

Emily L. Judd

Experience

NASA Langley Research Center (LaRC)

Aerospace Engineer: Space Mission Analysis Branch

July 2019–present

- Mars Architecture Team: Langley Deputy Team Lead (May 2021–present). Coordinated across multiple centers, teams, and disciplines to develop the Updated Exploration Atmospheres decision memo. Designed trajectory visualizations. Presented on Artemis and Mars human exploration to students in the US, Canada, and Australia.
- Modeled space mission architecture elements to determine development and production costs to inform budgetary and procurement leadership. Combined cost estimates with campaign timelines to determine affordability.
- Conducted trades and sensitivity analysis on parametric vehicle models to inform design and architecture decisions. Analyzed mission concepts. Studied the applicability of adapting a Lunar Ascent Element for use in a Mars Ascent Vehicle.
- Communications Team Co-Lead (May 2020–present): Pitched and wrote feature articles for the directorate website. Developed directorate social media content and coordinated with Langley social media team. Mentored student interns.

Pathways Student Trainee (Engineering): Space Mission Analysis Branch

April 2018–July 2019

- Conducted research on increasing access and democratization of space. Developed the Space Technology Mission Directorate strategic framework to inform agency leadership. Modeled costs for a Science Directorate mission proposal.
- NASA Group Achievement Award: Mars Basis of Comparison Reference Team (Aug. 2019). Built vehicle cost models.
- Summer 2018 LaRC Pathways Agency Cross-Center Connection Chair. 2018 Langley Summer Games Planning Committee.

Intern: Advanced Materials and Processing Branch

June–August 2016

- Designed and tested methods to integrate boron nitride nanotubes into a metal matrix for use in aerospace structures. Led material characterization efforts with scanning probe microscopy. Additional analysis with FTIR and Raman spectroscopy.

Education

University of Michigan

M.Eng. in Space Engineering

May 2019

M.S. in Climate and Space Sciences and Engineering. 2016–2017 Dwight F. Benton Fellow.

April 2018

University of Central Florida

May 2016

B.S. in Aerospace Engineering (Cum Laude), B.M. in Music Performance on horn. University Honors. National Merit Scholar.

Publications

- (Clark, 2021) How the Allocation of Lander Functions Impacts Human Lunar Exploration Architecture Propellant Demands
- (Lewis, 2020) A Parametric Assessment of Lunar and Mars Ascent Vehicle Synergy
- (Jones, 2020) Cost Breakeven Analysis of Lunar In-Situ Propellant Production for Human Missions to the Moon and Mars
- (Owens, 2020) Integrated Trajectory, Habitat, and Logistics Analysis and Trade Study for Human Mars Missions
- (Sha, 2019) Conceptualization of a Medical Support Unit Designed to Sustain Crew Health during Deep Space Transit
- (Jones, 2019) Cost Breakeven Analysis of Lunar ISRU for Human Lunar Surface Architectures
- (Jones, 2019) Cost Breakeven Analysis of Cis-lunar ISRU for Propellant
- (Grande, 2018) Mega-Drivers to Inform NASA Space Technology Strategic Planning
- (Earle, 2018) Strategic Framework for NASA's Space Technology Mission Directorate
- (Zhu, 2017) Automated Composite Fabric Layup for Wind Turbine Blades
- (Gordon, 2015) A Microstructurally-Informed, Continuum-Level Life Prediction Model for Thermo-Acousto-Mechanically Fatigued Ti-6242S and IN617

Certifications

FCC Amateur Radio Technician License; AGI Systems Toolkit: Levels 1–3; PRICE TruePlanning Cost Estimation Framework.

Memberships | Community Service

American Institute of Aeronautics and Astronautics. | NASA Speakers Bureau; Skype a Scientist; university student mentor.