

VICTORIA MEADOWS

RESEARCH INTERESTS:

Supporting the science, design and development of NASA astrobiology-relevant missions by leading massively interdisciplinary research to simulate a diverse range of terrestrial exoplanetary environments and spectra. Understanding factors affecting exoplanet habitability, and biosignature generation, detectability and interpretation. Modeling star-planet interactions and their impacts on terrestrial climate, photochemistry and escape. Interpretation of observations of TRAPPIST-1 exoplanets. Solar System/exoplanet synergies using observations and models of Venus and Earth.

PROFESSIONAL PREPARATION:

University of Sydney, PhD (Physics) 1994 (Advisors: D.A. Allen & R.W. Hunstead) University of New South Wales, B.Sc. (Physics - Class 1 Honors), 1988.

EMPLOYMENT AND SELECTED PROFESSIONAL EXPERIENCE

2025 – Senior Research Scientist, SETI Institute, Mountain View, CA
2025– Professor Emerita, University of Washington
2017 – Cross-Appointed Researcher, Astrobiology Center, University of Tokyo.
2001 – Principal Investigator, NASA NAI/NExSS Virtual Planetary Laboratory (VPL) Team
2013-2025 Full Professor, Astronomy, University of Washington, Seattle, WA
2017-2025 Adjunct Professor, Earth and Space Sciences, University of Washington, Seattle, WA
2011-2025 Director, University of Washington Astrobiology Program, Seattle, WA
2007-2013 Associate Professor, University of Washington, Seattle, WA
1998-2007 Lead/Associate Research Scientist, *Spitzer* Science Center, Caltech, Pasadena, CA
1996-2005 Research Scientist – Senior A, Jet Propulsion Laboratory, La Cañada, CA.
1994-1996 NRC Postdoctoral Scholar, Jet Propulsion Laboratory, La Cañada, CA

COMMUNITY SERVICE: LEADERSHIP AND STRATEGY COMMITTEES

2025 – Member, Scientific Organizing Committee, "Science and Technology in the Era of LIFE"
2024 – Member, NASA Ames Center for Life Detection Advisory Group 2022
– Member, Max Planck Institut für Astronomie Scientific Advisory Board
2020 – Co-Lead, TRAPPIST-1 JWST Community Initiative.
2020 – Co-Lead, ExoPAG Science Interest Group 3: Exoplanet/Solar System Synergies
2022-2024 Chair, UW Astrobiology Program 10 Year Review Report Committee
2021-2022 Co-Lead, NExSS/NfoLD Biosignatures Standards of Evidence Workshop
2019-2021 Chair, NAS *Astro2020* Science Panel on Exoplanets, Astrobiology & Solar System
2018-2023 Co-Lead, Nexus for Exoplanet System Science (NExSS) Research Coord. Network
2018-2019 Chair of the Scientific Organizing Committee for AbSciCon 2019
2018-2019 Chair of the NASA Exoplanet Analysis Group (ExoPAG)
2018-2019 Member of the NASA Astrophysics Advisory Council (APAC)
2017-2018 Associate Editor, *Astrobiology* Journal
2001-2018 Member, NASA Astrobiology Institute Executive Council

2018 Member of the National Academy of Sciences *Astrobiology Strategy* Committee
 2018 Member of the National Academy of Sciences *Exoplanet Strategy* Committee
 2015-2016 Author and Reviewer, NASA Astrobiology Strategy
 2007 External Reviewer, NRC report on NASA's Solar System Program.
 2007 External Reviewer, Space Studies Board Exoplanet Task Force Report
 2007-2008 NASA Astrobiology Roadmap Revision Team
 2005-2008 Planetary Science Subcommittee of the NASA Advisory Council
 2004 Science Organizer and Co-chair for the joint NASA Astrobiology Institute and TPF Project Workshop on "Biosignatures of Life From Space".
 2004 Scientific Organizing Committee and Astrobiology Session Chair for the TPF/Darwin International Conference "Dust Disks and the Formation, Evolution and Detection of Habitable Planets"
 2005 NASA Universe Roadmap Writing Team – Chair for "Habitable Planets and Life"
 2004-2005 NASA Origins Subcommittee of the NASA Space Science Advisory Committee
 2002-2003 NASA Astrobiology Roadmap Team.
 2002-2003 NASA Origins Roadmap Team.
 2002-2003 NASA Shared Foundations Roadmap Team.

Dr Meadows has an international reputation as a leader and scientific strategy expert on exoplanet astrobiology. She was the longest serving member of the NAI Executive Council, and the Co-Lead NASA's 500-member Nexus for Exoplanet Systems Science, which was modeled on her VPL research group's integrative and interdisciplinary research strategy. These leadership positions gave her an opportunity to help steer the growing field of astrobiology on a national and international level and in particular she has played key roles in developing several NAS and NASA strategy documents. These included serving on both the NAS Exoplanet Strategy (2018), the NAS Astrobiology Strategy (2018) simultaneously, as the only scientist charged with cross-report cohesion and synthesis for the two reports. For the NAS Astro2020 Decadal Survey (2021) she was the Science Panel Chair for Exoplanets, Astrobiology and the Solar System, which again required the synthesis and development of interdisciplinary goals.

SPACEFLIGHT MISSION AND MISSION CONCEPT EXPERIENCE

2025 – NASA Habitable Worlds Observatory Community Science and Instrumentation Team.
 2016 – SPARCS CubeSat mission proposal and mission team – Star-planet interactions
 2018-2023 NASA UV-SCOPE MIDEX mission proposal team – Star-planet interactions.
 2016-2018 NASA LUVOIR Science and Technology Definition Team – Exoplanet Astrobiology
 2013-2016 NASA Exo-C Science and Technology Definition Team – Exoplanet Astrobiology
 2007-2011 NASA EPOXI Mission Science Team – Earth as an Exoplanet
 2006-2007 NASA Discovery mission studies for the Venus *Vesper* concept and for EPOCH, a mission of opportunity for reuse of the Deep Impact spacecraft. The EPOCH proposal was successful and became half of the EPOXI mission.

2006-2007 NASA Vesper Discovery Mission concept co-Investigative Instrument Scientist for DASC (Deep Atmosphere Spectral Camera) – Venus aeronomy and atmosphere.
 2004-2006 NASA Terrestrial Planet Finder-Coronagraph Science & Technology Definition Team
 2002-2004 NASA Terrestrial Planet Finder Science Working Group
 1998-2007 NASA *Spitzer* - Uplink Scientist, Solar System Scientist, User Support Team, Infrared Spectrograph Instrument Team.
 1996-2005 Proposal team member for three Venus Discovery mission concepts and one TPFtechnology concept mission.
 1995-2006 HST/WFPC2 Instrument Science Team

Dr. Meadows has served on mission concept studies, proposals and flight teams with core science that spans Venus reconnaissance, Earth as an exoplanet, planetary astronomy, general astrophysics, stellar space weather impacts on exoplanets, and exoplanet astrobiology. Her early mission work was on Discovery proposals for Venus, including the Vesper and Morningstar concepts, and she was the Deep Atmosphere Spectral Camera Instrument Scientist for Vesper. She then worked at the Spitzer Science Center for nearly a decade, serving primarily as the pre- and post-launch *Spitzer* Uplink Scientist, working with a team of programmers and engineers to help develop the *Spitzer* user interface for telescope commanding and scheduling (SPOT). For *Spitzer*, she also served as the Solar System Observations Scientist and as a member of the User Support and Infrared Spectrograph (IRS) Instrument teams. During and after *Spitzer* she worked on mission concept proposals for missions capable of searching for habitability and signs of life on exoplanets. These included TPF, TPF-Coronagraph, Exo-C and LUVOIR. Most recently she has been involved in a MIDEX proposal for a UV telescope for exoplanets, and a funded CubeSat mission to observe the interaction between stellar activity and winds, and their impact on planetary atmospheric escape, photochemistry and biosignatures. She is currently a member of the NASA Community Science and Instrumentation Team which is tasked with identifying science drivers and science and technology requirements for the Habitable Worlds Observatory.

SELECTED HONORS AND AWARDS:

2023 Fellow of the American Geophysical Union
 2022 Fellow of the American Astronomical Society
 2021 Elected to the Washington State Academy of Sciences
 2020 Tinsley Visiting Scholar, UT-Austin (suspended due to COVID pandemic)
 2019 NASA Group Achievement Award – Astrophysics Large Mission Study Team (LUVOIR)
 2019 Hans E. Suess Memorial Lecture, UC San Diego
 2018 SETI Frank Drake Award – for significant contributions to the field of Astrobiology
 2015 Bok Lecture, Siding Spring, Australia.
 2015 Allison Levick Memorial Lecture, Sydney, Australia
 2009 NASA Group Achievement Award – 2008 Astrobiology Roadmap Team
 2008-2010 National Academy of Sciences - Frontiers of Science Kavli Fellow
 2007-2008 NASA Astrobiology Roadmap Revision Team
 2006 NASA Group Achievement Award – Spitzer Deep Impact Support Team

2005 NASA Group Achievement Award – Spitzer First Look Survey Science Team
2004 NASA Group Achievement Award – Spitzer Space Telescope Mission Ops Team 2001
The JPL Lew Allen Award for Excellence (leadership in scientific research for VPL) In
addition to the above honors and awards Dr. Meadows was nominated for the David B.
Thorud Leadership award (2019) for her leadership of the UW Astrobiology Graduate Program.

PROFESSIONAL MEMBERSHIPS:

American Geophysical Union (30 years), American Astronomical Society – Division of
Planetary Sciences (30 years), American Astronomical Society (15 years). Washington State
Academy of Sciences (4 years).

RECENT INVITED NATIONAL AND INTERNATIONAL PRESENTATIONS:

2026 Apr, *Wisconsin Center for Origins Research Lecture*, U. Wisconsin-Madison
2025 Apr, *CASA-Colloquium*, UC-Boulder
2024 Sep, *US-Japan Conference on Life on Exoplanets*, JAXA Offices, Washington, DC 2024
Apr, *Earth-Life Science Institute*, Tokyo Institute of Technology, Tokyo, Japan.
2024 Apr, *NINS-Astrobiology Center of Japan*, NAOJ/University of Tokyo, Tokyo, Japan.
2024 Mar, *Extreme Solar Systems V*, Christchurch, New Zealand
2023 Sep, GMT Community Sci. “*Exoplanet Architectures to Atmospheres*”, Washington, DC
2023 Jul, *Habitable Worlds Observatory Symposium*, STScI, Baltimore, MD, USA
2023 Jan, AAS Special Session on *Leveraging Ground and Space-based Facilities*, Seattle, WA
2022 Sep, *Exoplanet High-Resolution Spectroscopy*, Heidelberg, Germany (and virtual)
2022 May, *Exoplanets IV*, Las Vegas, NV, USA
2021 Oct, *2021 PLATO Conference*, Organized by ESA, held virtually.
2020 Feb, *2020 AAAS meeting*, Seattle, WA, USA.
2019 June, Plenary talk at the *Astrobiology Science Conference 2019*, Seattle, WA, USA.
2019 June, *TRAPPIST-1 Conference*, Liège, Belgium.
2018 Oct, *High-Resolution Spectroscopy of Exoplanets Conference*, Nice, France. 2017
Nov, *Habitable Worlds 2017*, Laramie, WY, USA.

THE VIRTUAL PLANETARY LABORATORY RESEARCH GROUP

Dr. Meadows started her scientific career as a Venus observer and near-infrared astronomer, and is now the Principal Investigator for the NASA Virtual Planetary Laboratory Lead (VPL) Team. Meadows founded the VPL in 2001, and over five NASA Astrobiology Institute and ICAR proposal cycles won ~\$40M of NASA funding support. Under her strategic and visionary leadership, the VPL team pioneered the field of exoplanet astrobiology, developing a strongly interdisciplinary theoretical framework that combines expertise in the early Earth, Solar System, stellar astrophysics and exoplanet communities to understand the potential habitability and global signs of life for extrasolar planets. Her team also pioneered models of star, planet and planetary system interactions and their impact on planetary habitability, a science theme that was highlighted as Worlds and Suns in Context in the Astro2020 Decadal. The VPL also simulates life’s impact on the planetary environment, and leads scientific research and the astrobiology community on recognizing the importance of environmental context, and the need for assessment

frameworks when searching for and interpreting planetary signs of life on distant planets. Over the last 25 years she, her team and her mentees developed the scientific foundation needed to justify the selection of the Habitable Worlds Observatory as NASA's next flagship. Her VPL team has grown from an initial group of 17 scientists, to a diverse group of 130 researchers at 28 institutions, with expertise spanning biology, planetary science, Earth science, and astrophysics. Under Meadows' leadership, the VPL publishes ~70 refereed papers a year (e.g. https://nai.nasa.gov/media/pdf_annual_reports/NAI_TeamsAR2016-VPL-01.pdf) and VPL's research structure and science themes served as the inspiration for the NASA NExSS interdisciplinary Research Coordination Network for exoplanet astrobiology, which Meadows also co-led.

NASA PROGRAM FUNDING AND JWST PROPOSALS

PI FY23 - FY28 The Virtual Planetary Laboratory: Advancing the Search for Life on Exoplanets, *Interdisciplinary Consortia for Astrobiology Research Program* (\$7.8M)

PI FY18 - FY23 The Virtual Planetary Laboratory: Advancing the Search for Life Beyond the Solar System, funded by the *NASA Astrobiology Institute/Astrobiology Program* (\$11M)

PI FY17 – FY19 The Nature and Characterization of M Dwarf Terrestrial Planets, **funded by *NASA Earth and Space Science Fellowship (NESSF)*** (for grad student A. Lincowski).

PI FY13 - FY18 The Virtual Planetary Laboratory, *NASA Astrobiology Institute* (\$9M)

PI FY08 – FY12 The Virtual Planetary Laboratory: Exploring the Habitability and Biosignatures of Extrasolar Terrestrial Planets. *NASA Astrobiology Institute* (\$7.8M)

PI FY01 - FY06 Astronomical Detection of Biosignatures From Extrasolar Planets (The Virtual Planetary Laboratory), funded by the *NASA Astrobiology Institute* (\$4.8M)

PI FY00 - FY01, Ground-based Support for the Cassini Venus Flyby, funded by the *NASA Planetary Astronomy Program*.

PI FY99 - FY01, The Radiative Effect of Clouds and Gases on the Limits of the Habitable Zone, funded by the *Exobiology Program*.

PI FY98 - FY00, The Composition of the SL9 Impact Plumes from Time-Resolved Near-IR Spectra, funded by the *Planetary Atmospheres Program*.

PI FY97 - FY99, Near-Infrared Observations of the Venus Nightside, funded by the *Planetary Astronomy Program*.

Co-I FY25-27 Bare rocks are not supposed to do that (GO 5191), *JWST Cycle 3 GO Program*, \$159k (4 occultation observations of TRAPPIST-1 c: MIRI/1280W)

Co-I FY25-27 TRAPPIST-1 Planets: Atmospheres Or Not? (GO 3077) , *JWST Cycle 2 GO Program*, \$204k (double phasecurve measurement of TRAPPIST-1 b and c: MIRI/1500W) **Co-I**

FY25 – FY29 Monitoring of the High-Energy Radiation Environment of Exoplanets around Low-mass Stars with SPARCS (Star-Planet Activity Research CubeSat): Launch, Operations, and Science, funded by the *Astrophysics Research and Analysis Program* (PI: Evgenya Shkolnik).

Co-I FY24 – FY26 Determining the Habitable Worlds Observatory capabilities needed to corroborate oxygen biosignatures, funded by the *Astrophysics Decadal Survey Precursor Science Program* (PI: Josh Krissansen-Totton).

Co-I FY20 – FY24 Monitoring the High-Energy Radiation Environment of Exoplanets around

Low-mass Stars with SPARCS (Star-Planet Activity Research CubeSat), funded by the ***Astrophysics Research and Analysis Program*** (PI: Evgenya Shkolnik)

Co-I FY20 – FY22 Polarization Signatures of Habitable Exoplanets, funded by the ***Habitable Worlds Program***, PI: Theodora Karilidi

Co-I FY20 – FY22 Assessing Atmospheric Seasonality as an Exoplanet Biosignature, funded by the ***Exobiology Program*** (PI: Stephanie Olson)

Co-I FY20 – FY21 Odyssey: A Large Strategic Class Mission Study for the Exploration of the Neptune-Triton System. (PI: Abigail Rymer).

Co-I FY18 – FY20 Monitoring the High-Energy Radiation Environment of Exoplanets around Low-mass Stars with SPARCS (Star-Planet Activity Research CubeSat), funded by the ***Astrophysics Research and Analysis Program*** (PI: Evgenya Shkolnik)

Co-I FY16 – FY18 Organic Habitable Worlds: Simulating Habitable Zones for Organic-Rich Atmospheres, funded by the ***Habitable Worlds Program*** (PI: Shawn Domagal-Goldman). **Co-I FY16 – FY18** HAZMAT: Habitable Zones and M dwarf Activity across Time and Space, funded by the ***Habitable Worlds Program*** (PI: Evgenya Shkolnik)

Co-I FY15 – FY17 A Statistical Characterization of the Atmospheres of Kepler's Small Planets, funded by the ***Astrophysics Data Analysis Program*** (PI: Drake Deming)

Co-I FY08 - FY09 The EPOXI Mission of Opportunity, funded by the ***NASA Discovery Program*** (PIs: Mike A'Hearn (DIXI)/Drake Deming (EPOCH))

Co-I FY05 - FY07 Modeling the effects of Stellar Flares on Planetary Characteristics, funded by the ***NASA Terrestrial Planet Finder - Foundation Science Program*** (PI: Jim Kasting) **Co-I FY05 - FY06** CorSpec, TPF-C Instrument Proposal Concept (PI: Heap, GSFC)

Co-I FY04 - FY07 The StARS Database, funded by the ***NASA Terrestrial Planet Finder – Foundation Science Program*** (PI: John Stauffer) **Co-I FY04 - FY07** Stellar Spectra for Astrobiology, funded by the ***NASA Terrestrial Planet Finder - Foundation Science Program*** (PI: Martin Cohen)

Co-I FY97 - FY99, Radiative Transfer in the Venus Atmosphere, funded by the ***Planetary Atmospheres Program*** (PI: David Crisp).

Co-I FY96, SL9 Impact Plume and Cloud Composition from Time-Resolved Near-IR Spectra, funded by the ***Comet Shoemaker-Levy 9/Jupiter Data Analysis and Interpretation Program*** (PI: David Crisp)

Co-I FY93 - FY95, Near-Infrared Emission from the Night Side of Venus, funded by the ***Planetary Astronomy and Planetary Atmospheres Program*** (PI: David Crisp). **Co-I FY93**, The Thermal Structure and Dynamics of the Venus Atmosphere, funded by the ***Venus Data Analysis Program*** (PI: David Crisp).

Dr. Meadows has also served as a Co-I on numerous successful HST observing programs, and as a collaborator with four other successful NAI/ICAR consortia.

FORMAL EDUCATION: TRAINING THE NEXT GENERATION:

Postdoctoral Scholars and Current Positions

Giovanna Tinetti – Professor, University College London, ARIEL PI

John Armstrong – Professor, Weber State University

Antigona Segura – Professor, UNAM
 Mark Claire – Lecturer, University of St. Andrews
 Shawn Domagal-Goldman – Civil Servant Scientist, NASA GSFC
 Sean Raymond – CNRS Researcher, Laboratoire d’Astrophysique de Bordeaux, France
 Rory Barnes – Associate Professor, University of Washington
 Colin Goldblatt – Associate Professor, University of Victoria
 Peter Driscoll – Staff Scientist, Carnegie Institution of Washington
 Benjamin Charnay – CNRS Researcher, LESIA, Paris Observatory, Meudon, France. Kimberley Bott – Research Scientist, SETI Institute, Mountain View, CA.
 Michael Wong – Postdoc, Carnegie Institution of Washington/Sagan Fellow
 Kaitlin Rasmussen – Professor, Tacoma Community College

Graduate Student Advisees and Current Positions

Dr. Tyler Robinson (Astronomy & Astrobiology) – Associate Professor, U of Arizona/LPL
 Dr. Aomawa Shields (Astronomy & Astrobiology) – Associate Professor, UC-Irvine
 Dr. Amit Misra (Astronomy & Astrobiology) – Computer Programmer, Microsoft
 Dr. Giada Arney (Astronomy & Astrobiology) – Civil Servant Scientist, NASA/GSFC and HWO Interim Project Scientist.
 Dr. Eddie Schwieterman (Astronomy & Astrobiology) – Assistant Professor, UC-Riverside
 Dr. Jacob Lustig-Yaeger (Astronomy & Astrobiology) – Staff Scientist, JHU-APL
 Dr. Andrew Lincowski (Astronomy & Astrobiology) –Assoc. Prof., Eastern Wyoming College.
 Dr. Miles Currie (Astronomy & Astrobiology) – NASA Postdoc Program Fellow, NASA GSFC.
 Megan Gialluca (Astronomy & Astrobiology) – Graduate student, UW
 Trent Thomas (Earth & Space Sci. & Astrobiology) – Graduate student, UW (science advisor)
 Jin Jyh Yeh (Environmental & Forest Sciences/Astrobiology Certificate) - Masters student, UW (member of Master's Committee).

Dr. Meadows served on **doctoral committees for Astronomy PhD graduates (or other disciplines as noted)** Lucianne Walkowicz (Adler Planetarium/Library of Congress Chair of Astrobiology), Nick Cowan (Assoc. Professor., McGill U.), Nate Kaib (Asst. Professor, U. Oklahoma), Mark Claire (Lecturer University of St. Andrews), Darci Snowdon (**Earth and Space Sciences**, Asst. Professor, Central Wash. U.), Rika Anderson (**Oceanography**, Asst. Professor, Carleton College), Meg Smith (**Earth and Space Sciences**, Aerospace Corp.), Elena Amador (**Earth and Space Sciences**, System Scientist, JPL), Rodrigo Luger (Postdoc, Flatiron Institute), Russell Deitrick (Postdoc, U. Bern, Switzerland), Matt Tilley (**Earth and Space Sciences**, Postdoc, UW), Joshua Krissansen-Totton (**Earth and Space Sciences**, Assistant Professor, UW), Osa Igbinosun (**Aeronautics & Astronautics**, Postdoc, JPL), David Fleming (Data Scientist, Bayer Crop Science), Owen Lehmer (**Earth and Space Sciences**, NASA Ames), Rodolfo Garcia (UW-Astronomy), Samantha Gilbert-Janizek (UW-Astronomy), Hector Delgado Diaz (UW-Astronomy) and Gabriella Engelmann-Suissa (UW-Astronomy), Rachel Atlas

(**Atmospheric Sciences**, Laboratoire de Météorologie Dynamique, France), Greta Shum (**Atmospheric Sciences**, Vrije Universiteit Brussel), Anna Grace Ulses (**Earth and Space Sciences**, UW).

Classroom Teaching

Prof. Meadows has over 18 years experience as a classroom educator, with extensive experience teaching introductory and 400 level undergraduate classes in astrobiology, extrasolar planets and Solar System planets (Introduction to Astrobiology, Introduction to the Solar System, Exoplanets (100-level), and Exoplanets (400-level)). As the Director for the UW Astrobiology Graduate Program she is also responsible for curriculum development, as well as co-teaching Astrobiology Program courses including graduate level Astrobiology Disciplines, Astrobiology Topics and the “professor’s choice” Winter Seminar. She also developed and solely teaches the graduate-level Astrobiology Professional Development course, which provides instruction and practice in the non-research aspects of being a scientist, including proposal writing and reviewing, scientific paper writing, non-academic jobs, job searching, interviewing, and writing teaching statements.

INFORMAL EDUCATION: MUSEUMS AND PUBLIC OUTREACH

Dr. Meadows has contributed to public outreach and informal educations since 1986, and she was employed as a Guide Lecturer at Sydney Observatory, an interactive museum of astronomy, for six years. She is a sought-after public lecturer, and has given numerous high profile public lectures on exoplanet astrobiology in the US and internationally, including JPL’s von Karman lecture, the Allison Levick Memorial Lecture (Australia) the Bok Lecture (Australia), the SETI Frank Drake Award Lecture, the Astrobiology Center of Japan Lecture (Japan), the Hans E. Suess Memorial Lecture, and the Benjamin Dean Lecture (California Academy of Sciences). She has also provided her expertise as a science advisor for award-winning television and planetarium shows, and for the design of museum and online science education interactives. As the Principal Investigator for the VPL, she oversaw several new EPO initiatives, including the development of astronomy and astrobiology education materials for teachers, and a high productive partnership with Seattle’s Pacific Science Center for the development of two “Science on a Sphere” shows on exoplanet astrobiology, and a museum exhibit on exoplanet biosignatures, featuring the work of several VPL team members. Most recently, she was the faculty coordinator for the 25th Anniversary Celebrations for the UW Astrobiology Program, which included a donor reception and a series of 4 public lectures with a total of over 850 attendees, given by herself and several distinguished alumni from the program.

COMMUNITY SERVICE: INTERDISCIPLINARY EDUCATION AND TRAINING

For the past 14 years, Dr. Meadows has served as the Director of the UW Astrobiology Graduate Program, which currently supports 47 graduate students and 28 faculty. As Director, Dr. Meadows designed and implemented the interdisciplinary Dual-Title PhD Degree Program in both a student’s home department & Astrobiology, and this degree has been offered by the UW Astrobiology Program since 2012. She also recruited 11 academic units at the University of

Washington to participate in the Dual-Title Program, including Astronomy, Earth and Space Sciences, Oceanography, Biology, Chemistry, Genome Sciences, Microbiology, Environmental & Forest Sciences, Atmospheric Sciences, Psychology and Aeronautics & Astronautics. Founded in 1998, the UW's Astrobiology Program is now recognized as the most comprehensive and cohesive graduate program in Astrobiology in the nation, encompassing research on the origin and evolution of life on Earth, life in extreme environments, habitability and life in the Solar System, the detection and characterization of habitable exoplanets, and space exploration. Since inception, 47 students have graduated with Dual-Title PhDs and 30 students with an Astrobiology Graduate Certificate. Of these graduates, 50% went on to tenure-track academic positions and several others took up leadership positions on NASA missions and mission development. All 78 UW Astrobiology Program Graduates have remained in STEM.

INCREASING DIVERSITY, EQUITY AND INCLUSION IN ASTROBIOLOGY

Dr. Meadows has a strong record of recruiting underrepresented members of STEM in both the faculty and student body of the UW Astrobiology Program. Since taking over as Director in 2011, the Astrobiology student cohort has improved its diversity from its historic 63%/37% men/women ratio to 50%/50% men/women and 25% underrepresented minorities today. Retention and completion rates for women have also increased from 30% prior to 2012, to 95% today, and for minorities, from 40% to 75%. Dr. Meadows has pioneered and continues to teach a student-acclaimed Professional Development class, to strengthen student skills in the non-research aspects of being a scientist, with a particular focus on proposal writing, to help prepare students for success in STEM fields. In 2019, she also introduced a new seminar class on improving Astrobiology, both in the way that we do our science and in ways that we can improve diversity and a sense of belonging in the Astrobiology community. She is also active in championing inclusive community building activities within the UW Astrobiology Program. Over the past 13 years, Dr. Meadows has recruited 14 UW professors into the Astrobiology Program, increasing the number of women professors in the program from 2 to 13, and minority professors from 0 to 3. For her work supporting a diverse graduate student cohort, and building community in her research group, the Astrobiology Program, and the larger field of astrobiology, she was nominated twice for the 2022 and 2024 UW Landolt Distinguished Graduate Mentor award, by over 30 students and faculty in the Astrobiology Program.

SELECTED PUBLICATIONS: (*Graduate Student*, *Postdoc*, *Undergraduate* Advisees)

(400+ publications total, over 120 in refereed journals, 4 (refereed) book chapters, 1 book edited, NASA ADS/Scopus h-index of 60, Google Scholar (interdisciplinary breadth) h-index of 66. Note that this list only includes those papers Meadows personally contributed to, and does not include the 1500+ of publications from Meadows' larger VPL team, which she has competitively funded, and developed and guided the research for, for the last 25 years.

2025

Lincowski, A. P., **Meadows, V. S.**, Crisp, D., Wolfe, E., Robinson, T., 2025, The Best of Both

Worlds: Introduction of a New Two-Column Climate Model and Application to JWST Observations of the Inner Planets of the TRAPPIST-1 System, in prep.

Meadows, V. S., Graham, H. V. and the Standards of Evidence Workshop Participants, 2025, The Community Biosignature Assessment Framework, in prep.

Gialluca, M. T., Arenberg, J. W., Stark, C., Shepherd, B., **Meadows, V. S.**, Roberge, A., Robinson, T. D.. 2025. Shedding Light on Large Space-Based Telescopes: Simulations of Stray light Due to Primary Mirror Damage from Micrometeoroid Impacts, in review.

Davis, C. E., **Meadows, V.**, Shkolnik, E., **Lincowski, A. P.**, Peacock, S., Loyd, R. O. P., Schneider, A., Barman, T., 2025, The Effects of M Star Age Dependent Ultraviolet Emission on Detecting and Interpreting Exoplanet Biosignatures, in review.

Meadows, V. S., 2025 October, “The Astronomical Search for Life Beyond the Solar System”, *Astronomical Herald*, 118,592 https://www.asj.or.jp/jp/activities/geppou/item/118-10_592.pdf

Wogan, N.F., Batalha, N.E., Zahnle, K., Krissansen-Totton, J., Catling, D., Wolf, E., Robinson, T.D., **Meadows, V.**, Arney, G., Domagal-Goldman, S. (2025). The Open-source Photochem Code: A General Chemical and Climate Model for Interpreting (Exo)Planet Observations. *The Planetary Science Journal*, 6(256), 33pp. <https://doi.org/10.3847/PSJ/ae0e1c>

Bimm, J and 35 authors including **Meadows, V.**, (Section Lead), 2025, Report on Communicating Discoveries in the Search for Life in the Universe. *Astrobiology*. 2025;0(0). doi:[10.1177/15311074251387636](https://doi.org/10.1177/15311074251387636)

Gillon, M., Ducrot, E., Bell, T. J., Huang, Z., Lincowski, Andrew P., Lyu, X., Maurel, A., Revol, A., Agol, E., Bolmont, E., Dong, C., Fauchez, T. J., Koll, D. D., Leconte, J., **Meadows, V. S.**, Selsis, F., Turbet, M., Charnay, B., Delrez, L., Demory, B.-O., Householder, A., Zieba, S., Berardo, D., Dyrek, A., Edwards, B., de Wit, J., Greene, T. P., Hu, R., Iro, N., Kreidberg, L., Lagage, P.-O., and Lustig-Yaeger, J. First JWST thermal phase curves of temperate terrestrial exoplanets reveal no thick atmosphere around TRAPPIST-1 b and c. *Nature Astronomy*, accepted: *arXiv preprint arXiv:2509.02128*

Ulises, A. G., Krissansen-Totton, J., Robinson, T.D., **Meadows, V.**, Catling, D.C. and Fortney, J.J., 2025. Detecting Land with Reflected Light Spectroscopy to Rule Out Waterworld O2 Biosignature False Positives. *The Astrophysical Journal*. 990(48), 12pp.

Deming, D., **Currie, M.H.**, **Meadows, V.S.** and Peacock, S., 2025. Minimizing Star-spot Contamination of Exoplanet Transit Spectroscopy Using Alternate Normalization. *The Astronomical Journal*, 170(1), p.11.

Thomas, T.B., Meadows, V.S., Krissansen-Totton, J., **Gialluca, M.T.**, Wogan, N.F. and Catling, D.C., 2025. Statistical geochemical constraints on present-day water outgassing as a source of secondary atmospheres on the TRAPPIST-1 exoplanets. *The Planetary Science Journal*, 6(5), p.126.

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