

CHRISTOPHER SCOTT EDWARDS, Ph.D.

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Curriculum Vitae

EDUCATION:

- 2012** **Ph.D. in Geological Sciences**, School of Earth and Space Exploration, Arizona State University, Tempe, AZ
- 2009** **M.S. in Geological Sciences**, School of Earth and Space Exploration, Arizona State University, Tempe, AZ
- 2007** **B.S. in Geological Sciences**, Summa Cum Laude, Department of Geological Sciences, Arizona State University, Tempe, AZ

POSITIONS HELD:

- 2016-** **Assistant Professor**, Department of Physics and Astronomy, Northern Arizona University
- 2015-2016** **Research Physical Scientist**, Astrogeology Science Center, United States Geological Survey
- 2012-2015** **Planetary Science Postdoctoral Fellow**, Department of Geological and Planetary Sciences, California Institute of Technology
- 2002-2007** **Research Assistant**, Mars Space Flight Facility, Department of Geological Sciences, Arizona State University
- 2007-2012** **Graduate Research Associate**, Mars Space Flight Facility School of Earth and Space Exploration, Arizona State University

PROFESSIONAL EXPERIENCE:

- 2016-** **THEMIS Science Team Co-Investigator**, Thermal Emission Imaging System, NASA/2001 Mars Odyssey
- 2016-** **MSL Participating Scientist** Mars Science Laboratory – Curiosity, NASA/Jet Propulsion Laboratory
- 2014-** **RIS4E Science Team Collaborator**, Remote In Situ and Synchrotron Studies for Science and Exploration, NASA/Solar System Exploration Research Virtual Institute (SSERVI)
- 2012-** **CRISM Science Team Collaborator**, Compact Reconnaissance Imaging Spectrometer for Mars, NASA/Mars Reconnaissance Orbiter
- 2003-2016** **THEMIS Science Team Collaborator**, Thermal Emission Imaging System, NASA/2001 Mars Odyssey
- 2003-** **Mini-TES Science Team Collaborator**, Mini-Thermal Emission Spectrometer NASA/Mars Exploration Rovers – Spirit & Opportunity
- 2013-2016** **MSL Science Team Member**, Mars Science Laboratory – Curiosity, NASA/Jet Propulsion Laboratory
- 2003-2006** **TES Science Team Member**, Thermal Emission Spectrometer, NASA/Mars Global Surveyor

REFEREED PUBLICATIONS:

Manuscripts In Submission

- 35) Ehlmann, B. L. and 35 authors including **C. S. Edwards** The Sustainability of Habitability on Terrestrial Planets: Insights, Questions, and Needed Measurements from Mars for Understanding the Evolution of Earth-like Worlds, *Journal of Geophysical Research*
- 34) Huang, J., Salvatore, M., **Edwards., C.S.**, Christensen, P. R., Xiao, L., Xu, Y., A Complex Fluvio-lacustrine Environment on Early Mars: Insights into the timing of chloride precipitation and clay alteration, *Geology*
- 31) Nowicki, S. A., R. D. Inman, K. E. Nussner, T. C. Esque, **C. S. Edwards**, Spatially-Consistent High Resolution Land Surface Temperature Mosaics for Thermophysical Analysis and Ecological Mapping of the Mojave Desert, *Remote Sensing of the Environment*.

Manuscripts In Press

- 33) Fraeman, A. A., **C. S. Edwards**, B. L. Ehlmann, R. E. Arvidson, J. R. Johnson, A Detailed Investigation of Lower Mt. Sharp Using Coordinated Orbital Datasets, *Journal of Geophysical Research*
- 32) **Edwards, C. S.** and S. Piqueux, The Water Content of Recurring Slope Lineae on Mars, *Geophysical Research Letters*, doi: [10.1002/2016GL070179](https://doi.org/10.1002/2016GL070179)
Press Coverage: [NASA/JPL Press Release](#); [NAU News](#); [ASU News](#); [Washington Post](#); [Space.com](#); [Engadget](#); [The Register](#); [Pasadena Star News](#); [NPR Air Talk \(live interview\)](#)

Published Manuscripts

- 30) **Edwards, C. S.**, and Ehlmann, B. L., 2016, Carbon sequestration on Mars: REPLY: *Geology*, v. 44, no. 6, p. e389, doi:[10.1130/G37984Y.1](https://doi.org/10.1130/G37984Y.1)
- 29) Salvatore, M. R., Kraft, M. D., **Edwards, C. S.**, and Christensen, P. R., 2016, The geologic history of Margaritifer basin, Mars: *Journal of Geophysical Research: Planets*, v. 121, no. 3, p. 273-295, doi: [10.1002/2015JE004938](https://doi.org/10.1002/2015JE004938).
- 28) Stack, K. M., **Edwards, C. S.**, Grotzinger, J. P., Gupta, S., Sumner, D. Y., Calef III, F. J., Edgar, L. A., Edgett, K. S., Fraeman, A. A., Jacob, S. R., Le Deit, L., Lewis, K. W., Rice, M. S., Rubin, D., Williams, R. M. E., and Williford, K. H., Comparing orbiter and rover image-based mapping of an ancient sedimentary environment, Aeolis Palus, Gale crater, Mars: *Icarus*, doi: [10.1016/j.icarus.2016.02.024](https://doi.org/10.1016/j.icarus.2016.02.024)
- 27) Greenberger, R. N., J. F. Mustard, E. A. Cloutis, P. Mann, J. H. Wilson, R. L. Flemming, K. M. Robertson, M. R. Salvatore, **C. S. Edwards**, (2015) Hydrothermal alteration and diagenesis of terrestrial lacustrine pillow basalts: Coordination of hyperspectral imaging with laboratory measurements, *Geochimica et Cosmochimica Acta*, 171, 174-200, doi: [10.1016/j.gca.2015.08.024](https://doi.org/10.1016/j.gca.2015.08.024)
- 26) **Edwards, C. S.**, and B. L. Ehlmann (2015), Carbon sequestration on Mars, *Geology*, 43(10), 863-866, doi: [10.1130/G36983.1](https://doi.org/10.1130/G36983.1)
Press Coverage: [NASA/JPL Press Release](#); [USGS Technical Announcement](#); [ASU News](#); [APL/CRISM Press Release](#)
- 25) Ehlmann, B. L. and **C. S. Edwards**, (2014), The Composition of the Martian Surface from Infrared Spectroscopy, *Annual Reviews in Earth and Planetary Sciences*, 42(1), 291-315, doi: [10.1146/annurev-earth-060313-055024](https://doi.org/10.1146/annurev-earth-060313-055024)
- 24) **Edwards, C. S.**, J. L. Bandfield, P. R. Christensen, A. D. Rogers (2014), The Formation of Infilled Craters on Mars: Evidence for Widespread Impact Induced Decompression Melting of the Martian Mantle?, *Icarus*, 228(1), 149-166, doi: [10.1016/j.icarus.2013.10.005](https://doi.org/10.1016/j.icarus.2013.10.005).

Press Coverage: Nature Research Highlight, doi: [10.1038/502597b](https://doi.org/10.1038/502597b); Red Planet Report, [Pressure-release melting put rocky floors into early Mars craters](#)

- 23) Pilorget, **C. S. Edwards**, B. L. Ehlmann, F. Forget, E. Millour, (2013) Material ejection by the cold jets and temperature evolution of the south seasonal polar cap of Mars from THEMIS/CRISM observations and implications for surface properties, *Journal of Geophysical Research: Planets*, 118(12), 2520-2536, doi: [10.1002/2013JE004513](https://doi.org/10.1002/2013JE004513).
- 22) Huang, J. **C. S. Edwards**, S. W. Ruff, P. R. Christensen, L. Xaio (2013), A New Method for the Semi-Quantitative Determination of Major Rock Forming Minerals with Multispectral Data: Application to THEMIS Infrared Data, *J. Geophys. Res.-Planets*, 118, doi: [10.1002/jgre.20160](https://doi.org/10.1002/jgre.20160)
- 21) **Edwards, C. S.**, and P. R. Christensen (2013), Microscopic emission and reflectance thermal infrared spectroscopy: instrumentation for quantitative in situ mineralogy of complex planetary surfaces, *Applied Optics*, 52(11), 2200-2217, doi: [10.1364/AO.52.002200](https://doi.org/10.1364/AO.52.002200).
- 20) Baldridge, A. M., M. D. Lane, and **C. S. Edwards** (2013), Searching at the right time of day: Evidence for aqueous minerals in Columbus crater with TES and THEMIS data, *J. Geophys. Res.*, 118(2), 179-189, doi: [10.1029/2012JE004225](https://doi.org/10.1029/2012JE004225).
- 19) Bandfield, J. L., **C. S. Edwards**, D. R. Montgomery, and B. D. Brand (2013), The dual nature of the martian crust: Young lavas and old clastic materials, *Icarus*, 222(1), 188-199, doi:[10.1016/j.icarus.2012.10.023](https://doi.org/10.1016/j.icarus.2012.10.023).

Press Coverage: Red Planet Report, [Mars' Explosive Childhood](#); The Martian Chronicles, [The two-faced crust of Mars](#)

- 18) Cooper, F. J., B. A. Adams, **C. S. Edwards**, and K. V. Hodges (2012), Large normal-sense displacement on the South Tibetan fault system in the eastern Himalaya, *Geology*, doi: [10.1130/g33318.1](https://doi.org/10.1130/g33318.1).
- 17) Nowicki, K. J., **C. S. Edwards**, P. R. Christensen, (2013) Post-Projection Removal of Row- and Column-Correlated Noise in Line-Scanning Data: Application to THEMIS infrared Data, *IEEE-Whispers Transactions*. ([pre-print](#))
- 16) Nowicki, K. J., **C. S. Edwards**, P. R. Christensen, (2013) Removal of Salt-and-Pepper Noise in THEMIS Infrared Radiance and Emissivity Spectral Data of the Martian Surface, *IEEE-Whispers Transactions*. ([pre-print](#))
- 15) Huang, J., **C. S. Edwards**, B. H. N. Horgan, P. R. Christensen, M. D. Kraft, and L. Xiao (2012), Identification and mapping of dikes with relatively primitive compositions in Thaumasia Planum on Mars: Implications for Tharsis volcanism and the opening of Valles Marineris, *Geophys Res Lett*, 39(17), L17201, doi: [10.1029/2012GL052523](https://doi.org/10.1029/2012GL052523).
- 14) **Edwards, C. S.**, K. J. Nowicki, P. R. Christensen, J. Hill, N. Gorelick, and K. Murray (2011), Mosaicking of global planetary image datasets: 1. Techniques and data processing for Thermal Emission Imaging System (THEMIS) multi-spectral data, *J. Geophys. Res.*, 116(E10), E10008, doi:[10.1029/2010JE003755](https://doi.org/10.1029/2010JE003755).
- 13) **Edwards, C. S.**, P. R. Christensen, and J. Hill (2011), Mosaicking of global planetary image datasets: 2. Modeling of wind streak thicknesses observed in Thermal Emission Imaging System (THEMIS) daytime and nighttime infrared data, *J. Geophys. Res.*, 116, E10005, doi:[10.1029/2011JE003857](https://doi.org/10.1029/2011JE003857).
- 12) Bandfield, J. L., A. D. Rogers, and **C. S. Edwards** (2011), The Role of Aqueous Alteration in the Formation of Martian Soils, *Icarus*, 211(1), 157-171, doi: [10.1016/j.icarus.2010.08.028](https://doi.org/10.1016/j.icarus.2010.08.028).
- 11) **Edwards, C. S.**, J. L. Bandfield, P. R. Christensen, and R. L. Fergason (2009), Global distribution of bedrock exposures on Mars using THEMIS high-resolution thermal inertia, *J. Geophys. Res.*, 114(E11001), doi:[10.1029/2009JE003363](https://doi.org/10.1029/2009JE003363).

- 10) **Edwards, C. S.**, P. R. Christensen, and V. E. Hamilton (2008), Evidence for extensive olivine-rich basalt bedrock outcrops in Ganges and Eos chasmas, Mars, *J. Geophys. Res.*, 113(E11003), doi:[10.1029/2008JE003091](https://doi.org/10.1029/2008JE003091).
- 9) Piqueux, S., **C. S. Edwards**, and P. R. Christensen (2008), Distribution of the ices exposed near the south pole of Mars using Thermal Emission Imaging System (THEMIS) temperature measurements, *J. Geophys. Res.*, 113(E8), doi: [10.1029/2007JE003055](https://doi.org/10.1029/2007JE003055).
- 8) Bandfield, J. L., and **C. S. Edwards** (2008), Derivation of martian surface slope characteristics from directional thermal infrared radiometry, *Icarus*, 193(1), 139-157, doi:[10.1016/j.icarus.2007.08.028](https://doi.org/10.1016/j.icarus.2007.08.028).

Manuscripts In Preparation

- 7) **Edwards, C.S.**, Hamilton, V. E., Piqueux, S., Vasavada, A., Bridges, N., The Thermophysical Characteristics of Namib Dune in Gale Crater, Mars: Ground Truthing Orbital Thermal Inertia
- 6) **Edwards, C.S.**, P. D. Asimow, S. T. Stewart, B. L. Ehlmann, Magmatic Volatiles on Early Mars Released by Impact-Related Volcanism
- 5) Glotch, T.D., and **C. S. Edwards**, Thermal Infrared Spectral Properties of Phobos: Evidence for Water and Carbonates.
- 4) Bohon, W., A. T. Tripathy, **C. S. Edwards**, B. A. Adams, F. J. Cooper, J. R. Arrowsmith, K. V. Hodges, Using ASTER Remote Sensing to Map Remote Terrestrial Areas: A Case Study from Ladakh India, *Journal of Geophysical Research*
- 3) Tripathy, A. T., **C. S. Edwards**, K. V. Hodges, J-A Wartho, F. J. Cooper, Lithologic mapping of complexly deformed sedimentary strata using ASTER data and the evolution of Indus Basin depocenters, Ladakh, NW India, *Journal of Geophysical Research*
- 2) Salvatore, M. R., **C. S. Edwards**, J. L. Bandfield, E. Amador, B. L. Ehlmann, J. F. Mustard, T. A. Gouge, P. R. Christensen, Composition and Physical Properties of the Nili Fossae and NE Syrtis Region of Mars Derived Through Thermal Infrared Spectral Analyses, *Icarus*
- 1) Ferguson, R. L., P. R. Christensen, **C. S. Edwards**, J. Hill, Assessment of Surface Properties and Geologic processes: Global THEMIS Thermal Inertia Mosaic of Mars, *Journal of Geophysical Research*

GRANTS AND FELLOWSHIPS:

Selected Grants

- 2016- **Co-I, NASA/Lunar Data Analysis Program (LDAP)**, Investigation of the Effect of Surface Roughness on Lunar Infrared Spectra, PI: J. Bandfield, *FTEs: 0.2*
- 2016- **PI, NASA/Mars Science Laboratory Participating Scientist (MSLPSP)**, Linking Microscale Properties to Regional Geologic Context: Understanding Past and Future Terrains from Imaging and Thermal Infrared Observations, *FTEs: 0.25*
- 2016- **Co-I, NASA/Planetary Data Archiving, Restoration, and Tools (PDART)**, Improving Thermal Model Capability for the Planetary Science Community. PI: S. Piqueux, *FTEs: 0.15*
- 2015- **Co-I, NASA/Solar System Workings (SSW)**, Low Temperature Calorimetry for Improved Martian Thermal Modeling: Application to Sedimentary Materials, PI: S. Piqueux, *FTEs: 0.0/0.0/0.2*

- 2015- **Co-I, NASA/Solar System Workings (SSW)**, Identifying and Quantifying Phyllosilicate-Bearing Materials on Solar System Bodies. PI: B. L. Ehlmann, *FTEs: 0.0/0.2/0.2*
- 2015- **Co-I, NASA/Mars Data Analysis Program (MDAP)**, Inter-seasonal and inter-annual Surface Dust Fluxes on Mars. PI: S. Piqueux, *FTEs: 0.2*
- 2015- **Co-I, NASA/Solar System Exploration Research Virtual Institute (SSERVI)**, Remote In Situ and Synchrotron Studies for Science and Exploration. PI: T. D. Glotch, *FTEs: 0.1*
- 2014- **Instrument Scientist, Emirates Mars InfraRed Spectrometer**, UAE Emirates Mars Mission via Laboratory for Atmospheric and Space Physics via Arizona State University, Project Manager: P. R. Christensen, *FTEs: 0.5*
- 2014- **Co-I, NASA/Mars Data Analysis Program (MDAP)**, Coordinated spectral, photogeologic, and morphometric studies of rock-dominated units on Mars. PI: A. D. Rogers, *FTEs: 0.15*

Proposals In Submission

- Pending **Co-I, NASA/Advancing Collaborative Connection for Earth System Science (ACCESS)**, J-Earth: Integrating Spatial Data Discovery, Analysis and GIS for Earth Science Applications. *FTEs: 0.2*

Past Funded Grants

- 2012-2014 **Co-I, JPL/Caltech/President and Director's Fund**, Surface-Based Hyperspectral Imaging for Advanced Planetary and Terrestrial Applications. Co-PIs: Bethany L. Ehlmann/Diana Blaney, *FTEs: 0.5*
- 2011-2015 **Collaborator, NASA/Mars Data Analysis Program (MDAP)**, Martian sediment production: An investigation into the relative roles of chemical and mechanical weathering. PI: Victoria E. Hamilton.
- 2012-2013 **PI, Planetary Science Postdoctoral Fellowship**, California Institute of Technology, Division of Geological and Planetary Sciences. *FTEs: 0.75*
- 2010-2013 **Collaborator, NASA/Mars Data Analysis Program (MDAP)**, Integrated Analyses of Martian Surface Compositions Using Near-Infrared through Thermal Infrared Spectroscopic Data. PI: Joshua L. Bandfield.
- 2012-2013 **Co-I, JPL/Mars Critical Data Products for Future Landing Site Characterization**, Land-On Science at the Nili Fossae Carbonate Plains: Aqueous Alteration of Ultramafic Rocks and Clay-Carbonate Stratigraphy. PI: Bethany L. Ehlmann. *FTEs: 0.25*
- 2008-2011 **Collaborator, NASA/Planetary Geology and Geophysics (PG&G)**, Laboratory Vibrational Spectroscopy for the Analysis of Planetary Surfaces. PI: Philip R. Christensen. Role: *Graduate Student*
- 2008-2011 **Collaborator, NASA/Mars Instrument Development Program (MIDP)**, Development of a Microscopic Analysis Thermal Emission Spectrometer (MicroTES) for Planetary Landed Missions. PI: Philip R. Christensen. Role: *Graduate Student*

AWARDS AND HONORS:

- 2015** **Outstanding Reviewer, Icarus**
- 2012** **Outstanding Graduate Mentor, Inaugural Recipient**, Graduate College, Graduate and Professional Student Association, Arizona State University
- 2012** **Outstanding Geology Graduate Student**, School of Earth and Space Exploration, Arizona State University
- 2011** **Scholarship Recipient**, NASA/NAI/UIMP Summer School
- 2010** **Scholarship Recipient**, NASA/PG&G Planetary Volcanology Field Workshop

ORAL PRESENTATIONS:

Invited Talks

- 2016** The Ancient Rocky surface of Mars, Northern Arizona University, Department of Physics and Astronomy Colloquium, Flagstaff, AZ, January 21.
- 2013** Impact Induced Decompression Melting of the Martian Mantle: The Formation of Widespread Infilled Craters and Inter-Crater Plains, Mars Science Seminar, Jet Propulsion Laboratory, Pasadena, CA, April 26.
- 2013** The Ancient Rocky Surfaces of Mars: Insights from Orbital Spacecraft Data and New Laboratory Instrumentation, Planetary Seminar Series, Georgia Institute of Technology, Atlanta, GA, January 22.
- 2012** 300 Years of Explorations: What Have We Learned About Our Closest Planet Neighbor Mars?, Arizona Science Center, Phoenix, AZ, July 6.
- 2010** Volcanic Origin of Flat Floored, Bedrock Containing Craters on Mars, USGS Astrogeology Colloquium Series, Flagstaff, AZ, April 28.

Conference Talks

- 2015** Carbon Sequestration on Mars: Insights from the Nili Fossae Carbonate Plains, American Geophysical Union, San Francisco, December 16.
- 2015** Processing and Visualizing Planetary Data using Davinci: Updates for Portability and Scriptable Execution, Planetary Data Users Workshop, Flagstaff, AZ, June 10.
- 2015** The Water Content of Recurring Slope Lineae on Mars, 46th Lunar and Planetary Science Conference, The Woodlands, TX, March 17.
- 2014** An Examination of the Impact-Induced Decompression Melting Formation Hypothesis for the Rocky, Mafic Crater Floors of Mars, 8th International Conference on Mars, Pasadena, CA, July 14.
- 2014** Testing the Impact-Induced Decompression Melting Hypothesis for Rocky, Mafic, Infilled Crater Floors on Mars, 45th Lunar and Planetary Science Conference, The Woodlands, TX, March 19.
- 2013** Removal of Salt-and-Pepper Noise in THEMIS Infrared Radiance and Emissivity Spectral Data of the Martian Surface, IEEE-Whispers, Gainesville, FL, June 26.
- 2013** Impact Induced Decompression Melting of the Martian Mantle: The Formation of Widespread Infilled Craters and Inter-Crater Plains, 44th Lunar and Planetary Science Conference, The Woodlands, TX, March 18.

- 2012 Using Davinci and JMARS for Processing and Visualization of Thermal Emission Spectrometer (TES) and Thermal Emission Imaging System (THEMIS) Data of Mars , Planetary Data Users Workshop, Flagstaff, AZ, June 25.
- 2011 Evidence for a Widespread Olivine-Rich Layer on Mars: Identification of a Global Impact Ejecta Deposit?, 42nd Lunar and Planetary Science Conference, The Woodlands, TX, March 11.
- 2007 Evidence For Extensive Olivine-Rich Basalt Bedrock Outcrops in Ganges and Eos Chasma on Mars, 7th International Conference on Mars, Pasadena, CA, July 9.
- 2006-2011 THEMIS Science Team Meetings (February 2011, April 2010, October 2009, May 2009, October 2008, October 2007, October 2006)

Campus Talks

- 2013 Impact Induced Decompression Melting of the Martian Mantle: The Formation of Widespread Infilled Craters and Inter-Crater Plains, Kleigel Lectures in Planetary Science, California Institute of Technology, Pasadena, CA, February 12.
- 2009-2012 Planetary Science Seminar, School of Earth and Space Exploration, Arizona State University, Tempe, Arizona (March 2012, February 2011, November 2010, February 2010, October 2009)
- 2008 Mapping of Extensive Olivine-Rich Basalt Bedrock Outcrops On Mars, Graduate Research Symposium, Arizona State University, Tempe, AZ, October 22.

TEACHING EXPERIENCE:

Courses Taught

- 2011 **Advanced Remote Sensing**, Arizona State University, *Co-Instructor*
- 2008 **Remote Sensing**, Arizona State University, *Teaching Assistant*
- 2007 **Introduction to Exploration**, Arizona State University, *Teaching Assistant*
- 2004-2010 **National Remote Sensing Educator Workshop**, *Field Instructor*

Formal Advising

- 2015- **Northern Arizona Graduate Student**, N. Smith,
- 2013-2014 **Summer Undergraduate Research Fellowship**, California Institute of Technology, Division of Geological and Planetary Sciences, *M. Bhadba (2012-2013), J. Bishop (2013), K. Bielow (2014)*
- 2011-2012 **Undergraduate Honor's Thesis Committee Member**, School of Earth and Space Exploration, Arizona State University, *S. Dunn (2011-2012)*
- 2008-2010 **NASA Space Grant Mentor to Undergraduate Students**, School of Earth and Space Exploration, Arizona State University, *J. Kaminski (2009-2010), J. Friedman (2008-2009)*

Education Public Outreach

- 2005- **Guest Instructor**, Mars Student Imaging Project (msip.mars.asu.edu), Arizona State University
- 2005-2012 **Representative of ASU Mars Space Flight Facility**, Present Mars related science to local schools and science centers

2004-2006 **Team Member**, Rock Around the World (ratw.mars.asu.edu), Arizona State University, Mars Space Flight Facility

RESEARCH EXPERIENCE:

Instrument Development

- 2014- **Emirates Mars InfraRed Spectrometer (Flight)**, Lead requirements definition, instrument performance characterization, and science traceability in the roles of Instrument Scientist, System Engineer and Integration and Test Scientist. This instrument and mission are developed in collaboration with the United Arab Emirates-MBRSC, the University of Colorado Boulder-LASP, and Arizona State University-SESE.
- 2008-2011 **Microscopic Emission Spectrometer (Proto-Flight)**, Assist with design, characterization, and calibration of NASA/Mars Instrument Development Program Micro-TES prototype flight instrument.
- 2008-2011 **Microscopic Emission Spectrometer (Laboratory)**, Led design, assembly, characterization, and calibration of NASA/Planetary Geology & Geophysics funded Micro-Emission spectrometer laboratory instrument.

Field Experience

- 2011 **Ground Truthing ASTER Remote Sensing Data of the Himalaya**, Western Bhutan. Worked closely with tectonic geologists to map and characterize the geology of the Jomolhari region using ground based measurements and remote sensing data.
- 2011 **NASA/NAI/UIMP Astrobiology Summer School**, Santander, Spain. A weeklong course with an emphasis aimed at assessing Mars habitability and Exploration, by Bruce Runnegar
- 2010 **NASA/PG&G Planetary Volcanology Field Workshop**, Hilo, HI. A weeklong course with an emphasis on planetary volcanology analogues, by Scott Rowland
- 2009 **NASA/ASU Astrobiology Institute Data Collection Trip**, Yellowstone National Park, WY. Excursion to collect infrared spectra of Martian analogue sinter deposits
- 2009 **Advanced Field Geology**, Arizona State University, AZ. A 4-weekend course with an emphasis on planetary aeolian analogues, by Ronald Greeley
- 2008 **Advanced Field Geology**, Arizona State University, AZ. A 4-weekend course with an emphasis on mapping various grades of metamorphic rocks, by Steven Reynolds
- 2006 **Field Course**, Western Ireland Geology and Environmental Science, James Madison University, by Steven Whitmeyer

PROFESSIONAL SERVICE:

- 2012- **Panel Member**, NASA/Planetary Instrument Concepts for the Advancement of Solar System Observations (*PICASSO*) - 2014; Planetary Geology and Geophysics (PG&G) - 2012
- 2011- **External Reviewer**, Earth and Space Sciences Fellowships (NESSF) – 2013; NASA/Moon and Mars Analog Missions Activities (MMAMA) - 2012; Mars Data Analysis Program (MDAP) - 2011

- 2010-** **Reviewer** – Icarus; Journal of Geophysical Research – Planets; Applied Optics; Icarus
- 2012** **AGU Session Convener/Chair**, Laboratory Investigations Supporting the Analysis of Datasets from Mars, the Moon, and Other Planetary Bodies. Co-conveners: Bethany Ehlmann, Timothy Glotch
- 2011** **AGU Session Convener/Chair**, Practical Applications of Visible and Infrared Spectroscopy to Terrestrial Geologic Studies. Co-conveners: Frances Cooper
- 2010** **Graduate Student Panel Member**, NASA/Planetary Geology and Geophysics (PG&G)
- 2010** **Graduate Student Panel Member**, Faculty Search Committee, Arizona State University, School of Earth and Space Exploration (SESE)

CONFERENCE ABSTRACTS:

- Edwards, C. S.**, and Rogers, A. D., Evaluating Flat-Crater Floor Fill Compositions: Insights into Volcanic and Sedimentary Processes, *in* Proceedings Lunar and Planetary Science Conference 2016, Volume 47, p. 2273.
- Edwards, C. S.**, B. L. Ehlmann (2015), Carbon Sequestration on Mars: Constraints from the Nili Fossae Carbonate Plains, *Eos Trans., AGU, Fall Meet. Suppl.*, Abstract P31F-06.
- Edwards, C. S.**, S. Anwar, W. Hagee, D. Doerres, S. Dickensheid, P.R. Christensen (2015), Processing and Visualizing Planetary Data Using Davinci: Updates for Portability and Scriptable Execution, Planetary Data Users Workshop, Abstract #7032.
- Edwards, C. S.**, S. Piqueux (2015), The Water Content of Recurring Slope Lineae, Mars, 46th LPSC, Abstract #2286.
- Edwards, C. S.**, P. D. Asimow, S.T. Stewart, B. L. Ehlmann (2014), The Formation of Widespread Volcanically Filled Crater Floors on Mars: Insights from Modeling and Observations, *Eos Trans. AGU, Fall Meet. Suppl.*, Abstract P41B-3903.
- Edwards, C. S.**, P. D. Asimow, S. T. Stewart, B. L. Ehlmann (2014), An Examination of the Impact-Induced Decompression Melting Formation Hypothesis for the Rocky, Mafic Crater Floors of Mars, 8th International Conference on Mars, Abstract #1303.
- Edwards, C. S.**, P. D. Asimow, B. L. Ehlmann, S. T. Stewart, (2014), Testing the Impact-Induced Decompression Melting Hypothesis for Mafic Infilled Crater Floors on Mars, 45th LPSC, Abstract # 2644.
- Edwards, C. S.**, and B. L. Ehlmann (2013), How much carbonate in Mars rocks? A Co-Analysis of CRISM, TES, and THEMIS data at the Nili Fossae Carbonate Plains, *Eos Trans. AGU, Fall Meet. Suppl.*, Abstract. P51D-1759.
- Edwards, C. S.**, et al., (2013), The Formation of Infilled Craters by Impact Induced Decompression Melting of the Martian Mantle, 44th LPSC, Abstract #2153.
- Edwards, C.S.**, and B. L. Ehlmann, (2013), The Nili Fossae Carbonate Plains as Viewed by TES, THEMIS, and CRISM: Alteration of Ultramafic Rocks and Clay-Carbonate Stratigraphy, 44th LPSC, Abstract #2424.
- Edwards, C. S.** and P. R. Christensen (2012), Using Davinci and JMARS for Processing and Visualization of Thermal Emission Spectrometer (TES) and Thermal Emission Imaging System (THEMIS) Data of Mars, 2nd Planetary Data Users Workshop.
- Edwards, C. S.**, et al., (2012), Development of a Microscopic Thermal Emission Spectrometer: Analysis of Primary Igneous Materials for Planetary Analogs, 43rd LPSC, Abstract #2658.

- Edwards, C. S.**, et al. (2011), Mapping of a Widespread Olivine-Rich Layer on Mars: Identification of a Global Impact Ejecta Deposit? Eos Trans., AGU, Fall Meet. Suppl., Abstract P31E-1739.
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PROFESSIONAL AFFILIATIONS:

American Geophysical Union

SOFTWARE AND OPERATING SYSTEM EXPERIENCE:

Proficient in: Mac, Windows and Linux (CentOS/RedHat, Ubuntu/Debian) systems

Well versed in scientific software: davinci (davinci.asu.edu, code base maintainer), LabView, ISIS (Integrated Software for Imaging Spectrometers), MySQL, PostgreSQL, OpenFOAM, SolidWorks, GnuPlot, MATLAB, MathCAD, IDL/ENVI, JMARS (jmars.asu.edu), ArcGIS, QGIS, GDAL, OMNIC

Able to program in: scripting languages (e.g. davinci, Python, IDL, MATLAB, Bash-/C-shell, etc.), C, FORTRAN, Java, PHP, HTML, JavaScript, Flash

Expert user of: Microsoft Office Suite (Word, Excel, PowerPoint), Adobe Suite (Photoshop, Illustrator, InDesign, Acrobat), EndNote, Final Cut Pro/Express

Capable with engineering development focused software: IBM Rational DOORS, Ambysoft Agile Development Life Cycle, Siemens Team Center