

Sarah M. Milkovich

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In search of a creative, collaborative team-based environment where I can make key contributions to solving unusual problems.

Critical Skills

Science systems engineering, development, and operations for landed and orbital spacecraft; science communication to a variety of technical and non-technical audiences; digesting a range of inputs and boiling them down to succinct, direct, and accessible key findings; geomorphology and planetary science; ability to tackle nebulous problems

Education:

- Ph.D. in Planetary Geology, Brown University, 2005
- M.S. in Planetary Geology, Brown University, 2002
- B.S. in Planetary Science, California Institute of Technology, 2000

Employment:

Self-employed: 2024

- Science communication consultant and artist

NASA Jet Propulsion Laboratory:

- Member of the Technical Staff: 2008-2023
- Postdoctoral Scholar, 2005-2008

Professional Experience:

Leadership

- Proposal Manager, SMAP Earth Science Senior Review, 2022-2023
- Assistant Science Manager, Mars 2020 rover, 2020 – 2023
 - “Air Traffic Control” for science team members’ questions about anything Mars 2020 related.
 - Organization and maintenance of documentation, mailing lists infrastructure, export approval, and operations access status of science team members; review technical documents for export (ITAR and EAR) before distribution to the team; coordinate launch and landing science team-internal events
- Science Operations Team Chief, Mars 2020 rover, 2017 – 2020
 - Schedule, budget, and risk identification and tracking; interfacing with 400+ scientists and engineers in multiple countries representing 8 instruments; facilitate instrument operations development discussions between instrument teams and JPL technical personnel; science team communication with engineering and software operations teams
- Formal and informal mentoring of college interns and coworkers

Systems Engineering

- Science Systems Engineer, Mars 2020 Rover, 2013 – 2020
Development of next generation processes for remote worldwide operations of Mars rovers centering scientific decision-making; requirement development, validation & verification planning, coordination, and participation; represent science customers in software capabilities discussions, from software requirements & design to overall budget priorities.
- Science Operations Systems Engineer, Mars Science Laboratory, 2012 – 2013
Maintain role procedures, meeting agendas, and operational interface agreements; requirement validation and verification; assist in transition from co-located operations at JPL to remote operations across multiple countries
- Assorted mission proposals, study teams, internal reviewer of proposals, 2004 - 2023

Spacecraft Operations

- Member of the Science Operations Team for Mars Phoenix, Cassini Mission to Saturn, Mars Reconnaissance Orbiter, Mars Science Laboratory (Curiosity), Mars 2020 Rover (Perseverance)
Work with science and engineering to design and schedule observations and sequences that maximize science return while remaining within spacecraft resources and constraints
- Investigation Scientist, HiRISE (MRO, 2009- 2014), UVIS (Cassini, 2010- 2012)
Facilitate communication and information flow between remote instrument PI and operations team, JPL mission management, project science leadership, and spacecraft flight teams.

Technical Communications

- JPL Disaster Response Coordinator for NASA's Earth Science Disasters program (2022-2023)
- Documentarian and ex-officio member of Mars 2020 Science Definition Team (2013), Mars 2020 Organic Contamination Panel (2014), and the the Joint Science Working Group for the 2018 NASA-ESA Joint Mars Rover Mission (2011-2012)
- Science training coordinator for Mars Science Laboratory, Mars 2020 rovers, including production of training materials and running training sessions.
- Colloquium speaker at many institutions, including Argonne National Laboratory, California Institute of Technology, UC Berkeley, Syracuse University, Michigan State University
- Invited speaker at many scientific conferences, including AGU Fall Meetings, International Conference on Mars Polar Science, Gordon Research Conference for Nuclear Chemistry
- Outreach liaison and content provider to JPL Public Engagement for many spacecraft
- Speaker on planetary science and exploration at schools, astronomy clubs, geology clubs, science fiction conventions, podcasts, news broadcasts, and other public venues

Scientific Research

- Specializing in geomorphology and stratigraphic analysis of the polar deposits of Mars in imaging and radar datasets, utilizing signal-based analysis techniques

- First author of 8 peer-reviewed scientific articles, and co-author on many more. Complete list available upon request
- Served as reviewer for NASA Mars Fundamental Research Program, Mars Data Analysis Program, and Planetary Geology and Geophysics grant programs.

Awards

- Recipient of the 2018 JPL Bruce Murray Award for Excellence in Education and Public Outreach
- JPL Bonus Awards include:
 - 7 awards for excellence in leadership, technical design, and science support for Mars 2020
 - 15+ awards for excellence in operations on Mars Phoenix, MRO, MSL, and Cassini spacecraft and instrument operations
 - Award for scientific paper, “Stratigraphy of Promethei Lingula, south polar layered deposits, Mars, in radar and imaging datasets”
 - NASA Group Achievement Award: "exceptional achievement in the development of innovative simulation techniques that greatly enhance NASA's exploration capabilities for Mars 2020 and future missions."
- Stephen E. Dworkin Planetary Geoscience Student Award for Best Poster Presentation, 36th LPSC, 2005
- Elected to Sigma Xi, Brown Chapter, 2005
- Caltech Eleanor Searle Prize in Law, Politics, and Institutions, 2000