

Stephen P. Scheidt

Visiting Associate Research Scientist, University of Maryland

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EDUCATION

PhD Geology, University of Pittsburgh (2009)

MS Geology, University of South Carolina (2002)

BS Environmental Science, University of Toledo (1999)

PROFESSIONAL WORK EXPERIENCE

NASA Goddard Space Flight Center, Center for Research and Exploration in Space Science & Technology II	
Associate Research Scientist, University of Maryland	02.2023 – current
Associate Research Scientist, Howard University	01.2020 – 02.2023
Consultant, Southeastern Universities Research Association	06.2019 – 01.2020
Associate Research Scientist, Planetary Science Institute	08.2018 – current
Associate Staff Scientist, University of Arizona, Lunar and Planetary Science Laboratory	10.2015 – 08.2018
Lead Imagery Scientist, BAE Systems, Inc. (McLean, VA)	07.2012 – 02.2013
Staff Geoscientist, Shield Environmental Associates (Pittsburgh, PA)	03.2003 – 06.2004
Field Team Supervisor and Geologist, Research Planning, Inc. (Columbia, SC)	09.2002 – 02.2003

ACADEMIC APPOINTMENTS

Adjunct Instructor, Community College of Baltimore County	01.2019 – 01.2020
Postdoctoral Scientist, University of Arizona, Lunar and Planetary Science Laboratory	10.2014 – 10.2015
Adjunct Geology Instructor, Northern Virginia Community College	08.2013 – 05.2014
Postdoctoral Scientist, Center for Earth and Planetary Studies, Smithsonian Institution	09.2010 – 09.2014
Postdoctoral Scientist, Desert Research Institute (Reno, NV)	01.2010 – 09.2010
University of Pittsburgh, Department of Geology and Planetary Science	
Adjunct Research Associate	01.2010 – 12.2012
Research & Teaching Assistant	06.2004 – 12.2009

INTERESTS AND EXPERIENCE

General optical and infrared remote sensing, geological surface processes, planetary geology and physical volcanology; applications of low altitude geospatial analysis of landforms; geologic mapping of Mars; planetary analog field investigations; design, development, operation and applications of geological and geophysical field equipment; small uncrewed aerial system (sUAS) payloads.

CURRENT PROJECTS

Goddard Instrument Field Team, Internal Science Funding Model

1. GIFT Field Site Proposal: Long Valley Caldera and Mono Basin (Deputy Field Lead)
2. Aeolian Degradation of Volcanic Domes: Wind Profiles, Form Flow, and High Resolution Topography of High Altitude Gravel-Mantled Megaripples at the Mono-Inyo Volcanic Field (PI)
3. Data Fusion & AR Target ID Tools to Investigate Lava Tubes in Hawaii (PI)
4. Viscous lava flow reconnaissance and modeling (Co-I)

5. Sampling of Paleolakebed Sediments at Mono Lake to Assess Past Environmental Conditions as an Analog to Ancient Martian Lake Deposits (Co-I)
6. MAGNETO: Low Altitude sUAS Magnetic Surveys of Lava Flows and Subsurface Voids (PI)
7. Multi-scale Topographic Data Support for Volcanic Deposit Evolution and Origins (PI)
8. Lidar/UAV studies of the morphology, textures, & stratigraphy of lava flows at Askja volcano, Iceland: Terrestrial analogs for the Mare Imbrium flow field on the Moon (Co-I)
9. Nature & Origin of Subsurface Ice at the Askja Caldera (Co-I)

Game-Changing Development Program, LuNaMaps Project, NASA GSFC

10. 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)

11. Geologic Mapping of Gusev Crater Informed by Comparative Studies of Volcanic Embayment Relationships on Earth and Mars, PI: David Crown, Planetary Science Institute (Co-I)
12. 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 (Co-I)

Mars Data Analysis Program (MDAP)

13. 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 (Co-I)
14. Geology of the Southern Rim of Hellas Basin, Mars: Investigations of Amphitrites Patera & Barnard Crater, PI: David Crown, Planetary Science Institute (Co-I)
15. Geologic evolution of the western flank of Alba Mons, Mars, PI: David Crown, Planetary Science Institute (Co-I)

Solar System Exploration Research Virtual Institute (SSERVI) Program

16. Remote, In Situ and Synchrotron Studies for Science and Exploration 2 (RISE2), PI: Timothy Glotch, Stony Brook University (Co-I)
17. GEODES, PI: Nicholas Schmerr, University of Maryland (Collaborator)

PAST PROJECTS

1. *Goddard Instrument Field Team, Internal Science Funding Model, NASA GSFC* (Co-I)
2. *Planetary Science and Technology Through Analog Research* (Co-I) 01.2020 – 02.2023
RAVEN: Remote Aerial Vehicle Exploration Network, PI: Christopher Hamilton, University of Arizona. PI: Christopher Hamilton, University of Arizona
3. *Smithsonian Scholar Studies* (Co-I) 05.2019 – 09.2019
Project Co-I: Examining the relationship between sand ripples and megaripples on Mars and Earth. PI: Jim Zimbleman, Smithsonian Institution
4. *Solar System Exploration Research Virtual Institute (SSERVI) Program* (Co-I) 2014 – 2019
Project Collaborator: NASA/ Remote, In Situ and Synchrotron Studies for Science and Exploration (RIS4E).
PI: Timothy Glotch, Stony Brook University

5. *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
6. *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
7. *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
8. *Smithsonian Grand Challenges (Co-I)* 10.2012 – 10.2013
Multi-Instrument Approach to the 3D Characterization of Martian Analogs: Hawaii
PI: Gareth Morgan, Smithsonian Institution
9. *Smithsonian Postdoctoral Earth and Planetary Sciences Fellowship* 08.2011 – 03.2014
Project Postdoctoral Scientist: Remote sensing of sand dunes
PI: Jim Zimbelman, Smithsonian Institution
10. *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
11. *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
12. *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
13. *NASA Solid Earth and Natural Hazards Program* 2004 – 2008
Research Graduate Student: Eolian processes in arid regions: Tracking land surface change using orbital data
PI: Dr. Nicholas Lancaster, Desert Research Institute

SELECT SKILLS & QUALIFICATIONS

- Current Remote Pilot Certification, 14 CFR Part 107, Small Unmanned Aircraft Systems
- geologic field mapping, sampling, and remote sensing ground-truth or validation
- Interpretation of multi- and hyper- spectral image data phenomenology and exploitation
- Code/algorithm development for image and data processing (Python, Matlab, ENVI/IDL)
- Geospatial Information Systems (GIS) data manipulation and analysis (ArcGIS, QGIS)
- 3D data manipulation and analysis (Fusion360, CloudCompare, Meshlab, Blender, Fusion360)
- Field methods using differential Global Position Systems (Trimble, Emlid, open source)
- Unix/Linux/Windows systems administration, networking and shell scripting/automation
- 3D stereo photogrammetry methods (Agisoft Metashape Professional, Pix4D, TBC)
- Thermal infrared imaging and thermal emission spectroscopy
- Kite/UAS aerial stereophotogrammetry, mapping and 3D terrain mapping missions

- Mechanical design and fabrication using FDM and SLA 3D printing
- 2D CNC laser cutting and milling
- 3D CAD (Autodesk Fusion360) and CAM (Fusion360, UGS, GRBL)
- Woodworking and carpentry

PEER-REVIEWED JOURNAL ARTICLES

- Blasizzo AY, IA Ukstins, SP Scheidt, AH Graettinger, DW Peate, TL Carley, AJ Moritz, JE Thines (2022). Vikhraun – the 1961 basaltic lava flow eruption at Askja, Iceland: morphology, geochemistry, and planetary analogs, *Earth, Planets and Space*, (accepted September 24, 2022).
- Fenton LK, SM Metzger, TI Michaels, SP Scheidt, TC Dorn, LDV Neakrase, B Cole, and O Sprau (2022). Meteorological and geological controls on dust devil activity: Initial results from a field study at Smith Creek Valley, Nevada, USA. *Aeolian Research* 59 (2022): 100831.
- 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 McCartys 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>.

11. Hamilton CW, PJ Mouginis-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>.
10. 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>.
9. 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.
8. 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.
7. 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.
6. 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.
5. Zimbelman JR and SP Scheidt (2012). Hesperian age for western medusae fossae formation, Mars, *Science*, 336, 6089, 1683, doi:10.1126/science.1221094.
4. 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.
3. 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.
2. Ktra 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.
1. 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.

FIRST AUTHOR ABSTRACTS & PRESENTATIONS

38. Scheidt, SP, DA Crown, DC Berman, DA Williams, H Bernhardt (2023). Mapping fluvial systems on martian volcanoes: investigations of Alba Mons and Amphitrites Patera. *Lunar and Planetary Institute Science Conference Abstracts, Lunar and Planetary Institute Science Conference Abstracts, Lunar Planet. Sci., LIV, abstract #2872*.
37. Scheidt, SP, Z Morse, DM Bower, C. Achilles, BP Theiling (2023). Illuminating the invisible: a planetary exploration strategy in a lava tube at Mauna Loa, Hawaii: ultraviolet-induced fluorescence imaging. *Lunar and Planetary Institute Science Conference Abstracts, Lunar and Planetary Institute Science Conference Abstracts, Lunar Planet. Sci., LIV, abstract #2786*.

36. 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.
35. 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 Analogs for Planetary Exploration, June 16-18, 2021, Virtual. Abs. #8028.
34. Scheidt SP, JA Richardson, MK Barker, NE Petro, CI Restrepo, E Mazarico, L Kerber, SX Hudziak (2021). Application of Earth-analog sites for lunar simulated digital terrain models. Joint 2021 NASA Exploration Science Forum and European Lunar Symposium 2021, July 20-23.
33. Scheidt SP, KE Young, CS Edwards, JM Hurtado, AD Horchler, TD Glotch (2020). Integration of low altitude aerial systems data into field operations for planetary analog surface exploration. NASA Exploration Science Forum 2020, July 20-23.
32. Scheidt SP, JA Zimbelman, 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.
31. 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.
30. Scheidt SP, DA Crown (2018). Topographic Analysis of the Flanks of Alba Mons Using MOLA DEMs, American Geophysical Union, Washington, DC, abstract #P31I-3824.
29. 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.
28. 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.
27. 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, abstract 3020.
26. 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, abstract #P24A-08.
25. Scheidt SP, LF Palafox, CW Hamilton, JR Zimbelman (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), abstract 8047.
24. Scheidt SP and CW Hamilton (2015). Generation of Ultrahigh Spatial Resolution Digital Terrain Models for a Martian Lava Flow Analog From Kilauea Volcano, Hawaii, Lunar Planet. Sci., XLVI, abstract 1055.

23. Scheidt SP and JR Zimbelman (2015). Gravel-mantled aeolian bedforms from Mono-Inyo Domes, California, USA: Morphology, Characteristics, and Relevance to Mars, Lunar Planet. Sci., XLVI, abstract 1056.
22. Scheidt SP, Hamilton CW, JR Zimbelman, 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, abstract 1491.
21. Scheidt SP, JR Zimbelman and Johnson MB (2014). Multiview Stereo Photogrammetry of Mars Aeolian Analogs, Lunar and Planetary Institute Science Conference Abstracts, Lunar Planet. Sci., XLV, abstract 1446.
20. Scheidt SP (2013). A New tool for comparative planetology for almost anyone, Works-in-Progress, National Air and Space Museum, Smithsonian Institution, Washington, DC.
19. Scheidt SP (2013). Field instrumentation needs: A multispectral imaging payload for a lightweight UAV, Smithsonian Tools for Discovery Workshop, Cambridge, MA.
18. 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, abstract 7051.
17. Scheidt SP, CG Hughes, RA Craddock, MS Ramsey and JR Zimbelman (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.
16. Scheidt SP (2011) [invited] Current and future multispectral data and techniques from onshore geologic and environmental mapping, ExxonMobile Workshop, Houston, TX, May 3, 2011.
15. Scheidt SP (2011). [invited] The good, the bad and the ugly: learning from case study examples of offshore hydrocarbon detection of oil spills using multispectral and hyperspectral imagery, ExxonMobile Workshop, Houston, TX, May 3, 2011.
14. Scheidt SP and JR Zimbelman (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, abstract 2631.
13. Scheidt SP, SL de Silva, JR Zimbelman, 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, abstract 2706.
12. 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.
11. 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, abstract #EP51A-0533.

10. 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.
9. Scheidt SP and MS Ramsey (2010). Dune Migration Rates of Namib Desert Dunes using ASTER: Success and Challenges, 37th ASTER Science Team Meeting, Tokyo, Japan.
8. 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, abstract 2010.
7. 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, abstract 2024.
6. Scheidt SP, MS Ramsey, N Lancaster (2008). Thermal remote sensing of sand transport systems, in Planetary Dunes Workshop: A Record of Climate Change, Alamogordo, NM, Lun. Planetary Institut., LPI Contribution #1403, abstract 7041.
5. Scheidt SP, M. Ramsey, N Lancaster (2007). Integration of ASTER TIR data and the Google Earth application to examine the relationships between sand transport pathways and dust emission hotspots, Eos Trans. AGU, 88(52): Fall Meet. Suppl., abs. #NG41C-0667, 2007.
4. Scheidt SP (2007). Sand and Dust: A Perspective from the ASTER Satellite, Desert Research Institute, Environmental Seminar, August 24, 2007.
3. Scheidt, SP (2006). Composition of potential dust source areas in the Sahara Desert using ASTER TIR, 30th ASTER Science Team Meeting, Pasadena, CA, December 7, 2006.
2. Scheidt SP (2006). Comparison of ASTER 15-band spectral classification to field survey and TIR linear deconvolution compositional mapping, 30th ASTER Science Team Meeting, Pasadena, CA, December 7, 2006.
1. Scheidt SP, MS Ramsey, N Lancaster (2006). Fusion of multitemporal/multispectral satellite data for the Gran Desierto: Implications for long distance sand transport, Sixth International Conference on Aeolian Research Meeting (ICAR), University of Guelph, Ontario, Canada, July 24 – 26, 2006.

PUBLISHED DATA SOURCES (*several in review*)

3. 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>.
2. 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.
1. 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.

FIELD RESEARCH

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 *Holubraun, 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, *Harquabala 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*.

CO-AUTHORED ABSTRACTS & PRESENTATIONS

104. Morse, ZR, SP Scheidt, BP Theiling, C Achilles (2023). Data in the dark: in-situ augmented reality data visualization of ultraviolet-induced fluorescence at Mauna Loa lava tube analog field site. Lunar and Planetary Institute Science Conference Abstracts, Lunar and Planetary Institute Science Conference Abstracts, Lunar Planet. Sci., LIV, abstract #2874.
103. Crown, DA, WB Garry, DC Berman, SW Anderson, SP Scheidt, SM Baloga, SA Miller (2023). Mapping martian lava flow fields: investigations of pahoehoe-like flow morphologies in the Tharsis and Elysium volcanic provinces. Lunar and Planetary Institute Science Conference Abstracts, Lunar and Planetary Institute Science Conference Abstracts, Lunar Planet. Sci., LIV, abstract #2269.
102. Crown DA, SP Scheidt, SW Ruff, RW Rice Jr, FC Chuang (2023). Terrestrial analog studies of volcanic embayment relationships: implications for interpretations of volcanic contacts on Mars. Lunar and Planetary Institute Science Conference Abstracts, Lunar and Planetary Institute Science Conference Abstracts, Lunar Planet. Sci., LIV, abstract #2710.
101. Crown DA, FC Chuang, RW Rice Jr, SW Ruff, SP Scheidt (2022). Gusev Crater, Mars: New insights from 1:250K-scale geologic mapping, Planetary Geologic Mappers Meeting 2022, LPI Contributions, abstract #7015.
100. Idec E, S Metzger, L Fenton, T Dorn, T Michaels, SP Scheidt, B Cole, O Sprau, L Neakrase (2022). Fueling Dust Devils; Insolation-Driven Surface Heating Rates for an Arid Terrestrial Mars-Analogue Site. LPI Contributions. Lunar and Planetary Institute Science Conference Abstracts, Lunar and Planetary Institute Science Conference Abstracts, Lunar Planet. Sci., LIII, abstract #2702.
99. Crown DA, FC Chuang, JW Rice, SW Ruff, SP Scheidt (2022). Geologic Mapping of Gusev Crater, Mars: Volcanic Resurfacing of Gusev's Floor. Lunar and Planetary Institute Science Conference Abstracts, Lunar and Planetary Institute Science Conference Abstracts, Lunar Planet. Sci., LIII, abstract #1123.

98. Whelley PL, M Zanetti, SP Scheidt, JA Richardson, Z Morse, K Miller, B Steiner, PM Bremner, KE Young (2022). Topographic Quintet: Comparing Five Methods for Measuring Ultra-High Resolution Topography. Lunar and Planetary Institute Science Conference Abstracts, Lunar Planet. Sci., LIII, abstract #2882.
97. Richardson JA, SS Sutton, PL Whelley, M Yu, SP Scheidt, JE Bleacher (2022). Morphology of Small Volcanic Vents in Tharsis (Mars) and the Holuhraun Lava Flow (Northern Iceland). Lunar and Planetary Institute Science Conference Abstracts, Lunar Planet. Sci., LIII, abstract #2537.
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MENTORING AND STUDENT COLLABORATIONS

Graduate and Postgraduate Advisement

- 2022 *Sam Hudziak* (University of Iowa): Co-mentored 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 worked together to process and analyze stereo camera data of dust devils as analogs for Mars atmospheric processes.
- 2021 *Sam Hudziak* (University of Iowa): Mentored 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 Blasizko* (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."

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.

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 (PTYS 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)

ACADEMIC HONORS & AWARDS

- 2017 1st Place Aware for 3D-carved Mars topography in the Art of Planetary Science at LPL
- 2015 3rd 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

FACILITIES & RESOURCES

I work with the Planetary Geology, Geophysics and Geochemistry Laboratory at the NASA Goddard Space Flight Center in Greenbelt, Maryland through The Center for Research and Exploration in Space Science and Technology II cooperative agreement, and I do collaborative research with scientists at the Planetary Science Institute through selected NASA ROSES proposals as a Co-Investigator. I have a wide range of resources for fieldwork, surveying, photography, stereophotogrammetry, 3D scanning, and computing. I put together my own shop for my hobbies, but also for rapid prototyping of electronics and field equipment ideas. This includes 3D printers and CNC milling. I have all the basic computer, Internet and office space required to support and complete proposed research projects, and I have the necessary gear to perform fieldwork in remote environments. My computers are ready for image processing and analysis, digital terrain production, geologic mapping, mechanical 2D/3D design, and manuscript/figure production.

Computing Resources

- 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 accessories
- 2 × DJI Mavic 2 Pro sUAS
- Heavylift Multicopter sUAS (*build in process*)
- Lightweight fixed wing sUAS (*build in process*)
- Tau 2 radiometric thermal infrared camera
- Nikon, Pentax, and Canon photography equipment
- Survey equipment: Leica NA324 transit level, Leica DISTO E7500i, and other survey equipment
- Field-ready UV-Induced Fluorescence (UVIF) camera system