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Education:

Graduate Education, 2005-2011: University of Colorado; Boulder, CO

Ph.D. in Geophysics through Astrophysics and Planetary Sciences Department; Spring 2011

M.S. in Astrophysics, Geophysics concentration; Spring 2008

Undergraduate Education, 2001-2005: Case Western Reserve University; Cleveland, OH

B.S. in Astronomy, double minors in Geology and Physics; Spring 2005

EMPLOYMENT and RECENT RESEARCH

Current and Recent Research:

SwRI-Boulder: March 2013 – present Department of Space Studies

Title: Principal Research Scientist (since 2019)

New Horizons: I helped plan the Pluto-Charon system encounter, helping to communicate between the science team and mission sequencers, and I repeated this role at a more involved level with the extended mission to MU₆₉ (Arrokoth). I also am on the Geology, Geophysics, & Imaging science theme team, focusing on impact crater studies and geologic mapping on Charon. I was a one-year trainee Project Scientist. I am also training to be the Deputy PI of the REX radio science experiment on the spacecraft.

Lunar Reconnaissance Orbiter: I am a Co-I on the *LRO* LAMP instrument focusing on lunar polar impact craters.

Other Work: I am PI of four current NASA grants to (a) do a comparative crater population study between Mercury, Moon, and Mars; (b) construct a global lunar crater database; (c) study a particular type of crater ejecta on Mars, and (d) construct global, cartographically and cosmetically controlled 6 m/pix basemaps of Mars. I am also helping to plan NASA's *Lucy* mission to Trojan asteroids.

SwRI-Boulder: April 2011 – present NASA Center for Lunar Origin and Evolution

Title: CosmoQuest's MoonMappers Science co-Lead (since 2012)

CosmoQuest's MoonMappers is a citizen science internet project where volunteers examine images of the lunar surface to identify features of interest. Its focus is on crater identification and correcting the results of automated crater-finding algorithms. As Science co-Lead, I am in charge of coordinating with the programming and EPO groups, interfacing with the public, and conducting my own research projects. I have continued this work *pro bono* after funding ended in April 2013.

CU Boulder: June 2013 – September 2014 Laboratory for Atmospheric and Space Physics

Title: Research Scientist II

Performing *N*-body simulations of Saturn's rings to explore how large structures may be able to form at the outer edge of the B ring and inner edge of the A ring. Also worked on the data pipeline and calibration work for the *MAVEN* spacecraft's IUVS instrument.

CU Boulder: May 2011 – June 2013 Laboratory for Atmospheric and Space Physics

Title: Research Scientist I

Study ages of surfaces and features, secondary craters, lobate ejecta blankets, and erosion processes across Mars through the use of a global impact crater database I constructed for my dissertation.

Peer-Reviewed Journal Publications:

- 2022 Lauer, T.R., *et al.* (2022) *Anomalous Flux in the Cosmic Optical Background Detected with New Horizons Observations.* The Astrophysical Journal Letters, 927(L8), 10pp. doi: 10.3847/2041-8213/ac573d
- 2022 Richardson, M., *et al.* (2022) *The CosmoQuest Moon Mappers Community Science Project: The Effect of Incidence Angle on Lunar Surface Crater Distribution.* The Open Journal of Astrophysics, 5. doi: 10.21105/astro.2110.13404
- 2021 Robbins, S.J., *et al.* (2021) *Is the Diameter of Herschel Crater, Mimas, an Outlier? A Mathematical Framework for Analyzing Planetary Feature Size-Frequency Distribution Anomalies.* Geophysical Research Letters, 48(14), e2021GL093247. doi: 10.101029/2021GL093247
- 2021 Robbins, S.J., and K.N. Singer. (2021) *Pluto and Charon Impact Crater Populations: Reconciling Different Results.* The Planetary Science Journal, 2(192), 9pp. doi: 10.3847/PSJ/ac0e94
- 2021 Robbins, S.J., *et al.* (2021) *Depths of Pluto's and Charon's Craters, and their Simple-to-Complex Transition.* Icarus, 356, 113902. doi: 10.1016/j.icarus.2020.113902.
- 2021 Beyer, R.A., *et al.* (2021) *Charon's Far Side Geomorphology.* The Planetary Science Journal, 2(141), 12pp. doi: 10.3847/PSJ/ac09e9.
- 2021 Burke, K.N., *et al.* (2021) *Particle Size-Frequency Distributions of the OSIRIS-Rex Candidate Sample Sites on Asteroid (101955) Bennu.* Remote Sensing, 13(7), 1315. doi: 10.3390/rs13071315.
- 2021 Cruikshank, D.P., *et al.* (2021) *Cryovolcanic Flooding in Viking Terra on Pluto.* Icarus, 356, 113786. doi: 10.1016/j.icarus.2020.113786.
- 2021 Hoover, R.H., *et al.* (2021) *Insight into Formation Processes of Layered Ejecta Craters on Mars from Thermophysical Observations.* Journal of Geophysical Research – Planets, 126(12), e2020JE006801. doi: 10.1029/2020JE006801
- 2021 Howett, C.J.A., *et al.* (2021) *Persephone: A Pluto-System Orbiter and Kuiper Belt Explorer.* The Planetary Science Journal, 2(75). doi: 10.103847/PSJ/abe6aa
- 2021 Lauer, T.R., *et al.* (2021) *New Horizons Observations of the Cosmic Optical Background.* The Astrophysical Journal, 906(77), 23pp. doi: 10.3847/1538-4357/abc881
- 2021 Schenk, P.M., *et al.* (2021) *Origins of Pits and Troughs and Degradation on a Small Primitive Planetesimal in the Kuiper Belt: High-Resolution Topography of (486958) Arrokoth from New Horizons.* Icarus, 356, 113834. doi: 10.1016/j.icarus.2020.113834.
- 2021 Schenk, P.M., *et al.* (2021) *Triton: Topography and Geology of a Probable Ocean World with Comparison to Pluto and Charon.* Remote Sensing, 13(17), 3476. doi: 10.3390/rs13173476.
- 2021 Showalter, M.R., *et al.* (2021) *A Statistical Review of Light Curves and the Prevalence of Contact Binaries in the Kuiper Belt.* Icarus, 356, 114098. doi: 10.1016/j.icarus.2020.114098.
- 2021 Xiaochen, M., *et al.* (2021) *Collisions of Small Kuiper Belt Objects with (486958) Arrokoth: Implications for Its Spin Evolution and Bulk Density.* Journal of Geophysical Research – Planets, 126(12), e2021JE006961. doi: 10.1029/2021JE006961.

- 2020 **Robbins, S.J., et al.** (2020) *Fully Controlled 6 meters per pixel Mosaic of Mars' South Polar Region.* Earth & Space Science, 7(10), e2019EA001054. doi: 10.1029/2019EA001054.
- 2020 **Robbins, S.J., et al.** (2020) *Empirical Photometric Control of Mars Context Camera Images.* Earth & Space Science, 7(10), e2019EA001053. doi: 10.1029/2019EA001053
- 2020 **Robbins, S.J.** (2020) *Mars' Red (575–625 nm) Seasonal Approximate Reflectivity Averaged Over Mars Years 24–28 from Mars Orbiter Camera.* Journal of Geophysical Research – Planets, 125(7), e2019JE006231. doi: 10.1029/2019JE006231.
- 2020 Spencer, J.R., **et al.** (2020) *The Geology and Geophysics of Kuiper Belt Object (486958) Arrokoth.* Science, 367(998), 11pp, eaay3999. doi: 10.1126/science.aay3999
- 2019 **Robbins, S.J.** (2019) *A New Global Database of Lunar Impact Craters >1–2 km: 1. Crater Locations and Sizes, Comparisons with Published Databases, and Global Analysis.* Journal of Geophysical Research – Planets, 124, p. 871–892. doi: 10.1029/2018JE005592.
- 2019 **Robbins, S.J.** (2019) *Geologic Landforms and Chronostratigraphic History of Charon as Revealed by a Hemispheric Geologic Map.* Journal of Geophysical Research—Planets, 124, p. 155–174. doi 10.1029/2018JE005684.
- 2019 Anderson, R.C., **et al.** (2019) *Unraveling the Geologic and Tectonic History fo the Memnonia-Sirenum Region of Mars: Implications on the Early Formation of the Tharsis Rise.* Icarus, 332, p. 132–150. doi: 10.1016/j.icarus.2019.0.010.
- 2019 Beyer, R.A., **et al.** (2019) *The nature and origin of Charon's smooth plains.* Icarus, 323, p. 16–32. doi: 10.1016/j.icaru.s2018.12.036.
- 2019 Buratti, B.J. **et al.** (2019) *New Horizons Photogmetry of Pluto's Moon Charon.* The Astrophysical Journal Letters, 874(1), 7pp, doi: 10.3847/2041-8213/ab0bff.
- 2019 Cruikshank, D.P., **et al.** (2019) *Recent cryovolcanism in Virgil Fossae on Pluto.* Icarus, 330, p. 155–168. doi: 10.1016/j.icarus.2019.04.023.
- 2019 Singer, K.N. **et al.** (2019) *Impact Craters on Pluto and Charon Indicate a Deficit of Small Kuiper Belt Objects.* Science, 363(6430), p. 955–959. doi: 10.1126/science.aap8628.
- 2019 Stern, S.A., **et al.** (2019) *Initial results from the New Horizons exploration of 2014 MU₆₉, a Small Kuiper Belt Object.* Science, 364:6441, eeaaw9771. doi: 10.1126/science.aaw9771.
- 2019 White, O.L., **et al.** (2019) *Washboard and fluted terrains on Pluto as evidence for ancient glaciation.* Nature—Astronomy, 3, p. 62–68. doi: 10.1038/s41550-018-0592-z.
- 2018 **Robbins, S.J.** (2018) *The Fractal Nature of Planetary Landforms and Implications to Geologic Mapping.* Earth & Space Science, 5, p. 211–220. doi: 10.1002/2018EA000372.
- 2018 **Robbins, S.J. et al.** (2018) *Investigation of Charon's Craters with Abrupt Terminus Ejecta, Comparisons to Other Icy Bodies, and Formation Implications.* Journal of Geophysical Research – Planets, 123(1), p. 20–36. doi: 10.1002/2017JE005287.
- 2018 **Robbins, S.J. et al.** (2018) *Revised Recommended Methods for Analyzing Crater Size-Frequency Distributions.* Meteoritics & Planetary Science, 53(4), p. 891–931. doi: 10.1111/maps.12990.
- 2018 **Robbins, S.J. et al.** (2018) *Measuring Impact Crater Depth in the Solar System.* Meteoritics & Planetary Science, 53(4), p. 583–637. doi: 10.1111/maps.12956.

- 2018 Bierhaus, E.B., McEwen, A.S., **Robbins, S.J.**, Singer, K.N., Dones, L., Kirchoff, M.R., and J.-P. Williams (2018) *Secondary Craters and Ejecta Across the Solar System: Populations and Effects on Impact-Crater Based Chronologies*. Meteoritics & Planetary Science, 53(4), p. 638–671. doi: 10.1111/maps.13057.
- 2018 Holo, S.J., Kite, E.S., and **S.J. Robbins** (2018) *Mars obliquity history constrained by elliptic crater orientations*. Earth & Planetary Science Letters, 496, p. 206–214. doi: 10.1016/j.epsl.2018.05.046.
- 2018 Moore, J.M. *et al.* (2018) *Great Expectations: Plans and Predictions for New Horizons Encounter with Kuiper Belt Object 2014 MU₆₉ (“Ultima Thule”)*. Geophysical Research Letters, 45, p. 8111–8120. doi: 10.1029/2018GL078996.
- 2018 Schenk, P.M. *et al.* (2018) *Basins, fractures and volcanoes: Global cartography and topography of Pluto from New Horizons*. Icarus, 314, p. 400–433. doi: 10.1016/j.icarus.2018.06.008.
- 2018 Schenk, P.M. *et al.* (2018) *Breaking up is hard to do: Global cartography and topography of Pluto’s mid-sized icy moon Charon from New Horizons*. Icarus, 315, p. 124–145. doi: 10.1016/j.icarus.2018.06.010.
- 2017 White, O.L. *et al.* (2017). *Geological Mapping of Sputnik Planitia on Pluto*. Icarus, 287, p. 261–286. doi: 10.1016/j.icarus.2017.01.011.
- 2017 Beyer, R.A. *et al.* (2017). *Charon Tectonics*. Icarus, 287, p. 161–174. doi: 10.1016/j.icarus.2016.12.018.
- 2017 Alvarellos, J.L., Dobrovolskis, A.R., Zahnle, K.J., Hamill, P., Dones, L., and **S.J. Robbins** (2017) *Fates of Satellite Ejecta in the Saturn System, II*. Icarus, 284, p. 70–89. doi: 10.1016/j.icarus.2016.10.028.
- 2017 **Robbins, S.J.** *et al.* (2017). *Craters of the Pluto-Charon System*. Icarus, 287, p. 187–206. doi: 10.1016/j.icarus.2016.09.027.
- 2016 Bagenal, F. *et al.* (2016) *Pluto’s Interaction with Its Space Environment: Solar Wind, Energetic Particles, and Dust*. Science, 351:6279. doi: 10.1126/science.aad9045.
- 2016 Fairén, A.G. *et al.* (2016) *The Argyre Region as a Prime Target for in situ Astrobiological Exploration of Mars*. Astrobiology, 16:2, p. 143–158. doi: 10.1089/ast.2015.1396.
- 2016 Gladstone, G.R. *et al.* (2016) *The Atmosphere of Pluto as Observed by New Horizons*. Science, 351:6279. doi: 10.1126/science.aad8866.
- 2016 Grundy, W.M. *et al.* (2016). *The Formation of Charon’s Red Poles from Seasonally Cold-Trapped Volatiles*. Nature, 539, p. 65–68. doi: 10.1038/nature19340.
- 2016 Karimi, M., Dombard, A.J., Buczkowski, D.L., **Robbins, S.J.**, and R.M. Williams (2016) *Using the Viscoelastic Relaxation of Large Impact Craters to Study the Thermal History of Mars*. Icarus, 272, p. 102–113. doi: 10.1016/j.icarus.2016.02.037.
- 2016 McKinnon, W.B. *et al.* (2016) *Convection in a Volatile Nitrogen-Ice-Rich Layer Drives Pluto’s Geological Vigour*. Nature, 534:7605, p. 82–85. doi: 10.1038/nature18289.
- 2016 Moore, J. *et al.* (2016) *The Geology of Pluto and Charon Through the Eyes of New Horizons*. Science, 351:6279, p. 1284–1293. doi: 10.1126/science.aad7055.
- 2016 Nimmo, F., *et al.* (2016) *Reorientation of Sputnik Planitia implies a subsurface ocean on Pluto*. Nature, 540, p. 94–96. doi: 10.1038/nature20148.

- 2016 Weaver, H.A. *et al.* (2016) *The Small Satellites of Pluto as Observed by New Horizons*. Science, 351:6279. doi: 10.1126/science.aae030.
- 2015 Stern, S.A. *et al.* (2015) *The Pluto System: Initial Results from Its Exploration by New Horizons*. Science, 350: 6258. doi: 10.1126/science.add1815.
- 2015 Dohm, J.M., *et al.* *Geological and Hydrological Histories of the Argyre Province, Mars*. Icarus, 253, p. 66-98. doi: 10.1016/j.icarus.2015.02.017.
- 2014 Mueller, K., Vidal, A., **Robbins, S.J.**, Golombek, M., and C. West. *Fault and Fold Growth in the Amenthes Uplift: Implications for Late Noachian Crustal Rheology and Heat Flow on Mars*. Earth & Planetary Science Letters, 408, p. 100-109. doi: 10.1016/j.epsl.2014.09.04.
- 2014 **Robbins, S.J.** (2014) *New Crater Calibrations for the Lunar Crater-Age Chronology*. Earth & Planetary Science Letters, 403, p. 188-198. doi: 10.1016/j.epsl.2014.06.038.
- 2014 **Robbins, S.J.**, and B.M. Hynek (2014) *The Secondary Crater Population of Mars*. Earth & Planetary Science Letters, 400, p. 66-76. doi: 10.1016/j.epsl.2014.05.005.
- 2014 **Robbins, S.J.**, *et al.* (2014) *The Variability of Crater Identification Among Expert and Community Crater Analysts*. Icarus, 234, p. 109-131. doi: 10.1016/j.icarus.2014.02.022.
- 2014 Tanaka, K.L., **Robbins, S.J.**, Fortezzo, C.M., Skinner, J.A., Jr., and T.M. Hare. (2014) *The Digital Global Geologic Map of Mars: Chronostratigraphic Ages, Topographic and Crater Morphologic Characteristics, and Updated Resurfacing History*. Planetary and Space Science, 95, pp. 11-24. doi: 10.1016/j.pss.2013.03.006.
- 2013 **Robbins, S.J.**, and B.M. Hynek. (2013) *Utility of Laser Altimeter and Stereoscopic Terrain Models to Derive Complex Morphology: Application to Martian Craters*. Planetary and Space Science, 86, pp. 57-65. doi: 10.1016/j.pss.2013.06.019.
- 2013 Lillis, R.J., **Robbins, S.J.**, Manga, M., Halekas, J.S., and H.V. Frey. (2013) *The Detectability of Impact Demagnetization at Mars: Implications for the History of the Dynamo*. Journal of Geophysical Research – Planets, 118. doi: 10.1002/jgre.20105.
- 2013 **Robbins, S.J.**, Hynek, B.M., Lillis, R.J., and W. Bottke. (2013) *The Large Crater Impact History of Mars: The Effect of Different Model Crater Age Techniques*. Icarus, 225, p. 173-184. doi: 10.1016/j.icarus.2013.03.019.
- 2013 Irwin, R.P., III, Tanaka, K.L., and **S.J. Robbins**. (2013) *Distribution of Early, Middle, and Late Noachian Cratered Surfaces in the Martian Highlands: Implications for Resurfacing Events and Processes*. Journal of Geophysical Research – Planets, 118:2, 278-291. doi: 10.1002/jgre.20053.
- 2012 Herrick, R.R., Shenk, P.M., and **S.J. Robbins**. (2012) *Surveys of Elliptical Crater Populations on the Saturnian Satellites, Mercury, and Mars*. Icarus, 220, pp. 297-304. doi: 10.1016/j.icarus.2012.05.027.
- 2012 **Robbins, S.J.**, and B.M. Hynek. (2012) *A New Global Database of Mars Impact Craters ≥ 1 km: 2. Global Crater Properties and Regional Variations of the Simple-to-Complex Transition Diameter*. Journal of Geophysical Research – Planets, 117, E06001. doi: 10.1029/2011JE003967.
- 2012 **Robbins, S.J.**, and B.M. Hynek. (2012) *A New Global Database of Mars Impact Craters ≥ 1 km: 1. Database Creation, Properties, and Parameters*. Journal of Geophysical Research – Planets, 117, E05004. doi: 10.1029/2011JE003966.

- 2011 Hynek, B.M., **Robbins, S.J.**, Šmárek, O., and S. Zhong. (2011) *Geological Evidence for a Migrating Tharsis Plume*. Earth & Planetary Science Letters, **310**, pp. 327-333. doi: 10.1016/j.epsl.2011.08.020.
- 2011 Collins, G.S., Davidson, T., Elbeshhausen, D., **Robbins, S.J.**, and B.M. Hynek. (2011) *The Size-Frequency Distribution of Elliptical Impact Craters*. Earth & Planetary Science Letters, **310**:1-2, p. 1-8. doi: 10.1016/j.epsl.2011.07.023.
- 2011 **Robbins, S.J.**, and B.M. Hynek. (2011) *Secondary Crater Fields from 24 Large Primary Craters on Mars: Insights into Nearby Secondary Crater Production*. Journal of Geophysical Research - Planets, **116**, E10003. doi: 10.1029/2011JE003820.
- 2011 Joy, K., and **30 coauthors**. (2011) *Moon Zoo: Citizen Science in Lunar Exploration*. Astronomy & Geophysics, **52**:2, pp. 2.10-2.12, doi: 10.1111/j.1468-4004.2011.52210.x.
- 2011 **Robbins, S.J.**, and B.M. Hynek. (2011) *Distant Secondary Craters from Lyot Crater, Mars, and Implications for Ages of Planetary Bodies*. Geophysical Research Letters, **38**, L05201. doi: 10.1029/2010GL046450.
- 2011 **Robbins, S.J.**, Di Achille, G, and B.M. Hynek. (2011) *The Volcanic History of Mars: High-Resolution Crater-Based Studies of the Calderas of Twenty Volcanoes*. Icarus, **211**, p. 1179-1203. doi: 10.1016/j.icarus.2010.11.012.
- 2010 **Robbins, S.J.**, Stewart, G.R., Lewis, M.C., Colwell, J.E., and M. Sremčević. (2010) *Estimating the Masses of Saturn's A and B Rings from High-Optical Depth N-Body Simulations and Stellar Occultations*. Icarus, **206**, p. 431-445. doi: 10.1016/j.icarus.2009.09.012.
- 2006 **Robbins, S.J.**, Henney, C. J., and J. W. Harvey. (2006) *Solar Wind Forecasting with Coronal Holes*. Solar Physics, **233**, No. 2. doi: 10.1007/511207-006-0064-y.
- 2003 **Robbins, S.J.**, Meyer, B. S., and G. C. Jordan, IV. (2003) *Modeling Nucleosynthesis: Web-Based Tools*. IAPPP, **94**, p. 22-29.

Peer-Reviewed Books/Chapters and USGS Maps:

- in rev Hiesinger, H., *et al.*, book chapter in New Views of the Moon, II.
- 2021 Spencer, J.R. *et al.*, *Charon* book chapter in new Pluto System book.
- 2021 Singer, K.N. *et al.*, *Craters* book chapter in new Pluto System book.
- 2018 **Robbins, S.J.** (2018) *Feature Databases in Planetary Geology*. in: Planetary Cartography and GIS, H. Hargitai, ed. Springer. ISBN 978-3-319-62848-6.
- 2018 Kirchoff, M.R., Bierhaus, E.B., Dones, L., **Robbins, S.J.**, Singer, K.N., Wagner, R.J., and K.J. Zahnle. (2018) *Cratering Histories of the Saturnian Satellites*. in Enceladus and the Icy Moons of Saturn. ed. P.M. Schenk, R.N. Clark, C.J.A. Howett, A.J. Verbiscer, and J.H Waite. University of Arizona Press. ISBN 978-0-8165-3707-5.
- 2013 Dohm, J.M., Anderson, R.C., Miyamoto, H., Maruyama, S., Baker, V.R., Mahaney, W.C., Hynek, B.M., **Robbins, S.J.**, and T.M. Hare. (2013) *Ch. 1: Mars Evolution*. in Mars: Evolution, Geology and Exploration. ed. A.G. Fairén. Nova Science Publishers, Inc. ISBN 978-1-62618-102-1.

Peer-Reviewed USGS Maps:

in rev. Hynek, B.M. *et al.*— geologic map of Rembrandt Basin area of Mercury

Collaborator: Tanaka, K.L. *et al.* 1:20,000,000 Scale Mars Global Geologic Maps. USGS map.

Contributor: ed. Hargitai, H., and A. Kereszturi. (2014) Encyclopedia of Planetary Landforms. New York: Springer-Verlag New York Inc. ISBN 978-1461431350.

Selected Contributed Abstracts and Conference Proceedings since 2007:

**Indicates first-author is a student I supervised.*

- 2022/03 LPSC **Robbins, S.J.**, Kirchoff, M.R., Hoover, R.H. (2022) *Fully Controlling Mars Reconnaissance Orbiter Context Camera Images and Producing Photometrically Stable Mosaics (2022 Update)*. Lunar & Planet. Sci. Conf., **53**, Abstract #2219.
- 2022/03 LPSC **Robbins, S.J.** (2022) *Processing Mars Global Surveyor's (MGS) Mars Orbiter Camera Wide-Angle (MOC-WA) Images, and Mars Reconnaissance Orbiter (MRO) Mars Color Imager (MARCI) Images*. Lunar & Planet. Sci. Conf., **53**, Abstract #1505.
- 2021/08 PCC **Robbins, S.J.**, *et al.* (2021) *Initial Work Building a Next-Generation Mars Crater Database: A Case-Study of MC-09 (Tharsis) Craters in Context Camera Images versus THEMIS*. Planetary Crater Consortium, **12**, Abstract #2037.
- 2021/06 PMM **Robbins, S.J.**, Kirchoff, M.R., Hoover, R.H. (2021) *Fully Controlling Mars Reconnaissance Orbiter Context Camera Images and Producing Cosmetically Stable Mosaics: Products*. Planetary Mappers' Meeting, **22**, Abstract #7003.
- 2021/06 PDW **Robbins, S.J.**, Kirchoff, M.R., Hoover, R.H. (2021) *Fully Controlling Mars Reconnaissance Orbiter Context Camera Images and Producing Cosmetically Stable Mosaics: Methods*. Planetary Data Workshop, **5**, Abstract #7086.
- 2021/03 LPSC **Robbins, S.J.**, Kirchoff, M.R., Hoover, R.H. (2021) *Fully Controlling Mars Reconnaissance Orbiter Context Camera Images and Producing Photometrically Stable Mosaics (2021 Update)*. Lunar & Planet. Sci. Conf., **52**, Abstract #2066.
- 2021/01 COSPAR **Robbins, S.J.**, *et al.* (2021) *Asteroids, Comets, and Kuiper Belt Objects: Sources of Inner and Outer Solar System Crater Populations*. COSPAR, **43**, Abstract #B1.3-0007-21.
- 2020/08 PCC **Robbins, S.J.**, *et al.* (2020) *Depths of Pluto's and Charon's Craters, and Their Simple-to-Complex Transition*. Planetary Crater Consortium, **11**, Abstract #2056.
- 2020/07 PMM **Robbins, S.J.**, Kirchoff, M.R., Hoover, R.H. (2020) *Fully Controlling Mars Reconnaissance Orbiter Context Camera Images and Producing Photometrically Stable Mosaics*. Planetary Mappers' Meeting, **21**, Abstract #7012.
- 2020/03 LPSC **Robbins, S.J.**, *et al.* (2020) *Asteroids, Comets, and Kuiper Belt Objects: Sources of Inner and Outer Solar System Crater Populations*. Lunar & Planet. Sci. Conf., **51**, Abstract #2589.

- 2020/03 LPSC **Robbins, S.J.**, Kirchoff, M.R., Hoover, R.H. (2020) *Fully Controlling Mars Reconnaissance Orbiter Context Camera Images and Producing Photometrically Stable Mosaics*. Lunar & Planet. Sci. Conf., **51**, Abstract #1153.
- 2020/03 LPSC Beddingfield, C.B., *et al.* (2020) *Polygonal Impact Craters on Charon*. Lunar & Planet. Sci. Conf., **51**, Abstract #1241.
- 2020/03 LPSC Howett, C.J.A., **Robbins, S.J.**, *et al.*, (2020) *Combined Pluto Orbiter and Kuiper Belt Exploration Mission*. Lunar & Planet. Sci. Conf., **51**, #1342.
- 2020/03 LPSC Piatek, J.L., *et al.* (2020) *Modification of Martian Crater Ejecta Facies Observed in Thermophysical Datasets*. Lunar & Planet. Sci. Conf., **51**, Abstract #2468.
- 2020/01 AAS **Robbins, S.J.**, *et al.* (2020) *Comets Sourced by KBOs: Comparison of Cometary Size-Frequency Distributions with Outer Solar System Craters*. American Astronomical Society, **235**.
- 2019/12 AGU Bain, Z.M., Putzig, N.E., Morgan, G.A., **Robbins, S.J.** (2019) *Using Mars Reconnaissance Orbiter (MRO) Shallow Radar (SHARAD) Sounder Surface Reflections to Understand Different Crater Morphologies*. American Geophysical Union, P41C-3467.
- 2019/12 AGU Singer, K.N., *et al.* (2019) *Impact Craters on 2014 MU₆₉: Implications for Kuiper Belt Object Size-Frequency Distributions and Planetesimal Formation*. American Geophysical Union, P33I-3535.
- 2019/09–10 Holo, S., Kite, E., **Robbins, S.J.** (2019) *Mars Obliquity through Deep Time: New Constraints from the Bombardment Compass*. EPSC-DPS Joint Meeting and Geological Society of America.
- 2019/08 PCC **Robbins, S.J.**, and J.D. Riggs (2019) *Open Tools for Crater Analyses*. Planetary Crater Consortium, **10**, Abstract #1910.
- 2019/07 PSANH **Robbins, S.J.**, Schenk, P.M., and K.N. Singer (2019) *The Depth-Diameter Relationship of Well-Preserved Impact Craters on Pluto and Charon*. Pluto System After New Horizons, **1**, Abstract #7055.
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- 2011/03 LPSC Kring, D., and **25 coauthors**. (2011) *Fold Hinge in Overturned Coconino Sandstone and its Structural Displacement During the Formation of Barringer Meteorite Crater (AKA Meteor Crater)*. Lunar and Planet. Sci. Conf., **42**, #1740.
- 2010/10 EPSC Collins, G.S., Davison, T., Elbeshhausen, D., **Robbins, S.J.**, and B.M. Hynek. (2010) *The Size-Frequency Distribution of Elliptical Craters*. European Planetary Science Congress, **5**, #EPSC2010-238.
- 2010/10 PCC **Robbins, S.J.**, Di Achille, G., and B.M. Hynek. (2010) *Dating the Most Recent Episodes of Volcanic Activity from Mars' Main Volcanic Calderas*. Planetary Crater Consortium, **1**, #1010.
- 2010/03 LPSC **Robbins, S.J.**, and B.M. Hynek. (2010) *Progress Towards a New Global Catalog of Martian Craters and Layered Ejecta Properties, Complete to 1.5 km*. Lunar and Planet. Sci. Conf., **41**, #2257.

- 2010/03 LPSC **Robbins, S.J.**, Di Achille, G., and B.M. Hynek. (2010) *Dating the Most Recent Episodes of Volcanic Activity from Mars' Main Volcanic Calderae*. Lunar and Planet. Sci. Conf., **41**, #2252.
- 2009/09 MCC **Robbins, S.J.**, and B.M. Hynek. (2009) *Progress Towards a New Global Catalog of Martian Craters and Layered Ejecta Properties, Complete to 1.5 km*. Mars Crater Conference, **12**, #1207.
- 2009/03 LPSC **Robbins, S.J.**, and B.M. Hynek. (2009) *Towards a New Catalog of Lobed Martian Craters Compared with a New Global Crater Database, Complete to 1.5 km*. Lunar and Planet. Sci. Conf., **40**, #2460.
- 2008/10 DPS **Robbins, S.J.**, Stewart, G.R., Colwell, J.E., and M.C. Lewis. (2008) *Self-Gravity Wakes in Saturnian Rings: Effects of Varying Location, Particle Density and Introducing a Particle Size Distribution*. Division of Planet. Sci. Meeting, pp. 424, **40:21.05**.
- 2008/09 MCC **Robbins, S.J.**, and B.M. Hynek. (2008). *MOLA Data May Introduce Significant Artifacts in Crater Diameters*. Mars Crater Conference, **11**, #1107.
- 2008/09 MCC **Robbins, S.J.**, Haber, R., and B.M. Hynek (2008) *Depth/Diameter Ratios of 2.5+ km Craters in Arabia Terra, Mars, and Hints at Refining the Region's History*. Mars Crater Conference, **11**, #1108.
- 2008/03 LPSC **Robbins, S.J.**, and B.M. Hynek. (2008) *Testing Formation Theories of NW Arabia Terra, Mars: New Clues from Old Craters*. Lunar and Planet. Sci. Conf., **39**, #2417.
- 2007/10 DPS **Robbins, S.J.**, Stewart, G.R., Colwell, J.E., and M.C. Lewis. (2007) *Simulations of Clumping Effects in High-Optical Depth Rings*. Division of Planet. Sci. Meeting, **38**, pp. 420.
- 2007/10 DPS Stewart, G.R., **Robbins, S.J.**, and J.E. Colwell. (2007) *Evidence for a Primordial Origin of Saturn's Rings*. Division of Planet. Sci. Meeting, **38**, pp. 420.
- 2007/10 MCC **Robbins, S.J.**, and B.M. Hynek. (2007) *A New Automated Method of Determining Depth, Diameter, and Volume of Known Craters*. Mars Crater Conference, 10, #1006.

Field Experience:

- Fall 2010 Selected for the first Meteor Crater Field Camp for a week-long detailed study of regions of the Barringer "Meteor Crater" outside of Flagstaff, AZ.
- Fall 2005, '07 Participant in the annual planetary analogues geology field trip offered to CU-Boulder graduate students. 2005 went to southern Colorado, northern Arizona and northern New Mexico to explore canyons, sand dunes, craters, and other features. 2007 went to Hawai'i's big island to study volcanic analogues and geologic mapping.

Computer Programming and Software Package Skills:

Languages: C++, HTML, IDL, Igor Pro, Java, JavaScript, Python
Geographic: ESRI's ArcGIS software package, Global Mapper
Analysis: IDL, Igor Pro
Image Analysis: ISIS3, Ames Stereo Pipeline, Adobe Suite (Photoshop, Illustrator)
Production: Adobe Suite (Photoshop, Illustrator, InDesign), Cinema 4D, Final Cut Pro

Active Funded Grants as PI:

- Sep 2022-'25 "Fully Controlled Context Camera Data for Mars: New SPICE Data and Global Mosaics"
\$607,480 *via* NASA ROSES-PDART (2021)
- Dec 2021-'24 "What Are the Secondary, Doublet, and Elliptical Crater Properties of Martian Amazonian- and Hesperian-Aged Impacts?"
\$420,000 *via* NASA ROSES-MDAP (2020)
- Sep 2017-'22 "Morphology and Morphometry Data Acquisition for a Global Lunar Crater Database of Craters ≥ 1 km in Diameter"
\$640,597 *via* NASA ROSES-PDART (2016)
- Aug 2015-'22 "Developing a New Crater Production Function for the Moon, Mars, and Mercury for Modeling Planetary Surface Ages"
\$259,711 *via* NASA ROSES-SSW (2014)

TEACHING

Formal Teaching Experience and Related Work:

- Fa 2013,18 Co-led planetary analogs & geology field trip to Grand Tetons and Yellowstone.
- Sp 2013 Co-taught graduate-level planetary seminar on impact crater processes, observations, and dynamics.
- 2013 Participated in research study for Science section of General Education Development (GED) test.
- 2012 Wrote science comprehension passages and questions for the GED test.
- 2011 Completed CU-Boulder's Graduate Teacher Program certification.
- 2010 Completed NASA's "Center for Astronomy Education" Workshop.
- 2010 Instructor of Record for ASTR 1110 - Introductory Astronomy, the Solar System, for Non-Majors, Non-Lab (19 students).
- Fall 2005, Spring '06 & '07 – Lab Instructor (2005, 2006) and Lecture TA (2007) for ASTR 1010 - Introductory Astronomy, the Solar System, for Non-Majors, with Lab (25 lab students each; 250 lecture).

Advising, Supervising, and Mentoring of Students:

- 2016-now Supervised Research Scientist (R. Hoover) on several projects for which I am the PI.
- 2011-'14 Co-advised & -supervised undergraduate working on broad-scale Martian erosion.
- 2012-'13 Supervision of high school student with Martian crater science fair project.
- 2011-'13 Co-advised & -supervised Master's student work on statistical properties of Martian impact craters.
- 2008-'10 Co-supervised undergraduates to help construct global Mars crater database.
- 2006-'07 Mentored high school student on open cluster photometry to derive relative ages as part of the Boulder Valley School District's "Science Research Seminar."

SERVICE AND EDUCATION AND PUBLIC OUTREACH

Professional Service:

- 2014-'22 Various positions on the Planetary Crater Consortium: 2014–2015, 2017–2020 Executive Committee Member; 2020–present Meeting Chair; 2021–present Chair.
- 2011-'22 Peer-Reviewed papers for the journals *Earth & Space Science*, *Journal of Geophysical Research—Planets*, *Geophysical Research Letters*, *Icarus*, *Earth & Planetary Science Letters*, *Meteoritics & Planetary Science*, *Nature*, *Nature-Astronomy*, *Nature-Geoscience*, *Planetary & Space Science*, *Science*.
- 2011-'21 Provided reviews for / served on NASA Grant Review panels: CDAP(S), DDAP, DACGIP, FINESST, EW, LASER & LDAP, MDAP, MFRP (defunct), OSIRIS-REx-PSP, PDART.
- 2017-'19 Provided reviews for / served on NASA Postdoctoral Program panels.
- 2012-'15 Convener/Chair of "Issues in Crater Studies and the Dating of Planetary Surfaces" conference, held May 19-22, 2015, at the Applied Physics Lab (JHU).
- 2015 Provided external reviews for NASA's Planetary Data Systems (PDS).
- 2015 Provided external reviews for Austrian Science Fund.
- 2012-'14 Dwornik judge at the Lunar and Planetary Science Conference.

Invited Talks:

- 2020,2021 Planetary Science Decadal Survey, invited to speak on the importance of continued funding for impact crater studies to both the Mars Committee on Geochronology, and Moon and Mercury Committee.
- 2020 SBAG Meeting invited talk about Pluto System Orbiter & Kuiper Belt Explorer mission.
- 2019 Planetary Data Workshop invited talk about creating planetary cartographic control networks.
- 2019 American Statistical Association, CO-WY chapter invited talk about crater statistics and how it is a case study of a stagnant field.
- 2018 Geological Society of America invited talk about Charon geologic map.
- 2016 University of Colorado's Laboratory for Atmospheric & Space Physics seminar on Pluto system craters and Education & Public Outreach efforts.
- 2015 *Cassini* UVIS Team meeting presentation about *N*-body simulations of Saturn's rings.
- 2015 CalTech planetary seminar speaker.

Professional Affiliations:

- 2012–now American Geophysical Union
- 2007–now Planetary Crater Consortium (formerly Mars Crater Consortium)
- 2004–now American Astronomical Society (Junior Member 2004-2011)

Selected Educational Work and Public Outreach:

Internet-Based

- 2008 - present Write "Exposing PseudoAstronomy" blog that examines popular astronomy pseudo-science beliefs <<http://pseudoastro.wordpress.com>>. In 2011, started eponymous podcast (see below).
- 1997 - present Created, manage, and maintain website "Journey Through the Galaxy" which is an educational astronomy site for the edification of the general public; presently available at <<http://jtg.sjrdesign.net>>. Listed in Exploring Earth and Space Systems for material for proficiency in the Minnesota Earth and Space Systems standards.

Community - Mass Media

2018 - present	Co-Host of "5 Minutes with an Astronomer" podcast.
2011 - present	Write, host, and produce "Exposing PseudoAstronomy" podcast that examines popular pseudo-science beliefs relating to astronomy, geology, and physics < http://podcast.sjrdesign.net >.
2015 - 2019	Lunar & Planetary Science Conference microblogger.
2015 - 2016	Interviewed by David Livingston on <i>The Space Show</i> .
2015 - 2019	Interviewed by the Ottawa Skeptics' "The Reality Check" podcast about numerous astronomy-related topics.
2014 - 2015	Studio member of weekly radio program "ATS Live."
2014	Appeared on several radio programs ("Reality Remix," "Fade to Black," "ATS Live") to discuss astronomy-based pseudoscience.
2012	Interviewed for WAMC radio's "Academic Minute" on Martian craters (Dec. 11, 2012).
2012	Interviewed for the "365 Days of Astronomy" and "NLSI" podcasts about Martian and lunar craters.
2011	Interviewed by the Center for Inquiry's "Point of Inquiry" podcast about 2012 doomsday.
2010 - present	Participating scientist in the National Academy of Science's "Science & Entertainment Exchange" that links media with scientists as advisors.
November 2010	Gave a 4-hr live interview for the national <i>Radio Amerika Now</i> radio show about the 2012 Apocalypse phenomenon and the methodology of "real" science.
June 2009, '10	Gave a 1-hr live interview for the local <i>Rational Alchemy</i> radio show and podcast about the Apollo Moon Hoax (2009) and 2012 Apocalypse phenomenon (2010).
2009 - present	Regular guest and "Astronomer Royale" of <i>The Conspiracy Skeptic</i> podcast.
June 2009	Was interviewed by 3 national news outlets for the moon hoax topic.

Public Lectures

2019	Presented talk, "Mars: Science and Fiction in Culture, Comics, and Cinema" at the Denver Pop Culture Con.
2016	Presented talk on impact craters and <i>New Horizons</i> mission to the Eastern Michigan University astronomy club.
2016-2017, 2019	Presented talk, "The (physics and astronomy) Science of <i>Futurama</i> " at the Denver ComicCon. 2016 only— Also member of panel discussing what superpowers a well evolved creature from another planet may have on Earth. 2019 only— Member of panel discussing 2018 year in review for astronomical science.
2015	Presented talk, "In Search Of: Planet X" at the Denver ComicCon. Also member of panel discussing building realistic worlds in science fiction.
2014	Presented talk, "The Cydonia Region of Mars" at the James Randi Educational Foundation's "The Amaz!ng Meeting" in Las Vegas.
2013-2014	Presented talk, "The Saga of the Lunar Ziggurat" at various venues.
2013	Presented workshop, "How Your Camera Lies to You: From UFOs to Ghosts, a Skeptics' Guide to Imaging" at the James Randi Educational Foundation's "The Amaz!ng Meeting" in Las Vegas and the Tellus Science Museum in Atlanta, GA.
2012	Presented talk, "GAPs Young-Earth Creationists Must Believe or Ignore (Geology, Astronomy, Physics)" at various venues.
2007, 2008, 2011, 2013	Presented talk, "The Apollo Moon Hoax: Why We Did NOT Not Go to the Moon," at various venues, including on-campus planetarium, the world's first "Skepticamp" conference ('07), and keynote for Yuri's Night activities ('08, '13).

- 2010 Presented talk, "Doomsday 2012: Death by the Mayans, Pole Shifts, or Galactic Alignments?" at various venues.
- 2009 Presented talk, "Is the Universe 10,000 Years Old?" at various venues.
- 2008 Public lecture about Pluto's planetary status debate at CU-Boulder's Fiske Planetarium.

Community - General and Grade Schools

- Spring, 2020 Talked to 6th grade classes in Melbourne, Australia about being a research scientist.
- Spring, 2009-'17 Science Fair judge for the regional Science Fair, including Head Judge in Earth & Space Sciences category for three years (2011-2013), and Roaming Judge for four years (2014-2017).
- Spring, 2015 Science Fair judge for the Colorado State Science and Engineering Fair (in Physics).
- 2008-'10 Participating scientist with CU's Project ASTRO-GEO which paired a scientist with a grade school teacher for classroom visits to help connect students with professionals in the field throughout the academic year.
- April of 2006-'11 Ran the 16" and 18" Sommers-Bausch Observatory telescopes as part of the Astronomy Day activities at CU-Boulder.
- June 22 & 26, 2004 Assisted with the National Solar Observatory's TLRIBSE program – a brief internship for grade school teachers to allow them to experience cutting-edge astronomical research.
- June & July 2004 Assisted with Kitt Peak Nightly Observing Program (KPNO NOP) – a nightly public outreach program for members of the general public.

Departmental / Institutional

- 2012 Gave highlight of research for Science Year in Review at LASP All-Hands Meeting
- 2009-2011 Rebuilt, operated, and maintained the APS department's website.
- Fall 2006, '07, '08, '09 Taught an astronomy department-specific Graduate Teacher Program seminar on practical hands-on CCD camera imaging at the campus observatory.