

## **JENNIFER BUZ**

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### **CURRENT EMPLOYMENT**

Postdoctoral Researcher, Dept. of Physics and Astronomy, NAU, 06/18-present

### **EDUCATION**

Ph.D., Geological Sciences, California Institute of Technology, 2018

Thesis: *Macro Mars to micro Mars: mapping minerals and magnetization*

S.M., Planetary Sciences, Massachusetts Institute of Technology, 2011

Thesis: *Recent Lunar magnetism*

S.B., Geological and Planetary Sciences, Massachusetts Institute of Technology, 2010

### **PROFESSIONAL & MISSION EXPERIENCE**

JPL Planetary Science Summer School 2020

*Venus balloon mission concept*

Mars 2020 Science Team and Landing Site Working Group Member, 2017-2019

CRISM/THEMIS analysis of candidate landing sites and photometric characterizations of Mastcam-Z calibration targets

Mars Science Laboratory, Science Team Member, Caltech/JPL, 3/14-Present

Remote sensing of the greater Gale region for regional context of mission results

NASA Exobiology Grant collaborator, 2015-Present

*Application of New Paleomagnetic and Rock Magnetic Techniques to Test the Origin of Magnetite in ALH84001 Carbonate*

Caltech Seismological Laboratory, Data Analyst, 10/11-12/12

Earthquake epicenter locating and seismic network monitoring

Lunar Orbiter Laser Altimeter, Research Assistant for Maria Zuber, NASA Goddard, 1/10-9/10

Surface roughness calculations and comparison with neutron detections

Lunar and Planetary Institute, Intern for Patrick McGovern, 6/09-8/09

Relating Venusian volcano edifice shape to the thickness of the elastic lithosphere using magma emplacement modeling and flow mapping

Paleomagnetism Laboratory, Research Assistant for Benjamin Weiss, MIT, 2008-2010

Apollo Lunar sample preparation and analyses for paleomagnetic investigations in a clean lab environment

### **AWARDS & RECOGNITION**

NAU Civic Service Institute Award for Outstanding Volunteerism 2020

NASA Group Achievement Award: MSL Extended Mission-1 Science & Operations Team 2017

NASA Earth and Space Science Fellowship Recipient, 2015, 2016, 2017

*Using remote sensing, laboratory, and in-situ measurements to understand the bedrock geology and past environments in the greater Gale region, Mars*

Caltech Rose Hills Fellowship, 2013

MIT 150<sup>th</sup> Anniversary Student Exploration Showcase, 3<sup>rd</sup> Place, 2011

*Using citizen science through a massive multiplayer online game framework to explore the Moon*

## TEACHING EXPERIENCE

Teaching Assistant, Paleomagnetism and Magnetostratigraphy (CIT Ge124a/b), 2015, 2017

Teaching Assistant, Field Geology Summer Field Camp (CIT Ge120b), 2016

Teaching Assistant, Hands-on Astronomy (MIT 12.009), 2007

## MENTORING EXPERIENCE

Tristan G. Murphy, Caltech Undergraduate, 2017

Kayla Wood, NAU Undergraduate 07/18-12/18

Tabatha Trigler, NAU Undergraduate 08/18-present

Shaye Fodrding, NAU Undergraduate 06/20-present

Ahmed Alhantoobi, Summer Intern 2019, 2020

## PUBLICATIONS \*student advisee ‡corresponding author

\*Alhantoobi, A., ‡ **Buz, J.**, O'Rourke, J.G., Langlais, B., Edwards, C.S., (in review GRL)  
Compositional Enhancement of Crustal Magnetization on Mars

Piqueux, S., **Buz, J.**, Edwards, C. S., Bandfield, J. L., Kleinböhl, A., Kass, D. M., Hayne, P.O.,  
the MCS and THEMIS teams (2019) Widespread Shallow Water Ice on Mars at High and  
Mid Latitudes, GRL, 46, 14290– 14298. <https://doi.org/10.1029/2019GL083947>

O'Rourke, J.G., **Buz, J.**, Fu, R.R., Lillis, R., (2019) Detectability of Remanent Magnetism in the  
Crust of Venus, GRL, 46, 5768– 5777. <https://doi.org/10.1029/2019GL082725>

**Buz, J.**, Ehlmann, B.L., Kinch, K., Johnson, J.R., Rice, M.S., Bell, J.F., Maki, J. (2019)  
Photometric characterization of Lucideon and Avian Technologies color standards:  
Application for calibration of the Mastcam-Z instrument on the Mars 2020 rover, SPIE  
Optical Engineering, 58(2), 027108, doi: 10.1117/1.OE.58.2.027108

**Buz, J.**, Ehlmann, B.L., Pan, L., Grotzinger, J.P., (2017) Mineralogy and stratigraphy of the Gale  
crater rim, wall, and floor units, J. Geophys. Res. Planets, 122, doi:10.1002/2016JE005163.

**Buz, J.**, Weiss, B.P., Tikoo, S.M., Shuster, D.L., Gattacceca, J., Grove, T.L. (2015), Magnetism  
of a Very Young Lunar Glass, J. Geophys. Res. Planets, 120, 1720-1735,  
doi:10.1002/2015JE004878.

Ehlmann, B.L., **Buz, J.**, (2014) Mineralogy and Fluvial History of the Watersheds of Gale, Knobel,  
and Sharp craters: A regional context for MSL Curiosity's Exploration, Geophys. Res. Lett.,  
doi: 10.1002/2014GL062553

Tikoo, S.M., Weiss, B.P., **Buz, J.**, Lima, A.E., Shea, E.K., Melo, G., Grove, T.L. (2012)  
Magnetic fidelity of lunar samples and implications for an ancient core dynamo, EPSL, 337-  
338, 93-103, doi: 10.1016/j.epsl.2012.05.024

Garrick-Bethell, I., Weiss, B.P., Shuster, D.L. and **Buz, J.** (2009) Early lunar magnetism,  
Science, 323, 356-359, doi: 10.1126/science.1166804

## IN-PREP PUBLICATIONS

**Buz, J.**, Piqueux, S., Edwards, C. S., (in prep for JGR Planets, Fall 2020 submission)  
Local variations in buried ice depth in the Martian mid-latitudes

## **SELECT CONFERENCE PRESENTATIONS, \*student advisee †invited**

- †**Buz, J.**, Fordring, S., Edwards, C.S., GSA, 2020, Talk, Using terrestrial playas to validate, extrapolate, and interpret in-situ and remote sensing data from Martian paleolakes
- †**Buz, J.**, Hanson, Erika, ASU Desert Attunement Symposium 2020, Playas on Earth and Mars
- Piqueux, S., **Buz, J.**, Edwards, C.S., Bandfield, J., Kleinboehl, A., Kass, D.M., Hayne, P.O., AGU 2019, Talk, Widespread Shallow Water Ice on Mars at High and Mid Latitudes
- \*Alhantoobi, A., **Buz, J.**, O'Rourke, J.G., Edwards, C.S., Langlais, B., AGU 2019, Talk, The Relationship of Martian Crustal Remnant Magnetism and Mineralogy
- Levitt, Z., Hilburn, I., **Buz, J.**, Dargan, R., Kirschvink, J.L., AGU 2019, Poster, Using Remanance FORCs to Test for Magnetofossils in Martian Meteorite ALH84001
- Buz, J.**, Edwards, C.S., Mars 9, Abstract #6325, Talk, Material Trends From Remote Sensing Analysis of Paleolake Basins
- \*Trigler, T.E., **Buz, J.**, Edwards, C.S., Rice, M.M., Starr, M., Seeger, C., Mars 9, Abstract # 6114, Poster, Using Multispectral Imagery of Float Rocks to Predict Upcoming Stratigraphy at Gale Crater
- Buz, J.**, Edwards, C.S., Piqueux, S., LPSC 2019, Abstract #3082, Poster, New Technique For Calculating Ice Depths On Mars At Themis Resolution
- McGovern, P.J., **Buz, J.**, LPSC 2019, Abstract # 2805, Poster, Self-consistent, Lithospheric Stress-modulated Growth of Large Volcanic Edifices on Venus: Scenarios for Creation of Conical and Domical Edifices, and Several Different Topographic Groups of Coronae.
- Buz, J.**, Kirschvink, J.K., Thomas-Keprta, K.L., Goldschmidt 2018, Talk, Paleomagnetic Tests to Distinguish the Origin of ALH84001 Magnetite
- Buz, J.**, Murphy, T., Kirschvink, J.K., LPSC 2017, Abstract #2924, Poster, Investigating Potential Martian True Polar Wander with ALH84001
- Buz, J.**, Ehlmann, B.L., Pan, L. GSA 2015, Abstract #71-10, Talk, Mineralogy and stratigraphy of Gale crater rim, wall, and floor units
- Buz, J.**, Kirschvink, J.L., LPSC 2015, Abstract #1961, Poster, Visualizing the Magnetization and Fracture Surfaces in ALH84001 Using SQUID Microscopy
- Buz, J.**, Ehlmann, B.L., Mars 8 2014, Abstract #1223, Poster, Geology of the Greater Gale Region
- Buz, J.**, Ehlmann, B.L., LPSC 2014, Abstract #2810, Poster, Effects of Grain Size on the Reflectance Spectroscopy of Olivine in the Vis-NIR and the Derivation of Olivine Composition Using Modified Gaussian Modeling
- Buz, J.**, Weiss, B.P., Garrick-Bethell, I., AGU 2010, Abstract # GP42A-0, Talk Recent Lunar Magnetism
- Torrence, M. H., Mazarico, E., Neumann, G. A., **Buz, J.**, Smith, D. E., Zuber, M. T., Barnouin, O. S., Rosenburg, M. A., AGU 2010, Abstract # P51C-1443, Poster, Surface roughness and slope from the Lunar Orbiter Laser Altimeter
- Tikoo, S.M., Weiss, B.P., **Buz, J.**, Garrick-Bethell, I., Grove, T.L., Gattaccea, J., LPSC 2010 Abstract #2705, Talk, Ancient Lunar Dynamo: Absence of Evidence is Not the Evidence of Absence
- Buz, J.**, McGovern, P.J., LPSC 2010, Abstract #1482, Poster, Venusian Volcano Shapes: Implications for Edifice Evolution and the Internal Thermal State of Venus

## **PROGRAMMING/SOFTWARE**

MATLAB (advanced), ENVI/IDL (advanced), Python (experienced), GMT (basic), C/Davinci (experienced), ArcGIS (advanced), Agisoft Photoscan

## **FIELD EXPERIENCE**

Participated in 6 courses on the regional geology of the SW United States

Participated in 5 field-based mapping courses (tectonics, carbonate stratigraphy, geomorphology, paleomagnetism, structural geology)

Paleomagnetic sample collection, Feb-March 2016, James Ross Island, Antarctica

Photogrammetry study, Feb-March 2016, James Ross Island, Antarctica

Photogrammetry study, March 2015, Huckleberry Ridge Ash, Tecopa, CA

Paleomagnetic sample collection, November 2008, Vredefort Crater, South Africa

## **PROFESSIONAL MEMBERSHIPS**

American Geophysical Union, Geological Society of America

## **PEER REVIEW**

Reviewer for *JGR Planets*, *Icarus*, *Earth and Space Science*, *Review of Scientific Instruments*

Reviewer and Executive Secretary positions for NASA review panels

## **RESEARCH INTERESTS/EXPERIENCES**

Geology, Mineralogy, Remote Sensing, Geologic Mapping, Spectroscopy, Paleomagnetism, Mission Operations, Instrument Design, Planetary Surfaces, Astrobiology

## **LANGUAGES**

English (Fluent), Spanish (Conversational), French (basic)

## **VOLUNTEER WORK**

House Calls from Outer Space, 2020-Present

Coconino County Search and Rescue, 2018-Present

Full STEAM Ahead, 2019-Present

Big Brothers Big Sisters of Flagstaff, 2019-Present

Skype-A-Scientist, 2018-Present

RISE Tutoring Program (tutor) 2015-2018

Coach, Dynamic Planet, Science Olympiad Sierra Madre Middle School 2016-2017

Outreach with the Caltech Tectonics Observatory 2011-2012

Science Club for Girls (mentor) 2011