

Dr. Stephen P. Scheidt

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EDUCATION

- 2009 **Ph.D. Geology** **University of Pittsburgh**
Advisor: Dr. Michael Ramsey, Professor
Aeolian System Dynamics Derived from Thermal Infrared Data. Ph.D. dissertation, 294 p.
- 2002 **M.S. Geology** **University of South Carolina**
Advisor: Dr. Venkat Kakshmi, Professor
Temporal Trends & Spatial Distribution of Wet Deposition of Mercury in the Southeastern United States. Master's thesis, 238 p.
- 1999 **B.S. Environmental Science** **University of Toledo**

POSITIONS & APPOINTMENTS

Howard University / CRESST II / NASA GSFC

01.2020 – current

Associate Research Scientist

Planetary Science Institute

08.2018 – current

Associate Research Scientist

Community College of Baltimore County

01.2019 – 01.2020

Adjunct Instructor

SURA / CRESST II / NASA GSFC

06.2019 – 01.2020

Consultant

University of Arizona, Lunar and Planetary Science Laboratory

10.2015 – 08.2018

Associate Staff Scientist

10.2014 – 10.2015

Postdoctoral Scientist

Smithsonian Institution, Center for Earth and Planetary Studies (CEPS)

09.2010 – 09.2014

Postdoctoral Scientist

Northern Virginia Community College (Alexandria Campus)

08.2013 – 05.2014

Adjunct Geology Instructor

BAE Systems, Inc. (McLean, VA)

07.2012 – 02.2013

Lead Imagery Scientist

Desert Research Institute (Reno, NV)

01.2010 – 09.2010

Postdoctoral Scientist

University of Pittsburgh, Department of Geology & Planetary Science

01.2010 – 12.2012

Adjunct Research Associate

06.2004 – 12.2009

Research / Teaching Assistant

Shield Environmental Associates (Pittsburgh, PA)

03.2003 – 06.2004

Staff Geoscientist

Research Planning, Inc. (Columbia, SC)

09.2002 – 02.2003

Field Team Supervisor and Geologist

RESEARCH PROFILE

12.5 years of professional experience past PhD. 20 years of combined technical, professional and research experience. Qualified interests and experience: General optical and infrared remote sensing, geological surface processes, planetary geology and physical volcanology; application of low altitude sUAS, aerial and orbital remote sensing data for the geospatial analysis of landforms; geologic mapping of Mars; planetary analog field investigations; thermophysics and thermal

infrared spectroscopy of geologic surfaces; design, development, operation and applications of field equipment, including cameras, geophysical instruments, global positioning systems (GPS) and small uncrewed aerial system (sUAS) payloads. New recent experience in geophysics, specifically the detection of magnetic anomalies in the Earth's crust due to volcanic and structural features.

SELECT SKILLS & QUALIFICATIONS

- Current Remote Pilot Certification, 14 CFR Part 107, Small Unmanned Aircraft Systems (*7 years*)
- Extensive geologic field mapping, including remote sensing ground-truth and validation
- Interpretation of multi- and hyper- spectral image data phenomenology and exploitation
- Code/algorithm development for image and data processing (Python, Matlab, ENVI/IDL)
- 2D/3D geospatial data manipulation and analysis (ArcGIS, QGIS, CloudCompare, Meshlab, Blender)
- Field methods using differential Global Position Systems
- Unix/Linux/Windows systems administration, networking and shell scripting/automation
- 3D stereo photogrammetry methods
- Thermal infrared imaging and thermal emission spectroscopy
- Kite/UAS aerial stereophotogrammetry, mapping and 3D terrain mapping methods
- Mechanical design and fabrication using FDM and SLA 3D printing,
- 2D CNC laser cutting, and 2.5D CNC milling
- 3D CAD (Autodesk Fusion360) and CAM (Fusion360, UGS, GRBL) (*6 years*)
- Woodworking and carpentry

FACILITIES & RESOURCES

Co-I Scheidt participates in a cooperative agreement, The Center for Research and Exploration in Space Science and Technology II (CRESST II), and works with the Planetary Geology, Geophysics and Geochemistry Laboratory (Code 698) at the NASA Goddard Space Flight Center (GSFC) in Greenbelt, Maryland. He works on selected NASA ROSES proposals as Co-I and internally funded projects as PI primarily off site at a home office or in the field. He utilizes in-house and institutional field, survey and computing assets, but also retains the facilities for 3D printing, desktop CNC manufacturing, and traditional methods of manufacturing for rapid prototyping of electronics and field equipment. He has the basic computer, Internet and office space required to securely support and complete all proposed research. He also has the necessary gear to perform qualified fieldwork, including camping infrastructure for operating in remote environments. Dr. Scheidt utilizes software for image processing and analysis, digital terrain production, geostatistical analysis, geologic mapping, mechanical 2D/3D design, and manuscript/figure production. These include but are not limited to: Microsoft Office, CloudCompare, Meshlab, Fusion360, ArcGIS Desktop Advanced, ENVI and IDL, MatLab, ISIS 3.4.6, Surfer, Agisoft Metashape Professional, Adobe Design Suite, Autodesk Fusion360, MatLab, and others.

Computing infrastructure

- Linux Workstation (8 core 3.5 GHz Intel i7, 32 GB RAM, NVidia GeForce 1080 Ti)
- Linux Mobile Workstation laptop (4 cores 2.4 GHz Intel i7, 16 GB RAM)
- Windows Workstation (8 core 2.4 GHz Intel i7, 64 GB RAM, NVidia GeForce 1080Ti)
- Windows Surface Pro for Business with LTE Advanced (Intel i5, 8GB RAM)
- Windows Surface Book 3 (4 core 3.9 GHz Intel i7, 32 GB RAM, NVidia GeForce 1660 Ti)
- Network attached server (Synology DS1817+ with 30 TB of secure data storage in RAID 10)

Field Equipment

- dGPS Survey System, Emlid RS2 Base and Rover, M2 and all accessories
- DJI Mavic 2 Pro sUAS
- Heavylift Multicopter sUAS (*build in process*)
- Lightweight fixed wing sUAS (*build in process*)
- An assortment of 20+ cameras, a range finder and other survey equipment

CURRENT NASA PROJECTS, PRINCIPLE INVESTIGATOR

Goddard Instrument Field Team, Internal Science Funding Model, NASA GSFC

1. MAGNETO: Low Altitude sUAS Magnetic Surveys of Lava Flows and Subsurface Voids
2. Multi-scale Topographic Data Support for Volcanic Deposit Evolution and Origins
3. Data Fusion & AR Target ID Tools to Investigate Lava Tubes in Hawaii

CURRENT NASA PROJECTS, CO-INVESTIGATOR

Game-Changing Development Program, LunaMaps Project, NASA GSFC

4. Supporting Lunar entry, descent, landing and terrain relative navigation (TRN) through planetary analogue terrain models from the field, PIs: Carolina Restrepo & Noah Petro, NASA GSFC

Solar System Workings (SSW)

5. Geologic Mapping of Gusev Crater Informed by Comparative Studies of Volcanic Embayment Relationships on Earth and Mars, PI: David Crown, Planetary Science Institute
6. Details in the devils: Using physical characteristics of dust-laden vortices to remotely determine ambient meteorological conditions on Earth and Mars, PI: Lori Fenton, SETI Institute

Mars Data Analysis Program (MDAP)

7. Evolution of Martian Lava Flow Fields: Investigations of Pahoehoe-like Flow Morphologies in the Tharsis and Elysium Volcanic Provinces, PI: David Crown, Planetary Science Institute
8. Geology of the Southern Rim of Hellas Basin, Mars: Investigations of Amphitrites Patera & Barnard Crater, PI: David Crown, Planetary Science Institute
9. Geologic evolution of the western flank of Alba Mons, Mars, PI: David Crown, Planetary Science Institute

Planetary Science and Technology Through Analog Research (PSTAR)

10. RAVEN: Remote Aerial Vehicle Exploration Network, PI: Christopher Hamilton, University of Arizona

Goddard Instrument Field Team, Internal Science Funding Model, NASA GSFC

11. Viscous lava flow reconnaissance and modeling, PI: Lynnae C. Quick, NASA GSFC
12. Lidar and UAV studies of the morphology, textures, and stratigraphy of lava flows at Askja volcano, Iceland: Terrestrial analogs for the Mare Imbrium flow field on the Moon, PI: Brent Garry, NASA GSFC

13. Nature and Origin of Subsurface Ice at the Askja Caldera, PI: David Hollibaugh Baker, NASA GSFC

Node of the Solar System Exploration Research Virtual Institute (SSERVI) Program

14. Remote, In Situ and Synchrotron Studies for Science and Exploration 2 (RISE2), PI: Timothy Glotch, Stony Brook University

PAST PROJECTS

1. *Smithsonian Scholar Studies* 05.2019 – 09.2019
Project Co-I: Examining the relationship between sand ripples and megaripples on Mars and Earth.
PI: Jim Zimbelman, Smithsonian Institution
2. *Solar System Exploration Research Virtual Institute (SSERVI) Program* 2014 – 2019
Project Collaborator: NASA/ Remote, In Situ and Synchrotron Studies for Science and Exploration (RIS4E).
PI: Timothy Glotch, Stony Brook University
3. *European Space Agency Colour and Stereo Surface Imaging System (CaSSIS)* 2018
Mission participation: Assist with image processing and digital terrain model generation
Co-I: Alfred McEwen, University of Arizona
4. *High Resolution Imaging Science Experiment (HiRISE)* 10.2015 – 06.2017
Mission Participation: Assist validation of stereo-derived digital terrain models
PI: Alfred McEwen, University of Arizona
5. *NASA Planetary Geology and Geophysics Program (PGG)* 2014 – 2015
Project Postdoctoral Researcher: Sinuous channels in volcanic provinces on the Earth and Mars
PI: Christopher Hamilton, University of Arizona
6. *Smithsonian Grand Challenges* 10.2012 – 10.2013
Project Co-I: Multi-Instrument Approach to the 3D Characterization of Martian Analogs: Hawaii
PI: Gareth Morgan, Smithsonian Institution
7. *Smithsonian Postdoctoral Earth and Planetary Sciences Fellowship* 08.2011 – 03.2014
Project Postdoctoral Scientist: Remote sensing of sand dunes
PI: Jim Zimbelman, Smithsonian Institution
8. *NASA Planetary Geology and Geophysics* 08.2010 – 08.2011
Project Postdoctoral Scientist: Geologic mapping of the Medusae Fossae Formation on Mars
PI: Jim Zimbelman, Smithsonian Institution
9. *NASA Established Program to Stimulate Competitive Research (EPSCoR)* 2010
Project Postdoctoral Scientist: Exploring Planetary Surfaces: Earth, Moon and Mars
PI: Wendy Calvin and Co-I: Nicholas Lancaster
10. *NASA Earth and Space Science Fellowship (NESSF)* 2006 – 2009
Research Graduate Student: Using multi-sensor data fusion to estimate dust aerosol composition and its effect on longwave radiative forcing
PI: Dr. Michael Ramsey, University of Pittsburgh

Research Graduate Student: Eolian processes in arid regions: Tracking land surface change using orbital data

PI: Dr. Nicholas Lancaster, Desert Research Institute

PEER-REVIEWED JOURNAL ARTICLES

- Crown DA, **SP Scheidt**, DC Berman (2022). Distribution and morphology of lava tube systems on the western flank of Alba Mons, Mars, *Journal of Geophysical Research-Planets*, 127, 6. <https://doi.org/10.1029/2022JE007263>.
- Voigt JRC, CW Hamilton, G Steinbrügge, and **SP Scheidt** (2022). Surface roughness characterization of the 2014–2015 Holuhraun lava flow-field in Iceland: Implications for facies mapping and remote sensing, *Bulletin of Volcanology*, 83, 82. <https://doi.org/10.1007/s00445-021-01499-4>.
- Kolzenburg S, J Kubanek, M Dirscherl, CW Hamilton, E Hauber, **SP Scheidt**, U Münzer (2022). Solid as a rock: Tectonic control of dike propagation and graben extension, *Geology*, 50(3): 260-265. <https://doi.org/10.1130/G49406.1>.
- Voigt, JR, CW Hamilton, **Scheidt SP**, U Münzer, Á Höskuldsson, I Jónsdóttir, T Thordarson (2021). Geomorphological characterization of the 2014–2015 Holuhraun lava flow-field in Iceland. *Journal of Volcanology and Geothermal Research*, 107278, <https://doi.org/10.1016/j.jvolgeores.2021.107278>.
- Simurda C, MS Ramsey, **SP Scheidt** (2020). Assessing lava flow subpixel surface roughness and particle size distribution for improved thermal inertia interpretations. *Remote Sensing*, 12, 18, <https://doi.org/10.3390/rs12182914>.
- Marx HE, **SP Scheidt**, MS Barker, KM Dlugosch (2020). TagSeq for gene expression in non-model plants: a pilot study at the Santa Rita Experimental Range NEON core site. *bioRxiv*, doi: <https://doi.org/10.1101/2020.04.04.025791>.
- Hamilton CW, **SP Scheidt**, et al. (2020). Lava-rise plateaus and inflation pits within the McCarty's flow-field, New Mexico: An analog for pāhoehoe-like lava flows on planetary surfaces. *J. Geophys. Res-Planets*, <https://doi.org/10.1029/2019JE005975>.
- Bonnefoy LE, CW Hamilton, **SP Scheidt**, S Duhamel, Á Höskuldsson, I Jónsdóttir, T Thordarson, and U Münzer (2019). Landscape evolution associated with the 2014-2015 Holuhraun eruption in Iceland, *Journal of Volcanology and Geothermal Research*, <https://doi.org/10.1016/j.jvolgeores.2019.07.019>.
- Young KE, JE Bleacher, AD Rogers, HH Schmitt, AC McAdam, WB Garry, PL Whelley, **SP Scheidt**, G Ito, CA Knudson, TG Graff, LV Bleacher, N Whelley, CA Evans, JM Hurtado Jr., TD Glotch (2018). The incorporation of field portable instrumentation into human planetary surface exploration, *Earth and Space Science*, 5, <https://doi.org/10.1029/2018EA000378>.
- Hamilton CW, PJ Mouginiis-Mark, MM Sori, **SP Scheidt**, AM Bramson (2018). Episodes of aqueous flooding and effusive volcanism associated with Hrad Vallis, Mars, *Journal of Geophysical Research: Planets*, 123, <https://doi.org/10.1029/2018JE005543>.
- Palafox LF, CW Hamilton, **SP Scheidt** and AM Alvarez (2016). Automated detection of geological landforms on Mars using convolutional neural networks, *Computers and Geosciences*, <http://dx.doi.org/10.1016/j.cageo.2016.12.015>.
- Zimbelman JR, **SP Scheidt**, SL de Silva, NT Bridges, MG Spagnuolo and EM Neely (2016). Aerodynamic roughness height for gravel-mantled megaripples, with implications for wind profiles near TARs on Mars, *Icarus*, 266, 306-314, doi:10.1016/j.icarus.2015.11.008.
- Lorenz RD and **SP Scheidt** (2014). Compact and inexpensive kite apparatus for geomorphological field aerial photography, with some remarks on operations, *GeoResJ*, 3, 1-8, doi:10.1016/j.grj.2014.06.001.
- Zimbelman JR and **SP Scheidt** (2014). Precision topography of a reversing sand dune at Bruneau Dunes, Idaho, as an analog for Transverse Aeolian Ridges on Mars, *Icarus*, 230, 29-37, doi:10.1016/j.icarus.2013.08.004.

- Scheidt SP** and N Lancaster (2013). The application of COSI-Corr to determine dune system dynamics in the southern Namib Desert using ASTER data, *Earth Surface Processes and Landforms*, 38, 9, 1004-1019, doi: 10.1002/esp.3383.
- Zimbelman JR and **SP Scheidt** (2012). Hesperian age for western medusae fossae formation, Mars, *Science*, 336, 6089, 1683, doi:10.1126/science.1221094.
- Scheidt SP**, N Lancaster and MS Ramsey (2011). Eolian dynamics and sediment mixing in the Gran Desierto, Mexico, determined from thermal infrared spectroscopy and remote-sensing data, *Geological Society of America Bulletin*, 123, 7-8, 1628-1644, doi:10.1130/B30338.1.
- Scheidt SP**, MS Ramsey and N Lancaster (2010). Determining soil moisture and sediment availability at White Sands Dune Field, New Mexico, from apparent thermal inertia data, *Journal of Geophysical Research: Earth Surface* (2003–2012), 115, F2, doi:10.1029.2009JF001378.
- Katra I, **SP Scheidt** and N Lancaster (2009). Changes in active eolian sand at northern Coachella Valley, California, *Geomorphology*, 105, 3-4, 277-290, doi:10.1016/j.geomorph.2008.10.004.
- Scheidt SP**, MS Ramsey and N Lancaster (2008). Radiometric normalization and image mosaic generation of ASTER thermal infrared data: An application to extensive sand sheets and dune fields, *Remote Sensing of Environment*, 112, 3, 920-933, doi:10.1016/j.rse.2007.06.020.

HONORS & AWARDS

- | | |
|-------------|---|
| 2017 | 1 st Place Aware for 3D-carved Mars topography in the Art of Planetary Science at LPL |
| 2015 | 3 rd Place Award for aerial photography entry in the Art of Planetary Science at LPL |
| 2011 – 2012 | Postdoctoral “Charles Lindbergh” Fellowship, Smithsonian Institution, CEPS |
| 2006 – 2009 | NASA Earth System Science (ESS) Graduate Student Fellowship Award Recipient |
| 2006 | Best Poster Contribution, Arts & Sciences Graduate Student Organization (ASGSO) Grad Expo, University of Pittsburgh |

FIELD RESEARCH HIGHLIGHTS

Low altitude magnetometer surveys of normal faults, ground-based photogrammetry and topographic surveys of lava tubes at *Lava Beds National Monument, California* • Low altitude aerial image surveys of volcanic terrains at the *Aden Volcanic Field, Kilbourne Hole, and Carrizozo, NM* • Dust devil tracking using stereo cameras at *Smith Creek Playa Field Site, Nevada* • Aerial and ground-based photogrammetry and topographic surveying of arid lands vegetation at *Santa Rita Experimental Range, Tucson, Arizona* • aeolian megaripples, subsurface ice deposits, and lava flows at *Askja, Iceland* • dunes and aeolian megaripples at *Great Sand Dunes National Park, CO* • aeolian megaripples and volcanic terrain at *Mono-Inyo Craters, CA* • volcanic morphology at *Holuhraun, Iceland and Vatnajökull National Park, Iceland* • *Hawai'i Volcanoes National Park* • *Raudholar, near Reykjavik, Iceland* • *El Mapais National Monument, NM* • *Craters of the Moon, ID* • and dunes at *Bruneau Dunes State Park, ID*. Additional fieldwork and remote sensing validation: aeolian megaripples, *Puna Desert, Argentina* • playa mineralogy, *Ash Meadows, NV* • dusty Saharan air layer, *Izaña Atmospheric Observatory in Tenerife, Spain* • dunes, *Gran Desierto, Sonora, Mexico* and *White Sands, NM* • Remote sensing of soil moisture field campaign SMEX02, *Ames, Iowa*. Geologic mapping: Capistrano stratigraphy, Exxonmobile field seminar in *La Jolla, CA* • maar craters *Sierra Pinacate, Sonora, MX* • Au/mineral deposits, *Harquahala Mountains in La Paz, AZ*. Hydrogeological fieldwork and environmental remediation [*Multiple sites in eastern U.S.A.*]. Coastal geomorphic mapping and environmental surveys: *Persian Gulf Coast, Saudi Arabia* • *Georgetown, SC* • *Lewes, DE*.

MENTORING AND STUDENT COLLABORATIONS

Graduate and Postgraduate Advisement

- 2022 *Sam Hudziak* (University of Iowa): Co-mentoring Sam as a NASA GSFC intern on the LunaMaps project, building a rock library for the construction of simulated DTMs for landing simulations.
- 2021 *Taylor Dorn* (UCLA): As part of a summer internship, Taylor and I will be working together to process and analyze stereo camera data of dust devils as analogs for Mars atmospheric processes.
- 2021 *Sam Hudziak* (University of Iowa): Mentoring Sam in the field to coach him in sUAS operations as he helps support NASA GSFC science.
- 2019 *Emileigh Shoemaker* (University of Arizona): Supported Emileigh in the field to provide sUAS image data of lava flows and underlying ice deposits in Iceland for her doctoral work.
- 2019 *Sam Hudziak* (University of Iowa): Supported Sam in the field to provide sUAS image data of ventifacts in volcanoclastic sediments in Iceland for his Master's thesis.
- 2019 *Aline Blasizzo* (University of Iowa): Supported Aline in the field to provide sUAS image data of lava flows in Iceland for her Master's thesis and submitted paper.
- 2014 *Christine Simurda* (University of Pittsburgh): Co-advised and collaborated on a project examining the correlation between surface roughness and thermal signatures of volcanic surfaces in the field.
- 2010 *Redha Mohammad* (University of Pittsburgh): External Committee Member. Dissertation: "Using thermal infrared (TIR) data to characterize dust storms and their sources in the Middle East." Currently at Kuwait University as an assistant professor.

Undergraduate

- 2016 Co-advised a University of Arizona Space Grant Program student, UAV remote sensing engineering and virtual reality (VR) environments for Mars analogs.
- 2016 Co-advised six students in the field on geology and UAV remote-sensing of lava flows southwest of Laki in Vatnajökull National Park and the Holuhraun lava flow field south of Askja, Iceland. <http://www.keckgeology.org/tephrastratigraphy-in-iceland-3>.
- 2014 Co-advised University of Pittsburgh graduate student on 3D data analysis of volcanic dome texture.
- 2014 Co-advised Arizona Space Grant Program student, data visualization of 3D data for mobile devices. Contributed to 2015 LPSC presentation.
- Co-advised Arizona Space Grant Program student, ArcGIS and fieldwork documentation in Iceland.
- 2006 University of Pittsburgh, undergraduate advisement on a satellite remote-sensing project using ASTER image data on a project to create a multispectral mosaic of the Sahara Desert.

FIRST-AUTHOR CONFERENCE ABSTRACTS (100+ coauthored abstracts)

- Scheidt SP**, SX Hudziak, JA Richardson, MK Barker, NE Petro, CI Restrepo, E Mazarico (2022). Application of Earth-analog sites for lunar simulated digital elevation models, 3rd Space Imaging Workshop, Atlanta, GA, 0-12 October 2022.
- Scheidt SP**, CA Crown, SW Ruff, JW Rice, FC Chuang (2021). Field and remote sensing investigations of volcanic embayment relationships in terrestrial analogues for application to Mars. Workshop on Terrestrial Analogues for Planetary Exploration, June 16-18, 2021, Virtual. Abs. #8028.
- Scheidt SP**, JA Richardson, MK Barker, NE Petro, CI Restrepo, E Mazarico, L Kerber (2021). Application of Earth-analog sites for lunar simulated digital terrain models. Joint 2021 NASA Exploration Science Forum and European Lunar Symposium, July 20-23, 2021. Abs. No. tbd.
- Scheidt SP**, JA Zimelman, MM Baker (2020). Grain-scale field documentation of aeolian terrestrial analogs using stereophotogrammetry of megaripples at Great Sand Dunes, Sixth International Planetary Dunes Workshop, abstract #3043.
- Scheidt SP**, DA Crown, DC Berman (2019). Distribution and morphology of valley networks on the flanks of Alba Mons, Mars. Lunar and Planetary Institute Science Conference Abstracts, Lunar Planet. Sci., L, abstract #2014.

- Scheidt SP**, DA Crown, DC Berman (2018). Topographic analyses of valley networks and volcanic ridges on the flanks of Alba Mons, Mars. Lunar and Planetary Institute Science Conference Abstracts, Lunar Planet. Sci., XLIX, abstract 1570.
- Scheidt SP**, JE Bleacher, CW Hamilton, PL Whelley, WB Garry, J Voigt, SS Sutton (2017). Anatomy of streamlined volcanic islands using multi-view stereophotogrammetry, Kilauea volcano, Hawaii, IAVCEI 2017 Scientific Assembly, Fostering Integrative Studies of Volcanoes, August 14-18, Portland, Oregon, U.S.A., abstract 924, p. 970.
- Scheidt SP**, LE Bonnefoy, S Sutton, P Whelley, CW Hamilton, AP deWet (2017). Remote sensing analysis of Askja pumice megaripples in the Vikursundar, Iceland as an analog for martian transverse aeolian ridges, Fifth International Planetary Dunes Workshop: From the bottom of the oceans to the outer limits of the solar system, St. George, Utah, abs. 3020.
- Scheidt SP**, PL Whelley, CW Hamilton, JE Bleacher, WB Garry (2015). The Kilauea 1974 flow: quantitative morphometry of lava flows using low altitude aerial image data using a kite-based platform in the field, 2015 Fall Meeting, American Geophysical Union, San Francisco, CA, abs. #P24A-08.
- Scheidt SP**, LF Palafox, CW Hamilton, JR Zimelman (2015), Automated detection of transverse aeolian ridges on Mars using convolutional neural networks and a field-based terrestrial orthoimage training set, Fourth International Planetary Dunes Workshop: Integrating Models, Remote Sensing and Field Data, Boise, ID (LPI Contributions No. 1843), abs. 8047.
- Scheidt SP**, CW Hamilton and JR Zimelman (2015). Generation of Ultrahigh Spatial Resolution Digital Terrain Models for a Martian Lava Flow Analog From Kilauea Volcano, Hawaii, Lunar Planet. Sci., XLVI, abs. 1055.
- Scheidt SP** and JR Zimelman (2015). Gravel-mantled aeolian bedforms from Mono-Inyo Domes, California, USA: Morphology, Characteristics, and Relevance to Mars, Lunar Planet. Sci., XLVI, abs. 1056.
- Scheidt SP**, Hamilton CW, JR Zimelman, JE Bleacher, WB Garry, AP de Wet and LS Crumpler (2014). Lava-Rise Plateaus and Inflation Pits Within the McCarty's Flow, New Mexico, Lunar Planet. Sci., XLV, abs. 1491.
- Scheidt SP**, JR Zimelman and Johnson MB (2014). Multiview Stereo Photogrammetry of Mars Aeolian Analogs, Lunar and Planetary Institute Science Conference Abstracts, Lunar Planet. Sci., XLV, abs. 1446.
- Scheidt SP** (2013). A New tool for comparative planetology for almost anyone, Works-in-Progress, National Air and Space Museum, Smithsonian Institution, Washington, DC.
- Scheidt SP** (2013). Field instrumentation needs: A multispectral imaging payload for a lightweight UAV, Smithsonian Tools for Discovery Workshop, Cambridge, MA.
- Scheidt SP** (2012). Sand transport pathways of dark dunes in the Sperrgebiet: Sand composition and dune migration rates from ASTER data, Third International Planetary Dunes Workshop: Remote Sensing and Image Analysis of Planetary Dunes, Flagstaff, AZ (LPI Contributions No. 1673), 85-86, abs. 7051.
- Scheidt SP**, CG Hughes, RA Craddock, MS Ramsey and JR Zimelman (2011). A simulated HypsIRI dataset using combined ASTER and AVIRIS data of the Ka'u Desert dunes for terrestrial mapping and planetary application, 4th HypsIRI Science Workshop, August 23-25, Washington, DC.
- Scheidt SP** and JR Zimelman (2011). Preliminary Geologic Map of the MC-16 NW Quadrangle, Mars: Subdivisions of the Lower and Middle Members of the Medusae Fossae Formation, Lunar Planet. Sci., XLII, abs. 2631.
- Scheidt SP**, SL de Silva, JR Zimelman, NT Bridges and JG Viramonte (2011). The Composition of Puna Gravel Ripple Fields: A Terrestrial Analog from TIR Remote-Sensing and Spectroscopy, Lunar Planet. Sci., XLII, abs. 2706.
- Scheidt SP**, N Lancaster and MS Ramsey (2010). Spatial patterns of sand composition in the Gran Desierto, MX determined from thermal infrared spectroscopy and ASTER remote sensing data, 2010 GSA Denver Annual Meeting (31 October - 3 November 2010), Geological Society of America Abstracts with Programs, 42, 5, 416, Paper No. 170-6.

- Scheidt SP** and N Lancaster (2010). Sensitivity of the Automatic Determination of Sand Transport Direction and Rate to Dune Morphology, 2010 Fall Meeting, American Geophysical Union, San Francisco, CA, abs. #EP51A-0533.
- Scheidt SP**, MS Ramsey, R Mohammed and N Lancaster (2010). Performance of the proposed HypsIRI TIR bands for accurate compositional identification of eolian dust, ash and sand, 3rd HypsIRI Science Workshop, August 24-26, 2010, Pasadena, CA.
- Scheidt SP**, N Lancaster and MS Ramsey (2010). Sand composition of the Gran Desierto: A terrestrial analogue for thermal infrared imaging and spectroscopy techniques, Second International Planetary Dunes Workshop: Planetary Analogs-Integrating Models, Remote Sensing and Field Data, abs. 2010.
- Scheidt SP** and N Lancaster (2010). Sensitivity of automatic determination of sand transport direction and rate to dune morphology in the Namib Sand Sea, Second International Planetary Dunes Workshop: Planetary Analogs-Integrating Models, Remote Sensing and Field Data (LPI Contributions No. 1552), Alamosa, CO, abs. 2024.

PUBLISHED DATA SOURCES

- Crown, DA, **SP Scheidt**, DC Berman (2022). Characteristics of Alba Mons lava tubes: western flank study area. figshare. Dataset. <https://doi.org/10.6084/m9.figshare.19758631.v5>.
- Scheidt SP**, CW Hamilton (2019). Unmanned aerial system (UAS)-derived orthoimage mosaics and digital terrain models of the northeastern portion of the 2014–2015 Holuhraun lava flow-field, Iceland: Data acquired from 2015 to 2018. University of Arizona Spatial Data Explorer. https://doi.org/10.2458/azu_geo_holuhraun_landscape_evolution.
- Scheidt SP**, CW Hamilton (2019). Kite-derived orthoimage mosaic and digital terrain model of the southern portion of the McCartys lava flow-field, New Mexico, USA: Data acquired 6 February to 1 April, 2015. University of Arizona Spatial Data Explorer. https://doi.org/10.2458/azu_geo_mccartys_2015.

TEACHING

<i>Institution</i>	<i>Date</i>	<i>Role</i>	<i>Courses</i>
<i>Community College of Baltimore County, Catonsville, MD</i>	2019-2020	Adjunct faculty	Guide activities on 2D/3D design, orientation to the FabLab, supervise CNC laser cutting, 3D printing and CNC router applications
<i>University of Arizona</i>	Spring 2016	Guest lecturer	Geology and Geophysics of the Solar System (PTY5 411)
<i>Northern Virginia Community College</i>	Spring 2014	Guest lecturer	Historical Geology (GOL 106)
	Fall 2013	Instructor	Physical Geology (GOL 105)
<i>University of Pittsburgh</i>	2007-2010	Guest lecturer	Natural Disasters (GEOL 0820), Introduction to Remote Sensing (GEOL 1460), Advanced Geohazards and Risk Management (GEOL 2640)
	2005-2006	Lab Instructor	Natural Disasters (GEOL 0820)
<i>University of South Carolina</i>	2000-2002	Lab Instructor	Environment of the Earth (GEOL 103), Intro to the Earth (GEOL 101) and Environment (ENVR 101)

PROFESSIONAL DEVELOPMENT

- 2014 Preparing for an Academic Career in the Geosciences: Workshop for Graduate Students and Post-Doctoral Fellows, University of Pittsburgh, Pittsburgh, PA.
- 2013 Online Instruction 101 workshop, Extended Learning Institute, Northern Virginia Community College.