

Lisette E. Melendez | Earth and Planetary Sciences

Curriculum Vitae

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Research Interests.

My research primarily focuses on understanding the processes and formation mechanisms that shape planetary surfaces in order to constrain the evolutionary history of these planetary bodies over the course of geologic time. My research interests comprise of understanding the mineralogical composition, geomorphology, and evolutionary trends of planetary surface environments on a wide range of scales, from micro-meter sized particles within thin sections of meteorites to paraglacial features on Mars that measure in the hundreds of meters. I aim to understand how planetary surfaces are altered using both laboratory techniques, like microscopy and spectroscopy, on samples and analogues, as well as larger-scale remote-sensing and GIS techniques.

As a scientist, I am dedicated to advocating for the inclusion of those with historically minoritized identities within STEM and building communities where diverse contributions are both welcomed and listened to.

Education.

- 2017 - 2021 B.S., University of South Florida (USF) Honors College - *cum laude*
Geology, minor: Astronomy
Cumulative GPA: 3.7 | Major GPA: 4.0
- o Honors thesis: "*Quantifying the Environmental Response to Deglaciation in Martian Craters Throughout the Late Amazonian.*"
Advisors: Dr. Joseph Panzik (University of South Florida) and
Dr. Erica Jawin (Smithsonian National Air and Space Museum)

Professional Experience.

- Nov. 2021 - present *Post-Baccalaureate Researcher*, University of South Florida | Tampa, FL
Advisor: Dr. Sarah Sheffield
Project Title: "*The Pennsylvanian Cladid Crinoid *Erisocrinus*: Ontogeny and Systematics.*"
- Jun. 2021 - Aug. 2021 *Research Intern*, Smithsonian National Museum of Natural History | Washington D.C.
Natural History Research Experiences (NHRE)
Advisors: Drs. Erica Jawin, Cari Corrigan, and Tim McCoy
Project Title: "*Linking Boulder Diversity on Asteroid (101955) Bennu to Carbonaceous Chondrite Meteorites.*"
- Jan. 2021 - Aug. 2021 *Curatorial Intern*, Institute for Digital Exploration | Tampa, FL
Advisors: Dr. Davide Tanasi, Madeleine Kraft
Position description: 3D digitization of archaeological artefacts and bronze casts from the John and Mable Ringling Museum of Art using LiDAR, close-range scanning, and digital photogrammetry, as well as recorded metadata and paradata necessary for curating a digital collection and database.

Professional Experience (cont.)

- Aug. 2020 – Jun. 2021 *Diversity, Equity, and Inclusion Intern*, National Aeronautics and Space Administration – Headquarters | Washington D.C.
Advisors: Dr. Shobhana Gupta, McRae Lenahan, Dr. Keith Gaddis
Position description: Developed and designed the logistics of a strategic communication series denoting the importance of mindful and inclusive language as well as curating a database aimed at understanding and reaching broader, more diverse communities.
- Jun. 2020 – Aug. 2020 *Research Intern*, Smithsonian National Museum of Natural History | Washington D.C.
Advisors: Drs. Erica Jawin, Cari Corrigan, and Tim McCoy
Project Title: “Quantifying the Environmental Response to Deglaciation within Martian Craters.” **Won Dwornik Award for Best Undergraduate Oral Presentation at LPSC '21.*
- May 2020 – Aug. 2020 *Research Intern*, National Aeronautics and Space Administration - Lucy Student Pipeline Accelerator and Competency Enabler Academy | Tempe, AZ
Project description: Wrote a concept proposal on the process of converting lunar regolith into 3D printing filament and aided in creating lunar geologic maps for areas that were mineralogically significant for our project.
- Mar. 2020 – Dec. 2020 *Science Communication Intern*, Time Scavengers | Tampa, FL
Advisors: Drs. Sarah Sheffield, Jen Bauer, and Adriane Lam
Position description: Wrote articles about the latest planetary science findings with the aim of increasing the accessibility of science. Also conducted peer-review and curated social media content.
- Mar. 2020 – Dec. 2021 *Research Intern*, University of South Florida | Tampa, FL
Advisor: Dr. Sarah Sheffield
Position description: Collected data about fossil discoveries to understand broad evolutionary changes in echinoderms through time and constructed a dataset to examine disparities within echinoderms and their dispersal throughout geologic history.
- Jan. 2020 – May. 2020 *Research Intern*, National Aeronautics and Space Administration – Ames Research Center | Mountain View, CA
Advisors: Dr. Parul Agrawal, Miguel D. Castillo
Project Title: “Feasibility Analyses and the Development of Advanced Planetary-Spatial Information Systems for Future Lunar Exploration Missions.”
- Aug. 2019 – Aug. 2021 *Student Assistant*, University of South Florida Library | Tampa, FL
Digital Scholarship Services and Collections Department
Supervisor: Richard Schmidt
Position description: Built open-access, high-impact digital research collections to support research productivity and imaged, digitized, and processed a wide range of physical collections (primarily regarding environmental science and natural history) following the Metadata Encoding and Transmission Standard (METS) and Metadata Object Description Schema (MODS).

Professional Experience (cont.)

- Aug. 2020 *Research Intern*, University of North Carolina at Chapel Hill – Green Bank Observatory | Green Bank, WV
Educational Research in Radio Astronomy
Advisor: Dr. Dan Reichart
Project Title: “Measuring the Rotation Curve and Mass Distribution of the Milky Way Using the 21-cm Emission Line of Neutral Hydrogen.”
- May 2019 – Jul. 2019 *Research Intern*, Brown University | Providence, RI
The Leadership Alliance
Advisors: Drs. John Mustard and Alyssa Pascuzzo
Project Title: “North Polar Layered Deposits of Mars: Investigating the Effects of Perennial Dust Deposits on Water-Ice Sublimation.”

Publications.

- Melendez, L.E.**, Jawin, E.R., and Panzik, J.E. Quantifying the Environmental Response to Deglaciation within Martian Craters During the Late Amazonian. *Icarus*, in prep.
- Jawin, E.R., McCoy, T.J., Ryan, A.J., Kaplan, H.H., Ballouz, R. L., Walsh, K.J., DellaGiustina, D.N., Emery, J.P., Hamilton, V.E., **Melendez, L.E.**, Connolly Jr., H.C., Barnouin, O.S., Bennett, C.A., Molaro J.L., Pajola, M., Rizk, B., Lauretta., D.S. Boulder Morphologies on asteroid Bennu Reveal Parent Body Characteristics. *Icarus*, submitted and pending review.
- Melendez, L.E.**, Hernandez, N.J., and Sheffield, S.L. The Pennsylvanian Cladid Crinoid *Erisocrinus*: Ontogeny and Systematics. in prep.
- Sheffield, S.L., **Melendez, L.E.**, Houdyshell, K., Burgos, M. (2020). Scientist of the Week. *School of Geosciences Faculty and Staff Publications*. 2227, https://digitalcommons.usf.edu/geo_facpub/2227

Grants and Funding.

- 2022 American Geosciences Institute Advancing Diversity in the Geosciences (\$5000) [Applied]
- 2020, '21 The Geological Society of America On to the Future Grant (\$1000 total)
- 2020 Division for Planetary Sciences Underrepresented Minority Communities Grant (\$200)
- 2020 Benjamin A. Gilman International Scholarship (\$5000) [declined due to COVID-19]
- 2020 Lane Foundation Scholarship Endowment (\$7000)
- 2020 Sally Ride Internship Award (\$10,000)

Honors.

- 2020, '21 University of South Florida Department of Arts and Sciences Dean’s Scholars’ Award
- 2020 Dwornik Award, Best Undergraduate Oral Presentation, 52nd Lunar and Planetary Science Conference
- 2020 Best Abstract Haiku: Honorable Mention, 52nd Lunar and Planetary Science Conference

Field Experience.

- 2019 Sample collection, Tonto National Monument, AZ
2019 Sample collection and mapping, Appalachian Mountain Range, NC
2019 Sample collection and stratigraphy analyses, Fort De Soto Park, FL

Conference Participation.

- Melendez, L.E.**, Hernandez-Gonzalez, N.J., Sheffield, S.L. (2022). The Pennsylvanian Cladid Crinoid *Erisocrinus*: Ontogeny and Systematics. Geological Society of America Joint North-Central and Southeastern Section Meeting, Cincinnati, O.H.
- Melendez, L.E.**, Jawin, E. R., Corrigan, C., and McCoy, T., (2021). Linking Boulder Diversity on Asteroid (101955) Bennu to Carbonaceous Chondrite Meteorites. Smithsonian National Museum of Natural History Intern Research Symposium, Washington, D.C.
- Melendez, L.E.**, Panzik, J.E., and Jawin, E. R. (2021). Quantifying the Environmental Response to Deglaciation within Martian Craters During the Late Amazonian. University of South Florida Spring Undergraduate Research Symposium, Tampa, FL.
- Melendez, L.E.**, Panzik, J.E., and Jawin, E. R. (2021). Quantifying the Environmental Response to Deglaciation within Martian Craters During the Late Amazonian. Lunar and Planetary Sciences Conference Abstract 2284, The Woodlands, TX.
- Melendez, L.E.**, Panzik, J.E., and Jawin, E. R. (2020). Quantifying the Environmental Response to Deglaciation within Martian Craters During the Late Amazonian. The Geological Society of America Annual Meeting, Montréal, CA.
- Pascuzzo, A.C., **Melendez, L.E.**, and Mustard, J.F. (2020). Present-Day and (Very) Recent Influences of Ice Sublimation on Martian Trough Migration. Lunar and Planetary Sciences Conference Abstract 2914, The Woodlands, TX.
- Melendez, L.E.**, Pascuzzo, A.C., and Mustard, J.F. (2019). North Polar Layered Deposits of Mars: Investigating the Effects of Perennial Dust Deposits on Water-Ice Sublimation. Leadership Alliance National Symposium. Hartford, CT.

Technical Skills.

Spacecraft Data Experience

- Moon* Lunar Reconnaissance Orbiter's *Lunar Reconnaissance Orbiter Narrow Angle Camera* (LROC NAC), *Lunar Orbiter Laser Altimeter* (LOLA), Chandrayaan-1's *Moon Mineralogy Mapper* (M³)
- Mars* Mars Reconnaissance Orbiter's *High-Resolution Imaging Science Experiment* (HiRISE), *Context Camera* (CTX), Mars Global Surveyor's *Mars Orbiter Laser Altimeter* (MOLA)
- Bennu* *OSIRIS-Rex Camera Suite* (OCAMS): PolyCam, MapCam, NavCam, SamCam, *OSIRIS-Rex Laser Altimeter* (OLA)

Technical Skills (cont.)

Computer Languages and Software Experience

Python, MATLAB, R, ESRI ArcGIS, Small Body Mapping Tool (SBMT), Craterstats2, Adobe Creative Suite, Agisoft Metashape, Geomagic Wrap, Artec Studio, Plustek Opti Film 120 Slide Scanner, VueScan, ImageJ

Lab Experience

Fossil photography and analysis applying ammonium chloride sublimate and a Nikon D850

Basic optical mineralogy

Meteorite sample request process

Outreach.

2021	Space Day at the Brandon Regional Library
2021	Social media takeover at Smithsonian NMNH
2021	Smithsonian NMNH's YEAH! HS student interns' mentor
2021	Science Museum of Minnesota's Full STEM Ahead program mentor
2020, '21	Founder of USF's Geology Club Student Peer Mentoring Program
2020, '21	OSIRIS-REx Asteroid Sample Return Mission Ambassador
2020	100 th Anniversary of the 19 th Amendment Women in STEM Library posts
2020	Time Scavengers science article posts
2020	NASA Community College Aerospace Scholars Team Mentor and Judge
2019, '20, '21	USF's Engineering Expo (annual university outreach event)
2019	Apollo 11's 50 th Anniversary "Rocks on the Moon" Booth

Service.

2021	Elected member of USF's Chapter of Sigma Xi (Science and Engineering Honor Society)
2021	USF Queer Trans People of Color Collective, Vice President
2020, '21	USF Physics Organization for Women and the Underrepresented, Vice President
2020, '21	USF Contemporary Art Museum Club, President
2019, '20, '21	USF Geology Club, President
2019, '20, '21	Smithsonian Digital Archives Volunteer Transcriber and Editor

Professional Affiliations.

The International Society of Nonbinary Scientists – since 2021
American Astronomical Society – since 2020
GeoLatinas – since 2020
The Society for Advancement of Chicanos/Hispanics and Native Americans in Science – since 2019
Association for Women Geoscientists – since 2019
American Geophysical Union – since 2019
The Geological Society of America – since 2019

Press Coverage and Select Published Projects.

“Poetry in the Abstract”, by Christopher Cokinos, The American Scholar, Apr. 15th, 2021 (<https://theamericanscholar.org/poetry-in-the-abstract/>)
“On the Path Towards Inclusivity with Lisette Melendez”, NASA Earth Science Applied Sciences News, NASA, Feb. 23rd, 2021 (<https://appliedsciences.nasa.gov/our-impact/people/path-towards-inclusivity-lisette-melendez>)
“Lekane with Lid”, 3D model created using the Artec Spider structured light scanner and processed in Artec Studio 12 Professional (<https://sketchfab.com/3d-models/lekane-with-lid-7a239b7a0dd6417d8b5ad81d87776a8a>)
“Environmental Lands Acquisition and Protection Program Collection”, USF Libraries digitization project (<https://digital.lib.usf.edu/elapp>)

Advisors and Mentors.

Thank you for helping me become the scientist I am today.

University of South Florida

Dr. Joseph Panzik, Geology & Planetary Science
Dr. Sarah Sheffield, Geology & Paleontology
Dr. Davide Tanasi, Digital Archaeology & Curation
Leslie Elsasser, Museum Education & Curation
Richard Schmidt, Library Sciences & Digital Collections

Smithsonian National Museum of Natural History

Dr. Erica Jawin, Planetary Geology
Dr. Cari Corrigan, Planetary Geology
Dr. Tim McCoy, Planetary Geology

National Aeronautics and Space Administration

Headquarters

Dr. Shobhana Gupta, Applied Sciences & DEIA
McRae Lenahan, Science Communication & DEIA
Dr. Keith Gaddis, Applied Sciences & DEIA

Ames Research Center

Dr. Parul Agrawal, Lunar Geodesy
Miguel D. Castillo, GIS

Brown University

Dr. John Mustard, Planetary Geology
Dr. Alyssa Pascuzzo, Planetary Geology