

Planetary Science and Astrobiology Decadal Survey

2023-2032: Panel on Venus

Committee

Paul K. Byrne

Chair

PAUL K. BYRNE is an associate professor of planetary science at North Carolina State University's Department of Marine, Earth, and Atmospheric Sciences. His research focuses on comparative planetary geology—comparing and contrasting the surfaces and interiors of planetary bodies, including Earth, to understand geological phenomena at the systems level. Byrne's research projects span the solar system from Mercury to Pluto and, increasingly, to the study of extrasolar planets. Prior to joining North Carolina State University, he was a postdoctoral fellow at the Lunar and Planetary Institute and the Earth and Planets Laboratory of the Carnegie Institution for Science. He serves on the Steering Committee of the Venus Exploration Analysis Group and is a recipient of numerous awards including the NASA Group Achievement Award as part of the MESSENGER mission team in 2018 and was named a NASA Early Career Fellow in 2019. Byrne earned his Ph.D. in planetary geology from Trinity College in Dublin, Ireland. He has not previously served on a National Academies committee.

Larry W. Esposito

Vice Chair

LARRY W. ESPOSITO is a professor at the University of Colorado, Boulder, in the Laboratory for Atmospheric and Space Physics. He is the principal investigator of the Ultraviolet Imaging Spectrograph experiment on the Cassini space mission to Saturn. He was chair of the Voyager Rings Working Group and, as a member of the Pioneer Saturn Imaging Team, he discovered Saturn's F ring. His research focuses on the nature and history of planetary rings and the atmosphere of Venus. Esposito has been a participant in numerous U.S., Russian, and European space missions to Venus, Mars, and the outer planets. In addition, he used the Hubble Space Telescope for its first observations of Venus. He was awarded the Harold C. Urey Prize of the American Astronomical Society, the Medal for Exceptional Scientific Achievement by NASA, and the Richtmyer Lecture Award of the American Association of Physics Teachers and the American Physical Society. He received his Ph.D. in astronomy from the University of Massachusetts, Amherst. Esposito has extensive National Academies experience, including chairing the Task Group on the Forward Contamination of Europa and the Committee on Planetary and Lunar Exploration.

Giada N. Arney

Member

GIADA N. ARNEY is a research space scientist in the Planetary Systems Laboratory at NASA's Goddard Space Flight Center. Her research interests include planetary atmospheres, photochemistry, planetary habitability, spectra, terrestrial solar system worlds (particularly Venus and Earth), exoplanets, and astrobiology. Arney currently serves as one of two deputy principal investigators of the DAVINCI+ Discovery mission concept study. Previously, she led the Science Support Analysis Team for the LUVOIR astrophysics flagship mission concept study. She was a co-editor of a recent title in the Space Science Series, Planetary Astrobiology. Arney received the NASA Early Career Achievement Award in 2018 and was a recipient of the Presidential Early Career Award for Scientists and Engineers in 2019. She received her Ph.D. in astronomy and astrobiology from the University of Washington. Arney has not previously served on a National Academies committee.

Amanda S. Brecht

Member

AMANDA S. BRECHT is a space scientist in the Planetary Systems Branch of NASA's Ames Research Center. Her research interests include planetary science, planetary atmospheres, general circulation models, and comparative planetology. Prior to joining NASA Ames in her current capacity, she was a research scientist at the Bay Area Environmental Research Institute, a NASA postdoctoral program fellow at NASA Ames, and a graduate research assistant at the University of Michigan. Brecht is the recipient of numerous awards, including the Rackham Engineering Award and a NASA Postdoctoral Fellowship. She received her Ph.D. in atmospheric and space science from the University of Michigan, Ann Arbor. Brecht has not previously served on a National Academies committee.

Thomas E. Cravens

Member

THOMAS E. CRAVENS is a professor at the University of Kansas in the Department of Physics and Astronomy. His research interests focus on planetary ionospheres, the interaction of the solar wind with planets, including Earth, Venus, Mars, and comets, and solar system x-ray emission. He was a team member on the Cassini Ion and Neutral Mass Spectrometer (INMS) and is an interdisciplinary scientist on NASA's Mars Atmosphere and Volatile Evolution (MAVEN) mission. He was a co-investigator on the Ion and Electron Sensor for the Rosetta Plasma Consortium (RPC) and was a co-investigator on the TUNDE and PLASMAG instruments on the VEGA-1 and 2 missions to comet Halley. He is a fellow of the American Geophysical Union. He received his Ph.D. in astronomy from Harvard University.

Kandis L. Jessup

Member

KANDIS-LEA JESSUP is a senior research scientist in the Department of Space Studies at the Southwest Research Institute and an affiliate professor in the Department of Physics and Astronomy at Regis College. She specializes in the observation and modeling of planetary atmospheres across the solar system (e.g., Venus, Io, Titan, and Pluto,). Jessup is currently involved in leading spectroscopic observation campaigns of the atmosphere of Venus, and the related radiative transfer modeling, photochemical modeling, and microphysical modeling needed to interpret these data. Jessup has over 20 years of experience with ground-based observation planning and analysis. In 2019, she was appointed as a guest investigator on the ESA/JAXA Bepi Colombo mission to Mercury. She received numerous awards including a NASA Early Careers Fellowship, a NASA Graduate Research Fellowship. She was recently nominated for the California Polytechnic Goldstein Lecture Award. Jessup is a member of the American Geophysical Union and the American Astronomical Society. She received her Ph.D. in atmospheric and space sciences from the University of Michigan, Ann Arbor. Jessup has not previously served on a National Academies committee.

James F. Kasting

Member

JAMES F. KASTING (NAS) is an Evan Pugh Professor at Pennsylvania State University (PSU). His research interests include atmospheric evolution, planetary atmospheres and paleoclimates. Before joining PSU, he spent two years at the National Center for Atmospheric Research in Boulder, Colorado and seven years in the Space Science Division at NASA's Ames Research Center. He is a fellow of the American Association for the Advancement of Science, the International Society for the Study of the Origin of Life, and the American Geophysical Union. Kasting is the recipient of the Stanley Miller Medal, also known as the NAS Award in Early Earth and Life Sciences. He earned his Ph.D. in atmospheric science from the University of Michigan. Kasting's service on National Academies studies includes membership on the Committee for US-USSR Workshop on Planetary Sciences, the Panel to Review Terrestrial Planet Finder Science Goals, and chair of the organizing committee for Searching for Life across Space and Time: A Workshop.

Scott D. King

Member

SCOTT D. KING is a professor at the Virginia Polytechnic Institute and State University. His research focuses on the study of thermomechanical processes that operate within planets using numerical models constrained by spacecraft data. Currently, he is a guest investigator of the Dawn at Ceres mission and a team member of the InSight mission. King has participated in multiple NASA R&A review panels, including as group chief. He is a fellow of the Geological Society of America and is the recipient of numerous awards, including a senior Alexander von Humboldt research prize. He was named a University Faculty Scholar at Purdue University. King received his Ph.D. in geophysics from the California Institute of Technology. He has not previously served on a National Academies committee.

Bernard Marty

Member

BERNARD MARTY is a professor in the National School of Geology and a researcher in the Petrographic and Geochemical Research Center at the Université de Lorraine in France. Prior to joining his current institution, Marty was a postdoctoral researcher at the Geophysical Institute of the University of Tokyo, a consulting engineer at the French Geological Survey, and a CNRS research scientist at the Université Pierre-et-Marie-Curie. He is the recipient of numerous awards, including the Lavoisier Fellow Award from the French Ministry of Foreign Relations. In addition, he was selected as a senior member of the Institut Universitaire de France, a Knight in 2012, and promoted to Officer in 2018 under the Ordre des Palmes Académiques of the Republic of France. He is also the recipient of the Grand Prix Dolomieu of the French Academy of Sciences. Currently, he is involved in many space missions, including principal investigator for the analysis of noble gases and nitrogen in Apollo samples, member of the Science Team for NASA's Genesis mission, member of the Preliminary Examination Team for NASA's Stardust mission, among others. He received his Ph.D. in physics from Université Pierre et Marie Curie. Marty has not served on a National Academies committee.

Thomas Navarro

Member

THOMAS NAVARRO is a postdoctoral fellow at the McGill Space Institute at McGill University and an assistant researcher in the Department of Earth, Planetary, and Space Sciences at the University of California, Los Angeles. His research and projects focus on the development and utilization of state-of-the-art three-dimensional general circulation models, along with their validation and comparison to satellite observations. Navarro is a NASA participating scientist on JAXA's Akatsuki mission to Venus and was involved in the HOVER Venus mission. Prior to starting his current role, he was a postdoctoral scholar at UCLA, a graduate research assistant at the Sorbonne University, and a research engineer at CNRS in Paris. Navarro received his Ph.D. in planetary science from the Sorbonne University. He has not previously served on a National Academies study.

Joseph G. O'Rourke

Member

JOSEPH G. O'ROURKE is an assistant professor at Arizona State University in the School of Earth and Space Exploration. His research focuses on planetary interiors—how processes that occur deep within planets can govern conditions on their surfaces over geologic time. He serves on the steering committee of the Venus Exploration Analysis Group. Before becoming faculty, he joined Arizona State University as a postdoctoral scholar. O'Rourke is the recipient of numerous awards, including a National Science Foundation graduate research fellowship and awards from the American Geophysical Union for outstanding graduate research and presentations. O'Rourke received his B.S. in astronomy and physics, and geology and geophysics from Yale University and his Ph.D. in planetary science from the California Institute of Technology.

Jennifer M. Rocca

Member

JENNIFER M. ROCCA is a principal project systems engineer at the Jet Propulsion Laboratory, where she is the Engineering Technical Authority for the SPHEREx Astrophysics Medium Explorer near-infrared all-sky spectral survey mission. She has been with JPL for 20 years, serving in numerous flight and project system design, development and operations roles on GRACE, Deep Impact, SIM, Dawn, Juno, and NISAR. Rocca has proposal and concept study experience in systems engineering and capture-lead roles for proposals in Earth sciences, planetary sciences, and astrophysics. She is the recipient of numerous awards including the 2019 JPL Explorer Award for SPHEREx Capture Leadership and NASA Exceptional Achievement Medals for her work on Deep Impact and Juno. Rocca received her M.S. in aeronautical and astronautical engineering from Stanford University. She has not previously served on a National Academies committee.

Alison R. Santos

Member

ALISON R. SANTOS is a postdoctoral fellow with the Universities Space Research Association through NASA's Postdoctoral Program and is currently based at NASA's Glenn Research Center. Her research interests include igneous petrology and geochemistry, volatiles in planetary systems, and planetary evolution, and she has conducted research in these areas on Mars, Venus, and the angrite parent body. Prior to arriving at NASA Glenn, she was a research scientist with the Institute of Meteoritics at the University of New Mexico. She received her Ph.D. in Earth and Planetary Sciences from the University of New Mexico and was a New Mexico Space Grant awardee while there. Santos has not previously served on a National Academies committee.

Jennifer L. Whitten

Member

JENNIFER L. WHITTEN is an associate professor of planetary science at Tulane University. Her research interests are focused on geologic processes that generate and modify terrestrial planetary crusts, including volcanic and impact-related resurfacing processes. She is currently leading a study of the radiophysical properties of Venus surface units using Magellan data and Arecibo telescopic observations. Before joining Tulane, Whitten was a postdoctoral researcher at the National Air and Space Museum Center for Earth and Planetary Studies. Whitten is the associate principal investigator of the VERITAS Discovery mission proposal team and serves as a member of the Venus Exploration and Analysis Group Steering Committee. She has received several awards, including the NASA Early Career Fellowship. She received her Ph.D. in planetary geology from Brown University.