S. C. CHU served as President of the Institute for Defense Analyses from 2009 to 2019, where he continues as an adjunct staff member. In the Department of Defense, he served as Under Secretary of Defense for Personnel and Readiness from 2001-2009, and earlier as Assistant Secretary of Defense and Director for Program Analysis and Evaluation (1981-1993). From 1978 to 1981 he was the Assistant Director of the Congressional Budget Office for National Security and International Affairs. Dr. Chu began his career as a U.S. Army officer (1968-1970). He was an economist with the RAND Corporation from 1970 to 1978, director of RAND's Washington Office (1994-1998), and vice president for its Army Research Division (1998-2001). He earned a Ph.D. in economics from Yale University. Dr. Chu is a Fellow of the National Academy of Public Administration and was previously a member of the Defense Science Board. Dr. Chu's National Academies service includes the Laboratory Assessments Board, the Board on Mathematical Sciences and Analytics, and the Division Committee on Engineering and Physical Sciences. He is a recipient of the Department of Defense Medal for Distinguished Public Service with Gold Palm, the Department of Veterans Affairs Meritorious Service Award, the Department of the Army Distinguished Civilian Service Award, the Department of the Navy Distinguished Public Service Award, and the National Academy of Public Administration's National Public Service Award.

Ana P. Barros

Member

ANA P. BARROS (NAE) is Donald Biggar Willett Chair of Engineering and Professor and Head of Civil and Environmental Engineering at UIUC. Before joining UIUC, she was Edmund T. Pratt, Jr. School Distinguished Professor of Civil and Environmental Engineering at Duke University. Dr. Barros was also a member of the engineering faculty at the University of Porto, Penn State, and Harvard University. Her primary research interests are in Hydrology, Hydrometeorology, and Environmental Physics. Her research relies on intensive field and laboratory experiments, satellite-based remote sensing, computational modeling, and environmental informatics. She pioneered early AI/ML applications for precipitation, flood, and drought estimation, as well as long-lead forecasting, beginning in the 1990s. She continues to develop coupled AI and physical modeling frameworks to improve the prediction of extreme precipitation and floods in mountainous regions. Prof. Barros served on multiple boards and committees over the years, such as the Space Studies Board (SSB) of the National Research Council, the Water Science and Technology Board (WTSB), the Board of Atmospheric Sciences and Climate (BASC). At present, she serves on SSB's Committee on Earth Sciences and Applications. She received the ASCE Ven Te Chow and the AIH Ray K. Linsley awards in Hydrology, and she is a Fellow of AGU, AMS, ASCE, and AAAS, a senior member of IEEE, and a member of the National Academy of Engineering.

Joan M. Bienvenue

Member

JOAN BIENVENUE is currently the Associate Vice Chancellor for research for the University of Texas System (UTS). In this role, she serves as research lead for the UT System. In early 2025, she took on the role Chief Research Security Officer and was appointed to serve on the Texas Higher Education Research Security Council, where she was elected Vice Chair. Prior to joining the UT System, she served as Executive Director and Vice Provost of the University of Tennessee–Oak Ridge Innovation Institute. She was the inaugural Director of the Applied Research Institute, at the University of Virginia, becoming Senior Executive Director in 2017. Prior to these roles, she joined Lockheed Martin as chief scientist and program manager, after service at the Armed Forces DNA Identification Laboratory (AFDIL) as Validation and Quality Control Supervisor. She was a National Institute of Justice Research (NIJ) Fellow while a graduate student at the University of Virginia (UVA). After completing her graduate studies, Dr. Bienvenue was an ORISE Postdoctoral Research Fellow at the FBI. Dr. Bienvenue is a fellow of the American Academy of Forensic Sciences. Dr. Bienvenue received a B.S. in chemistry from Rivier University, an M.S. in forensic science at the University of New Haven, a Ph.D. in chemistry from the University of Virginia, and an M.B.A. from the University of Mary Washington.

Julie Castillo-Rogez

Member

JULIE CASTILLO-ROGEZ is a senior research scientist Emeritus at the Jet Propulsion Laboratory (JPL), California Institute of Technology. Prior to retirement, she was the Chief Scientist for Planetary Science and Exploration, and for Planetary Flight Projects at JPL. Castillo-Rogez specializes in modeling the geophysical evolution of large icy moons and dwarf planets. She has participated in several flight projects, including NASA's Cassini mission, Dawn, InSight, Europa Clipper, and the Near Earth Asteroid Scout CubeSat. While at JPL, she informed internal investments in science and flight technology and led the science formulation for several technologies, including autonomous systems, next generation computers, and small spacecraft. Castillo-Rogez was awarded NASA's Exceptional Science Achievement Medal in 2019 and the Paolo Farinella Prize of the Europlanet Society in 2022. She holds a Ph.D. in Planetary Geophysics (2001) and M. Sc. In terrestrial geophysics from the University of Rennes, France (1998).

Ross B. Corotis

Member

ROSS B. COROTIS (NAE), is Professor of Engineering Emeritus and Dean Emeritus at the University of Colorado in Boulder. He was on the faculty at Northwestern University and subsequently established the Department of Civil Engineering at The Johns Hopkins University. He researches the coordinated roles of engineering and social science in framing resiliency for the built environment. He served as science advisor for the Department of State in Washington, DC., and was Editor of the journals Structural Safety and ASCE Journal of Engineering Mechanics. For The National Academies he served on the Building Research Board, the Disasters Roundtable, the Board on Infrastructure and the Constructed Environment, chaired the Laboratory Assessment Board, was founding chair of the Committee on NIST Technical Programs, and Chair of the Civil Engineering Section of the NAE. He earned three degrees (SB, SM, PhD) from MIT. He is a registered professional engineer and structural engineer, Distinguished Member of ASCE, Fellow of the Structural Engineering and Engineering Mechanics Institutes, recipient of the ASCE Huber, Shinozuka and OPAL Awards, and author of more than 250 publications. He chaired the NASEM committee on the Technical Assessment of the Capital Facility Needs of the National Institute of Standards and Technology.

Orlando Figueroa

Member

ORLANDO FIGUEROA is the president of Orlando Leadership Enterprise, LLC, which focuses on providing expert advice in space mission systems and technology, organization and enterprise/program management, strategic planning, and team and leadership development. Figueroa retired from NASA after serving as the director of applied engineering and technology at the Goddard Space Flight Center (GSFC), the deputy center director of science and technology at GSFC, and the NASA deputy associate administrator for Science Mission Directorate. Figueroa was named the 2005 Service to America Federal Employee of the Year and was awarded the 2008 Smithsonian Institution Latino Center Legacy Award, the 2010 NASA Distinguished Service Medal, the 2016 National Space Society Pioneer Award, and the Senior Executive Service President Rank Award. Figueroa earned a B.S. in mechanical engineering from the University of Puerto Rico, Mayaguez. Figueroa served on the National Academies' Committee on Planetary Science and Astrobiology Decadal Survey 2023-2032 and currently serves on the Committee on Astrobiology and Planetary Science.

Qiang Fu

Member

QIANG FU is the Calvin Professor of Atmospheric Sciences at the University of Washington, where he has served as a full professor since 2006 after previously serving on the faculty at Dalhousie University. His research focuses on atmospheric radiation and cloud processes, atmospheric remote sensing, cloud-aerosol-radiation-climate interactions, stratospheric circulation and stratosphere-troposphere exchange, and climate change. Fu is a member of the National Academy of Sciences and the Washington State Academy of Sciences, and is a Fellow of the American Meteorological Society, the American Geophysical Union, and the American Association for the Advancement of Science. He is a recipient of the Alexander von Humboldt Research Award and the AMS Jule G. Charney Medal. Fu earned bachelor's and master's degrees from Peking University and a doctorate in atmospheric sciences from the University of Utah.

Stephen A. Fuselier

Member

STEPHEN A. FUSELIER (NAS) is the Vice President of the Space Science Division at the Southwest Research Institute. He is recognized for his fundamental contributions to understanding the physics of the interaction of the solar wind with Earth's magnetosphere, comets, and the interstellar medium. Fuselier was born and grew up in New Orleans, Louisiana. He graduated from the University of Southern California with a BS in physics and from the University of Iowa with an MS and a PhD in physics. He was a postdoctoral fellow at Los Alamos Laboratory before working at Lockheed Martin Advanced Technology Center as a scientist and manager. In 2011, he joined Southwest Research Institute. He is a Co-Investigator and instrument lead on several NASA and European Space Agency missions and is Deputy PI for the Tandem Reconnection and Cusp Electrodynamics Reconnaissance Satellites. His awards and honors include Fellow of the American Geophysical Union, recipient of the AGU James B. Macelwane Medal, and the European Geosciences Union Hannes Alfvén Medal, and membership in the National Academy of Sciences.

Katherine L. Gregory

Member

KATE GREGORY, PE, is a Senior Consultant at AtkinsRéalis, providing guidance on infrastructure planning initiatives, particularly involving the U.S. DOE and international militaries. A retired Rear Admiral, she previously served as Chief Operating Officer for Fermilab and Senior Vice President at Iowa State University, following her naval career which culminated as the US Navy's Chief of Engineers leading Naval Facilities Engineering Command. Rear Admiral (ret) Gregory possesses more than 40 years of expertise in the strategic analysis, development, and delivery of complex infrastructure. Her professional focus centers on lifecycle planning and infrastructure risk, having managed a \$270 billion global portfolio, led large-scale initiatives like a \$7 billion renewable energy network, and developed new military complexes in Guam and Italy. She is highly skilled in aligning infrastructure with technical requirements for national research and military missions. A licensed Professional Engineer, she is a member of the American Society of Civil Engineers and the Society of American Military Engineers. She holds a BS in General Engineering from the U.S. Naval Academy and MS degrees in Systems Management from the University of Southern California, and Construction Management from The George Washington University.

Michele V. Manuel

Member

MICHELE VIOLA MANUEL (NAE) is the U.S. Steel Dean of the Swanson School of Engineering and Professor of Mechanical Engineering and Materials Science at the University of Pittsburgh. Prior to this role, she was the Rolf E. Hummel Distinguished Professor and Department Chair of the Department of Materials Science and Engineering at the University of Florida. Her primary research expertise is in computational thermodynamics and kinetics-based alloy design, with applications spanning lightweight structural alloys, biomedical implants, and materials under extreme environments. Dr. Manuel is an elected member of the National Academy of Engineering, a Fellow of ASM International, and recipient of the Presidential Early Career Award for Scientists and Engineers (PECASE), the TMS Brimacombe Medalist Award, and NASA's Group Achievement Award. She holds a Ph.D. in Materials Science and Engineering from Northwestern University and a B.S. in Materials Science and Engineering from the University of Florida. Dr. Manuel completed postdoctoral training at General Motors and a visiting scholar appointment at NASA Glenn Research Center. Dr. Manuel has previously served on National Academies panels, including the 2023–2032 Decadal Survey on Biological and Physical Sciences Research in Space and the Panel on Assessment of the Sciences of Extreme Materials at the Army Research Laboratory.

Michael G. Ryschkewitsch

Member

MICHAEL G. RYSCHKEWITSCH stepped down in 2022 as Sector Head for the Space Exploration Sector of the Johns Hopkins University Applied Physics Laboratory. In that role he was responsible for APL's portfolio of space programs for both NASA and national security sponsors spanning many aspects of solar system research, from space physics to space situational awareness and planetary probes on behalf of the Department of Defense, the intelligence community, the National Aeronautics and Space Administration, and other federal agencies. He continues to serve as a member of the technical staff in support of projects and pro bono work for outside organizations such as the National Academies and the FAA. Before joining the Laboratory, Dr. Ryschkewitsch served for over thirty years at NASA with the last seven years as the NASA Chief Engineer. He is a Fellow of the AIAA and recipient of the National Space Club Norman L. Baker Astronautics Engineer award, NASA Distinguished Service Medal, President's Distinguished Rank Award, Medal for Outstanding Leadership. National Aeronautics and Space Administration (NASA). Asteroid 182044 Ryschkewitsch was named for him. Dr. Ryschkewitsch earned his Bachelor of Science degree in physics from the University of Florida and a Ph.D. in physics from Duke University.

Wanda A. Sigur

Member

WANDA SIGUR (NAE) works as an aerospace consultant for both traditional and emerging space exploration companies. Ms. Sigur retired from Lockheed Martin as VP and General Manager of the Civil Space business where she had executive responsibility for national space programs relating to human space flight and space science, including planetary, solar, astrophysics, Earth remote sensing, and nuclear space power missions for civil government agencies. As President and Founder, Lambent Engineering LLC, she provides support to multiple customers in strategic planning, and program management. Previously, Ms. Sigur was Vice President, Engineering, for Lockheed Martin Space. In this capacity, she was responsible for leading the corporation's Space Engineering organization, responsible for military space, civil space, commercial space, classified space and strategic missile defense engineering design, analysis, test, production support, personnel development, and engineering process development and deployment. She has held multiple positions in executive leadership and program management, including key roles in human spaceflight programs, and advanced composites structures design and implementation. Ms. Sigur is a member of the National Academy of Engineering and the Texas Academy of Medicine, Engineering, Science and Technology. She graduated from Rice University with a BS in Materials Science and NanoEngineering and an MBA from Tulane University.

David H. Weinberg

Member

DAVID WEINBERG (NAS) is a Distinguished University Professor in the Department of Astronomy at the Ohio State University. He studies the matter and energy contents of the universe, the formation and evolution of galaxies, the physics intergalactic gas, and the origin of the chemical elements. He has played leading roles in the Sloan Digital Sky Survey and in the development of the upcoming Nancy Grace Roman Space Telescope. He is a member of the National Academy of Sciences and a winner of the Dannie Heineman Prize from the American Astronomical Society and the American Institute of Physics. He earned his BS degree from Yale University and his PhD in astrophysics from Princeton University. He served on science panels for the 2010 and 2020 decadal reviews of astronomy and astrophysics and on the mid-decadal review committee for Astro2010.

Daniel Nagasawa

Staff Officer