

C. Adeene Denton

Tel.: 210-834-7472
Web.: adeenedenton.com
adenton@lpl.arizona.edu

University of Arizona
Michael J. Drake Building
Tucson, AZ 85705

RESEARCH INTERESTS

Planetary evolution of rocky and icy bodies through the lens of impact cratering.

EDUCATION

Purdue University

PhD, Earth, Atmospheric, and Planetary Science December 2022
Advisor: Brandon Johnson
Thesis: Sputnik Planitia as a probe for Pluto's internal evolution.

Brown University

Graduate Student, Earth, Environmental, and Planetary Science 2016-2019
PhD advisor: Brandon Johnson
M.Sc. Earth, Environmental, and Planetary Science May 2018
M.Sc. advisor: James W. Head
Thesis: Subsurface collapse and denudation of the fretted terrain and the Arabia Terra plateau: Origins and implications for martian dichotomy boundary evolution.

Rice University

B.S. Earth Science May 2016
B.A. History
GPA 3.88, Cum Laude
Senior Thesis: Tectonic history of Enceladus's SPT and its ties to the formation of the tiger stripe fractures

EXPERIENCE

Postdoctoral Researcher - Lunar and Planetary Laboratory, U. Arizona January 2023 – Present
Advisor: Dr. Erik Asphaug
Project title: Collisional formation of the Kuiper Belt.

Research Scientist - Lunar and Planetary Laboratory, U. Arizona September – December 2022
Project title: Giant impacts around Saturn.

Graduate Research Scientist - Purdue University August 2019 – August 2022
Advisor: Dr. Brandon Johnson

Graduate Research Scientist - Brown University Fall 2016 – Fall 2019
PhD Advisor: Dr. Brandon Johnson
Masters Advisor: Dr. James W. Head

Undergraduate Research Assistant - Rice University Fall 2015 – Spring 2016
Advisors: Dr. Adrian Lenardic and Dr. Helge Gonnermann
Project Title: Numerical investigation of long-term ice strength in Enceladus' South Polar Terrain.

Summer Research Intern - Lunar and Planetary Institute, Houston, TX Summer 2015
Advisor: Dr. David Kring
Project title: Differential vertical and radial displacement along faults in the crater wall during the formation of Meteor Crater, AZ.

PUBLICATIONS

1. **Denton, C.A.**, Gosselin, G.J., Freed, A.M. and Johnson, B.C. (2022), The formation and evolution of Sputnik Planitia, Pluto, prior to ice fill. In review.

2. Seaton, K., Burnett, E.R. **Denton, C.A.**, et al. (2022). The Astrobiology eXploration at Enceladus: A New Frontiers mission concept study. In review.
3. **Denton, C.A.**, and Rhoden, A.R. (2022), Tracking the Evolution of an Ocean Within Mimas Using the Herschel Impact Basin. *Geophysical Research Letters*. <https://doi.org/10.1029/2022GL100516>.
4. **Denton, C.A.**, Johnson, B.C., Wakita, S., Freed, A.M., Melosh, H.J., and Stern, A.S. (2021), Pluto’s antipodal terrains imply a thick subsurface ocean and hydrated core. *Geophysical Research Letters*. <https://doi.org/10.1029/2020GL091596>.
5. Wakita, S., Johnson, B.C., **Denton, C.A.**, and Davison, T.M. (2021). Jetting during oblique impacts of spherical impactors. *Icarus*. <https://doi.org/10.1016/j.icarus.2021.114365>.
6. Palumbo, A.M. and Deutsch, A.N., Bramble, M.S., Tarnas, J.T., Boatwright, B.D., Lark, L.H., Nathan, E.M., Wilner, J.A., Chen, Y., Anzures, B.A., **Denton, C.A.**, et al. (2019), Scientific exploration of Mare Imbrium with OrbitBeyond, Inc.: Characterizing the regional volcanic history of the Moon. *New Space* 7, 137–150. <https://doi.org/10.1089/space.2019.0016>

HONORS AND AWARDS

Graduate

<i>Purdue Earth Atmospheric and Planetary Sciences Outstanding Graduate Student</i>	2021
<i>Purdue Earth Atmospheric and Planetary Sciences Three-Minute Thesis Winner</i>	2021
<i>Future Investigator in NASA Earth and Space Science and Technology (FINESST)</i>	2020 – 2022
<i>Lunar and Planetary Institute Career Development Award</i>	2020
<i>Women in Space Travel Grant</i>	2019, 2020
<i>Large Meteorite Impacts VI Brasilia Travel Award</i>	2019
<i>Association for Women Geoscientists Takken Travel Award</i>	2019
<i>National Academies Space Science Week Early Career Program</i>	2019
<i>Dance Magazine 25 to Watch</i>	2019
<i>Brown University Presidential Fellow</i>	2016 – 2019
<i>Brown University Graduate Travel Grant</i>	2017, 2018, 2019
<i>Brown University International Travel Grant</i>	2016

Undergraduate

<i>ExxonMobil Outstanding Undergraduate in Earth Science</i>	2016
<i>Charles S. Garside Jr. Prize in History</i>	2016
<i>Houston Geological Society Outstanding Student Award</i>	2015
<i>Houston Geological Society Maby Scholarship</i>	2015
<i>Houston Gem and Mineral Society Scholarship</i>	2014

CONFERENCE PRESENTATIONS: FIRST AUTHOR

1. **Denton, C.A.**, Gosselin, G.J., Freed, A.M., and Johnson, B.C. (2023). The Formation and Evolution of the Sputnik Basin, Pluto, Prior to Nitrogen Ice Fill. 54th Lunar and Planetary Science Conference, The Woodlands, TX. (Submitted).
2. **Denton, C.A.**, Rhoden, A.R., and Ferguson, S.N. (2023). Using the Herschel Impact Basin to Track the Evolution of an Ocean within Mimas. 54th Lunar and Planetary Science Conference, The Woodlands, TX. (Submitted).
3. **Denton, C.A.**, Johnson, B.C., Wakita, S., Freed, A.M., Melosh, H.J., and Stern, A.S. (2021). Antipodal terrains produced by Sputnik Planitia-forming impact imply Pluto has thick ocean and hydrated core. 52nd Lunar and Planetary Science Conference, The Woodlands, TX.
4. **Denton, C.A.**, B.C., Wakita, S., Freed, A.M., Melosh, H.J., and Stern, A.S. (2021). Pluto’s antipodal terrains imply a thick subsurface ocean and hydrated core. New Horizons Science Plenary Meeting, Boulder, Colorado.
5. **Denton, C.A.**, Johnson, B.C., Freed, A.M., and Melosh, H.J. (2020). Seismology on Pluto?! Antipodal terrains produced by Sputnik Planitia-forming impact, 51st Lunar and Planetary Science Conference, The Woodlands, Texas
6. **Denton, C.A.** and Johnson, B.C. (2019). Formation of the Sputnik Planitia basin: Moving towards refined constraints on ocean thickness. Large Meteorite Impacts VI, Brasilia, Brazil.

7. **Denton, C.A.** and Head, J.W. (2019). Fretted channels and closed depressions in Arabia Terra, Mars: Origins and implications for subsurface hydrologic activity. 50th Lunar and Planetary Science Conference, The Woodlands, Texas.
8. **Denton, C.A.** and Head, J.W. (2019). Fretted channels and closed depressions in Arabia Terra, Mars: Origins and implications for subsurface hydrologic activity. Women in Space Conference, Scottsdale, Arizona.
9. **Denton, C.A.** and Head, J.W. (2018). Mapping the fretted terrain north of Arabia Terra, Mars: Results and implications for dichotomy boundary formation. 49th Lunar and Planetary Science Conference, The Woodlands, Texas.
10. **Denton, C.A.** and Head, J.W. (2018). Subsurface hydrologic activity in northern Arabia Terra, Mars: Implications for formation of fretted channels. 49th Lunar and Planetary Science Conference, The Woodlands, Texas (Poster).
11. **Denton, C.A.** and Head, J.W. (2018). Mapping the fretted terrain north of Arabia Terra, Mars: Results and implications for dichotomy boundary formation. Women in Space Conference, Toronto, Canada.
12. **Denton, C.A.** and Head, J.W. (2017). Arabia Terra-Meridiani Planum as possible glacial loess and outwash/playa plains adjacent to Late Noachian/Early Hesperian icy highlands. 48th Lunar and Planetary Science Conference, The Woodlands, Texas.
13. **Denton, C.A.** and Head, J.W. (2017). Protonilus Mensae: Origin by contact and deferred melting associated with emplacement of Late Noachian flood volcanism (Poster). 48th Lunar and Planetary Science Conference, The Woodlands, Texas.
14. **Denton, C.A.** and Kring, D. A. (2016). Differential vertical and radial displacement along faults in the crater wall during the formation of Meteor Crater, AZ (Poster). 47th Lunar and Planetary Science Conference, The Woodlands, Texas.

INVITED EXTERNAL TALKS AND TEAM MEETINGS

New Horizons Science Team Meeting - Wallace, ID (September 2022)

The formation and evolution of Sputnik basin prior to ice fill.

Southwest Research Institute - Boulder, CO (August 2022)

Sputnik Planitia as a probe for Pluto's internal evolution.

Jet Propulsion Laboratory - Pasadena, CA (July 2022)

Sputnik Planitia as a probe for Pluto's internal evolution.

The University of Western Ontario - London, Ontario, Canada (February 2022)

Blown Wide Open: Searching for Oceans in the Outer Solar System with Giant Impacts.

Lunar and Planetary Institute - Clear Lake, Texas (October 2021)

Blown Wide Open: Searching for Oceans in the Outer Solar System with Giant Impacts.

New Horizons Science Plenary Meeting - Boulder, Colorado (April 2020)

Pluto's antipodal terrains imply a thick subsurface ocean and hydrated core.

TEDxProvidence 2017 - Providence, Rhode Island (September 2017)

Netflix and chill at 0 Kelvin: How human culture will make the leap to space.

CONFERENCE PRESENTATIONS: CONTRIBUTING AUTHOR

1. N. Baijal, **C. A. Denton**, and E. Asphaug (2023). Porosity and Collisional Seismology of Asteroid Interiors. 54th Lunar and Planetary Science Conference, The Woodlands, Texas. (Submitted).
2. H. A. Ballantyne, E. Asphaug, **C. A. Denton**, A. Emsenhuber, and M. Jutzi (2022). Sputnik Planitia as an Impactor Remnant: An Ancient Mascon in a Frozen Ice Mantle. 53rd Lunar and Planetary Science Conference, The Woodlands, Texas.
3. A. R. Rhoden, M. E. Walker, **C. A. Denton**, and S. N. Ferguson (2022). Is Mimas a stealth ocean world? 53rd Lunar and Planetary Science Conference, The Woodlands, Texas.
4. K. M. Seaton, E. R. Burnett, **C. A. Denton**, et al., (2022). Science objectives for a mission concept to Enceladus: The Astrobiology Exploration at Enceladus (AXE). 53rd Lunar and Planetary Science Conference, The Woodlands, Texas.

5. K. M. Seaton, E. R. Burnett, **C. A. Denton**, et al., (2022). Mission implementation for a New Frontiers mission concept: The Astrobiology Exploration at Enceladus (AXE). 53rd Lunar and Planetary Science Conference, The Woodlands, Texas.
6. Mijjum, M. and **Denton, C.A.** (2021). URGE at Purdue EAPS: actions taken and barriers to developing a diverse and inclusive department. Geological Society of America Connects 2021, Portland, Oregon.

TEACHING

Guest Lecturer - The College of William and Mary ENSP 440/GEOL 427: The environmental and human history of North America	Spring 2021
Guest Lecturer - University of Arizona PTYS 595B: Special Topics in Planetary Science	Spring 2021
Guest Lecturer - Purdue University EAPS 35400: Planetary Interiors	Spring 2021
Guest Lecturer - Purdue University EAPS 35300/55600: Earth and Planetary Surface Processes	Fall 2020
Lead Instructor - Brown University Summer @ Brown Stem II Program Habitable Worlds: Possible Places for Life in the Solar System and Beyond	Summer 2019
Teaching Assistant - Brown University Summer @ Brown Stem II Program Habitable Worlds: Possible Places for Life in the Solar System and Beyond	Summer 2018
Sheridan Center for Teaching and Learning - Reflective Teaching Certificate	Fall 2017

MENTORING

Graduate advisees, University of Arizona - Namya Baijal: Impact modeling and asteroid seismology Robert Melikyan: Impact modeling and planetary evolution	2022-Present
Undergraduate advisees, Purdue University - Evan Kelch: Geomorphologic mapping and analysis on Earth and Mars Pat Pesa II: Geologic mapping, planetary geology, and cratering on Pluto	2020-2021

SERVICE AND OUTREACH

Department of Earth, Atmospheric and Planetary Sciences - Purdue University First-Year Mentorship Program Founder and Co-Director	2020-2022
Diversity Committee Graduate Representative	2020-2022
Seminar Committee, Planetary Representative	2019-2022
Astronomy on Tap - Purdue University Organizer and speaker for local, student-run group aimed at encouraging enthusiasm for earth and planetary science in the local community.	2021
Saturday Morning Astrophysics - Purdue University Led workshops for upper-level middle and high school students on the physics behind impact cratering and its importance in the Solar System.	2020-2021
Scientists in the Schools - Pinhead Institute Volunteer and contributing scientist for Scientists in the Schools, a program designed to bring scientists and their research to local schools in San Miguel County, CO.	2020-2021
Popular Astronomy Club of the Quad Cities - Moline, IL Speaker for local citizen astronomy group regarding the origin and evolution of Pluto and its role in the Kuiper Belt.	2021
Indiana Astronomical Society - Indianapolis, IN Speaker for statewide citizen astronomy group regarding the origin and evolution of Pluto and its role in the Kuiper Belt.	2020

- Ethics and Human Rights Group** - Space Generation Advisory Council 2019-2021
 Founder and co-director of project group focused on sustainable space exploration and intersectional diversity and equity in the space sector.
- Department of Earth, Environmental and Planetary Sciences** - Brown University
 Graduate Professional Development Representative 2019
 Planetary Climate Task Force 2018-2019
 Graduate Diversity Working Group Workshop Leader 2018-2019
 Graduate Student Body Co-President 2017-2018
- Graduate Women in Science and Engineering** - Brown University 2017-2019
 Director of university-wide networking, outreach, and inclusion efforts.
- La Salle Scholars** - La Salle Academy, Providence RI 2018-2019
 Led workshops for high school students interested in unusual career opportunities, exploring different career pathways in earth and space science.
- Young Scholars' Conference** - Brown University 2017-2018
 Co-directed a conference for women in science and engineering to prepare them for the academic and industrial job market. Events included networking panels, practice job talks, and sample interviews.