

Michael Manuel Sori

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Earth, Atmospheric, and Planetary Sciences
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RESEARCH INTERESTS

Planetary Science, Geophysics, Surface Processes, Gravity, Ices, Volcanism

EDUCATION

Ph.D.	2014	Massachusetts Institute of Technology (MIT), Planetary Science, Advisors: Maria Zuber, Taylor Perron Thesis: "Judging a Planet by its Cover: Insights into Lunar Crustal Structure and Martian Climate History from Surface Features"
B.S.	2008	Duke University, Mathematics
B.A.	2008	Duke University, Physics

PROFESSIONAL EXPERIENCE

2020–present	Assistant Professor, Purdue University
2017–2020	Associate Staff Scientist, University of Arizona
2014–2017	Postdoctoral research associate, University of Arizona

RESEARCH EXPERIENCE

2009–present	Worked with Lunar Reconnaissance Orbiter, GRAIL, Dawn, and Mars Reconnaissance Orbiter NASA missions
2015	Iceland Field Workshop on active lava-water interactions
2010	Field Training and Research Program at Meteor Crater
2009	Internship at Hollifield Radioactive Ion Beam Facility with Ken Carter, Oak Ridge National Laboratory
2007–2008	Undergraduate research assistant at Duke Free Electron Laser Laboratory with Ying Wu, Duke University

GRANTS

As principal investigator (PI) or lead:

2021–2024	The evolution of planetary crusts through lunar gravity and topography, NASA Lunar Data Analysis Program (LDAP)
2021	Cryovolcanism as an atmospheric source on Pluto's moon Charon, Purdue Ross-Lynn Scholars Grant
2020	Next Generation Planetary Geodesy, Caltech Keck Institute for Space Studies (KISS) Study Program
2017–2020	Ice deposits in polar craters on Mars, NASA Mars Data Analysis Program (MDAP)

As co-investigator (Co-I):

2021	Purdue planetary science summer research program, Indiana Space Grant Consortium (PI: Briony Horgan)
2019–2020	Assessing dwarf planet Ceres' past and present habitability potential, NASA Planetary Mission Concept Studies (PI: Julie Castillo-Rogez)

AWARDS

2021	Teaching Honor Roll, Purdue University (x2)
2019	NASA RHG Exceptional Achievement for Science Award: The Dawn Science Team, Ceres encounter
2019	University of Arizona Outstanding Postdoctoral Scholar Award
2019	NASA PI Launchpad Workshop selection
2017	Early Career travel award, NASA Outer Planets Assessment Group (OPAG)
2014	MIT Grayce B. Kerr Fellowship
2013	NASA RHG Exceptional Achievement for Science Award: The LRO Science Mission Team
2011–2013	MIT Robert R. Shrock Fellowship

MENTORSHIP

Kristel Izquierdo	Postdoc, Purdue	Supervisor, 2021–now
Ian Pamerleau	PhD student, Purdue	Advisor, 2021–now
Stephanie Menten	PhD student, Purdue	Advisor, 2020–now
Alexander Kling	PhD student, Purdue	Committee member, 2021–now
Kris Laferriere	PhD student, Purdue	Committee member, 2021–now
Riley McGlasson	PhD student, Purdue	Committee member, 2021–now
Hunter Vannier	PhD student, Purdue	Committee member, 2021–now
Austin Blevins	PhD student, Purdue	Committee member, 2020–now
Prakhar Sinha	PhD student, Purdue	Committee member, 2020–now
Marie Henderson	PhD student, Purdue	Committee member, 2020–2021
Sean O'Hara	PhD student, UIC	Committee member, 2017–2019
Katherine Meves	Undergrad, Purdue	Research mentor, 2021–now
Imani Lawrence	Undergrad, Purdue	Research mentor, 2021–now
Hannah Gibson	Masters student, Purdue	Co-advisor, 2020–2021
Lauren Dickson	Undergrad, Purdue	Research mentor, 2021
Elizabeth Bailey	Undergrad, MIT	Research mentor, 2013–2014

SERVICE

2021–present	Purdue University College Grade Appeals committee
2020–present	Purdue EAPS seminar committee
2020–present	Purdue EAPS undergraduate committee
2016–present	LPSC Session Chair, Dwornik Award judge
2015–present	NASA review panel member/group chief, multiple programs
2014–present	Reviewer for <i>Science Advances</i> , <i>Nature Geoscience</i> , <i>Nature Astronomy</i> , <i>Nature Communications</i> , <i>AGU Advances</i> , <i>Geology</i> , <i>EPSL</i> , <i>Geophys. Res. Lett.</i> , <i>JGR Planets</i> , <i>Icarus</i> , <i>Planet. Sci. J.</i> , <i>Advances in Space Research</i> , <i>J. Glaciology</i> , <i>Earth and Space Science</i> , <i>Planetary and Space Science</i>
2020–2021	NASA's Mars Ice Core Working Group member
2020	AGU session convener Next-generation planetary geodesy
2020	"Fresh Faculty Recruits", panel member, University of Arizona Postdoctoral Affairs office
2019	Review committee member, University of Arizona postdoctoral scholar and mentoring awards
2018–2019	NASA advisory committee member, Science Definition Team for Ceres mission studies

2016–2018	Guest editor, <i>Icarus</i> special issue for Mars Polar Science
2017	AGU session convener, Cryospheres of terrestrial planets
2017	Secretary of the IAVCEI/IACS Joint Commission on Volcano–Ice Interactions
2016–2017	Postdoctoral representative to the faculty, Lunar and Planetary Laboratory, University of Arizona
2012–2014	MIT EAPS Government Student Advisory Council, Graduate Student Committee Member
2011–2014	MIT EAPS Planetary Internal Colloquium Series, Organizer
2011–2012	MIT EAPS Student Advisory Council, President
2010–2011	MIT EAPS Student Advisory Council, Orientation Chair

INVITED PRESENTATIONS

Feb 11, 2022	Gravity science and geology from orbiting spacecraft at the Moon, Mars, and beyond, Auburn University
Sep 3, 2021	Adventures in decoding paleoclimate records on Mars, Purdue University
Feb 17, 2021	Ice and fire on Mars and Triton: Do polar caps reveal planetary heat? University of California-Berkeley
Apr 22, 2019	Ceres as a laboratory for cryovolcanism and other planetary processes, Purdue University
Mar 6, 2019	Ceres as a laboratory for cryovolcanism and other planetary processes, Rutgers University
Feb 21, 2019	Ceres as a laboratory for cryovolcanism and other planetary processes, MIT
Jan 8, 2019	Ceres as a laboratory for cryovolcanism and other planetary processes, Georgia Tech
Mar 1, 2018	Ancient geological histories of the crusts of the Moon and Mercury from geophysics, University of Illinois at Chicago
Jan 23, 2018	The early histories of the Moon and Mercury revealed by gravity, CalTech
Sep 28, 2017	Mars climate and ice: Accumulation of the polar layered deposits, University of Bern
Mar 9, 2017	Decoding the geological histories encrypted into ices on Mars and Ceres, Brown University
Jan 31, 2017	Dynamic ices in the outer solar system, CalTech
Nov 7, 2016	Ices reveal planetary histories throughout the solar system, Southwest Research Institute
Feb 9, 2016	Quantifying the importance of ice flow on Mars, MIT
Oct 30, 2014	The nature of isostasy in the lunar highlands and implications for mantle structure, University of Iceland

Dec 5, 2013 A procedure for testing the orbital tuning of the Martian polar layered deposits, Brown University

TEACHING

2021–now	Instructor, Purdue University, EAPS 580, Geodynamics
2021–now	Instructor, Purdue University, EAPS 391, Planetary Interiors
2015–2019	Guest lecturer, University of Arizona, PTYS 411, Geology and Geophysics of the Solar System
2015–2019	Guest lecturer, University of Arizona, PTYS 554, Evolution of Planetary Surfaces
2013	Teaching Assistant, MIT Course 12.093, Field Course (Sample collection in the Western Himalayas)
2013	Teaching Assistant, MIT Course 12.002, Introduction to Geophysics and Planetary Science

PUBLIC ENGAGEMENT AND PRESS

2021	Astronomy on Tap – Cradle of Astronauts Lecture
2021	National 4-H STEM Summit Career Panelist
2019	Steward Public Evening Lecture, University of Arizona
2019	Press for co-first-author study on Mars polar water (publication #18 below), including from Newsweek , Mashable , Arizona Daily Star , and others
2018	Press for first-author study on Ceres cryovolcanism (publication #15 below), including from UANews , National Geographic , Discover magazine , and others
2018	Press for first-author study on Mercury’s crust (publication #12 below), including from UANews , Newsweek , Forbes , and others
2017	Press for first-author study on Ceres cryovolcanoes (publication #9 below), including from UANews , Popular Science , Gizmodo , and others
2017	Invited lectures, several Arizona amateur astronomy clubs
2012–2014	Presentations at the Boston Museum of Science, including the “Mars and Beyond” event and individual lectures
2012–2014	Presentations to Houston-area middle school classes during LPSC (Lunar and Planetary Science Conference)

2011 Presentations at the Boston Debate League (student club for high school students) at the Federal Reserve Bank

PEER-REVIEWED PUBLICATIONS

(Superscripts of G, U, or P indicate an author that is a graduate student, undergraduate student, or postdoctoral researcher under Professor Sori's advisement)

[38] Dickson, L.^U and **M.M. Sori** (2022), The origin of mascons on Ceres as constrained by crater morphology, in revision.

[37] Egea-Gonzalez, I., P.C. Lois, A. Jiménez-Díaz, A.M. Bramson, **M.M. Sori**, and J. Ruiz (2022), The stability of a liquid-water body below the south polar cap of Mars, in revision.

[36] Bramson, A.M., L.M. Carter, G.W. Patterson, **M.M. Sori**, G.A. Morgan, L.M. Jozwiak, C.A. Nypaver, and J.T.S. Cahill (2022), Burial depths of extensive shallow cryptomaria in the lunar Schiller-Schickard region, in revision.

[35] Menten, S.M.^G, **M.M. Sori**, and A.M. Bramson (2022), Endogenically sourced volatiles on Charon and other Kuiper Belt Objects, in revision.

[34] **Sori, M.M.**, P. Becerra, J. Bapst, S. Byrne, and R.A. McGlasson (2022), [Orbital forcing of Martian climate revealed in a south polar outlier ice deposit](#), *Geophys. Res. Lett.* 49, e2021GL097450.

[33] Castillo-Rogez, J., M. Neveau, V. Vinogradoff, K. Miller, **M.M. Sori**, F. Tosi, B. Schmidt, K. Hughson, C. De Sanctis, H. McSween, J. Scully, L. Quick, K. Otto, K. Krohn, G. Thangjam, A. Ermakov, P. Schenk, A. Nathues, and C. Raymond (2022), [Science drivers for the exploration of Ceres: From Solar System evolution to ocean world science](#), *Planet. Sci. J* 3, 64.

[32] Castillo-Rogez, J., J. Brophy, K. Miller, **M.M. Sori**, J. Scully, L. Quick, R. Grimm, M. Zolensky, M. Bland, D. Buczkowski, C. Raymond, A. Hendrix, T. Prettyman, Y. Sekine, T. Titus, D. Williams, P. Backes, L. Barge, A. Ermakov, S. Moreland, and K. Zacny (2022), [Concepts for the future exploration of dwarf planet Ceres' habitability](#), *Planet. Sci. J* 3, 41.

- [31] Nichols-Fleming, F., A.J. Evans, B.C. Johnson, and **M.M. Sori** (2022), [Porosity evolution in metallic asteroids: Implications for the origin and thermal history of asteroid 16 Psyche](#), *J. Geophys. Res. Planets* 127, e2021JE007063.
- [30] Cartwright, R.J., T.A. Nordheim, D.R. Decolibus, W.M. Grundy, B.J. Holler, C.B. Beddingfield, **M.M. Sori**, M.P. Lucas, C.M. Elder, L.H. Regoli, D.P. Cruikshank, J.P. Emery, E.J. Leonard, and C.J. Cochrane (2022), [A CO₂ cycle on Ariel? Radiolytic production and migration to low latitude cold traps](#), *Planet. Sci. J.* 3, 8.
- [29] Izquierdo, K.^P, **M.M. Sori**, J.M. Soderblom, B.C. Johnson, and S.E. Wiggins (2021), [Lunar megaregolith structure revealed by GRAIL gravity data](#), *Geophys. Res. Lett.* 48, e2021GL095978.
- [28] Cartwright, R.J., C.B. Beddingfield, T.A. Nordheim, C.M. Elder, J.C. Castillo-Rogez, M. Neveu, A.M. Bramson, **M.M. Sori**, B.J. Buratti, R.T. Pappalardo, J.E. Roser, I.J. Cohen, E.J. Leonard, A.I. Ermakov, M.R. Showalter, W.M. Grundy, E.P. Turtle, and M.D. Hofstadter (2021), [The science case for spacecraft exploration of the Uranian satellites: Candidate ocean worlds in an ice giant system](#), *Planet. Sci. J.* 2, 120.
- [27] Schaefer, E.I., C.W. Hamilton, C.D. Neish, **M.M. Sori**, A.M. Bramson, and S.P. Beard (2021), [Reexamining the potential to classify lava flows from the fractality of their margins](#), *J. Geophys. Res. Solid Earth* 126, e2020JB020949.
- [26] **Sori, M.M.** (2021), [Can Triton's internal heat be inferred from its ice cap?](#) *Geophys. Res. Lett.* 48, e2020GL090518.
- [25] Johnson, B.C. and **M.M. Sori** (2020), [Landslide morphology and mobility on Ceres controlled by topography](#), *J. Geophys. Res. Planets* 125, e2020JE006640.
- [24] Scully, J.E.C., P.M. Schenk, J.C. Castillo-Rogez, D.L. Buczkowski, D.A. Williams, J.H. Pasckert, K.D. Duarte, V.N. Romero, L.C. Quick, **M.M. Sori**, M.E. Landis, C.A. Raymond, A. Neesemann, B.E. Schmidt, H.G. Sizemore, and C.T. Russell (2020), [The varied sources of faculae-forming brines in Ceres' Occator crater emplaced via hydrothermal brine effusion](#), *Nature Communications* 11, 3680.

[23] Park, R.S., A.S. Konopliv, A.I. Ermakov, J.C. Castillo-Rogez, R.R. Fu, K.H.G. Hughson, T.H. Prettyman, C.A. Raymond, J.E.C. Scully, H.G. Sizemore, **M.M. Sori**, A.T. Vaughan, G. Mitri, B.E. Schmidt, and C.T. Russell (2020), [Evidence of non-uniform crust of Ceres from Dawn's high-resolution gravity data](#), *Nature Astronomy* 4, 748–755.

[22] Hamilton, C.W., S.P. Scheidt, **M.M. Sori**, A.P. de Wet, J.E. Bleacher, P.J. Mouginis-Mark, S. Self, J.R. Zimbelman, W.B. Garry, P.L. Whelley, and L.S. Crumpler (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* 125, e2019JE005975 (cover image).

[21] Johnson, B.C., **M.M. Sori**, and A.J. Evans (2020), [Ferrovulcanism on metal worlds and the origin of pallasites](#), *Nature Astronomy* 4, 41–44.

[20] **Sori, M.M.**, J. Bapst, P. Becerra, and S. Byrne (2019), [Islands of ice on Mars and Pluto](#), *J. Geophys. Res. Planets* 124, 2522–2542 (cover image).

[19] Bland, M.T., D.L. Buczkowski, H.G. Sizemore, A.I. Ermakov, S.D. King, **M.M. Sori**, C.A. Raymond, J.C. Castillo-Rogez, and C.T. Russell (2019), [Dome formation on Ceres by solid-state flow analogous to terrestrial salt tectonics](#), *Nature Geoscience* 12, 797–801.

[18] Becerra, P., **M.M. Sori**, N. Thomas, A. Pommerol, S.S. Sutton, S. Tulyakov, E. Simioni, and G. Cremonese (2019), [Timescales of the climate record in the south polar ice cap of Mars](#), *Geophys. Res. Lett.* 46, 7268–7277 (cover image).

[17] **Sori, M.M.*** and A.M. Bramson* (2019), [Water on Mars, with a grain of salt: Local heat anomalies are required for basal melting of ice at the south pole today](#), *Geophys. Res. Lett.* 46, 1222–1231. (*Both authors contributed equally)

[16] Sizemore, H.G., B.E. Schmidt, D.A. Buczkowski, **M.M. Sori**, J.C. Castillo-Rogez, D.C. Berman, C. Ahrens, H.T. Chilton, K.H.G. Hughson, K. Duarte, K.A. Otto, M.T. Bland, A. Neesemann, J.E.C. Scully, D.A. Crown, S.C. Mest, D.A. Williams, T. Platz, P. Schenk, M.E. Landis, S. Marchi, N. Schorghofer, L.C. Quick, T.H. Prettyman, M.C. De Sanctis, A. Nass, G. Thangjam, A. Nathues, C.T. Russell, and C.A. Raymond (2019), [A global inventory of ice-related morphological features on dwarf planet Ceres: Implications for the evolution and current state of the cryosphere](#), *J. Geophys. Res. Planets* 124, 1650–1689.

[15] Ruesch, O., L.C. Quick, M.E. Landis, **M.M. Sori**, O. Čadek, P. Brož, K.A. Otto, M.T. Bland, S. Byrne, J.C. Castillo-Rogez, H. Hiesinger, R. Jaumann, K. Krohn, L.A. McFadden, A. Nathues, A. Neesemann, F. Preusker, T. Roatsch, P.M. Schenk, J.E.C. Scully, M.V. Sykes, D.A. Williams, C.A. Raymond, and C.T. Russell (2019), [Bright carbonate surfaces on Ceres as remnants of salt-rich water fountains](#), *Icarus* 320, 39–48.

[14] **Sori, M.M.**, H.G. Sizemore, S. Byrne, A.M. Bramson, M.T. Bland, N.T. Stein, and C.T. Russell (2018), [Cryovolcanic rates on Ceres revealed by topography](#), *Nature Astronomy* 2, 946–950. Featured in *Nature Astronomy News & Views*.

[13] Hamilton, C.W., P.J. Mouginis-Mark, **M.M. Sori**, S.P. Scheidt, and A.M. Bramson (2018), [Episodes of aqueous flooding and volcanism from geologically recent outflow channels on Mars](#), *J. Geophys. Res. Planets* 123, 1484–1510.

[12] **Sori, M.M.** (2018), [A thin, dense crust for Mercury](#), *Earth Planet. Sci. Lett.* 489, 92–99.

[11] **Sori, M.M.**, P.B. James, B.C. Johnson, J.M. Soderblom, S.C. Solomon, M.A. Wieczorek, and M.T. Zuber (2018), [Isostatic compensation of the lunar highlands](#), *J. Geophys. Res. Planets* 123, 646–665.

[10] **Sori, M.M.**, J.N. Bapst, A.M. Bramson, S. Byrne, and M.E. Landis (2017), [A Wunda-full world? Carbon dioxide ice deposits on Umbriel and other Uranian Moons](#), *Icarus* 290, 1–13.

[9] **Sori, M.M.**, S. Byrne, M.T. Bland, A.M. Bramson, A.I. Ermakov, C.W. Hamilton, K.A. Otto, O. Ruesch, and C.T. Russell (2017), [The vanishing cryovolcanoes of Ceres](#), *Geophys. Res. Lett.* 44, 1243–1250.

[8] Becerra, P., **M.M. Sori**, and S. Byrne (2017), [Signals of astronomical forcing in the exposure topography of Mars' north polar layered deposits](#), *Geophys. Res. Lett.* 44, 62–70.

[7] Smith, D.E., M.T. Zuber, G.A. Neumann, E. Mazarico, F.G. Lemoine, J.W. Head, P.G. Lucey, O. Aharonson, M.S. Robinson, X. Sun, M.H. Torrence, M.K. Barker, J. Oberst, T.C. Duxbury, D. Mao, O.S. Barnouin, K. Jha, D.D. Rowlands, S. Goossens, D. Baker, S. Bauer, P. Gläser, M. Lemelin, M. Rosenburg, **M.M.**

Sori, J. Whitten, and T. Mcclanahan (2017), [Summary of the results from the Lunar Orbiter Laser Altimeter after seven years in lunar orbit](#), *Icarus* 283, 70–91.

[6] Becerra, P., S. Byrne, M.M. Sori, S. Sutton, and K.E. Herkenhoff (2016), [Stratigraphy of the north polar layered deposits of Mars using high-resolution topography](#), *J. Geophys. Res. Planets* 121, 1445–1471.

[5] Sori, M.M., M.T. Zuber, J.W. Head, and W.S. Kiefer (2016), [Gravitational search for cryptovolcanism on the Moon: Evidence for large volumes of early igneous activity](#), *Icarus* 273, 284–295.

[4] Sori, M.M., S. Byrne, C.W. Hamilton, and M.E. Landis (2016), [Viscous flow rates of icy topography on the North Polar Layered Deposits of Mars](#), *Geophys. Res. Lett.* 43, 541–549.

[3] Neumann, G.A., M.T. Zuber, D.E. Smith, M.A. Wieczorek, J.W. Head, D.M.H. Baker, S.C. Solomon, D.E. Smith, F.G. Lemoine, E. Mazarico, T.J. Sabaka, S. Goossens, H.J. Melosh, R.J. Phillips, S.W. Asmar, A.S. Konopliv, J.G. Williams, M.M. Sori, J.M. Soderblom, K. Miljkovic, J.C. Andrews-Hanna, F. Nimmo, and W.S. Kiefer (2015), [Lunar Impact Basins Revealed by Gravity Recovery and Interior Laboratory Measurements](#), *Science Advances* 1.

[2] Soderblom J.M., A.J. Evans, B.C. Johnson, H.J. Melosh, K. Miljkovic, R.J. Phillips, J.C. Andrews-Hanna, C.J. Bierson, J.W. Head, C. Milbury, G.A. Neumann, F. Nimmo, D.E. Smith, S.C. Solomon, M.M. Sori, M.A. Wieczorek, and M.T. Zuber (2015), [The fractured Moon: Production and saturation of porosity in the lunar highlands from impact cratering](#), *Geophys. Res. Lett.* 42, 6939–6944.

[1] Sori, M.M., J.T. Perron, P. Huybers, and O. Aharonson (2014), [A procedure for testing the significance of orbital tuning of the Martian polar layered deposits](#), *Icarus* 235, 136–146.

OTHER PUBLICATIONS

(Superscripts of G, U, or P indicate an author that is a graduate student, undergraduate student, or postdoctoral researcher under Professor Sori's advisement)

- [13] James, P., A. Ermakov, and **M.M. Sori** (2020), [Requirements for gravity measurements on the anticipated Artemis III mission](#), *arxiv Astrophysics: Instrumentation and methods for astrophysics*.
- [12] James, P., A. Ermakov, J. Keane, M. Wieczorek, **M.M. Sori**, B. Johnson, S. Goossens, A. Evans, B. Bills, S. Chiow, M. Ding, F. Nimmo, R. Sood, S. Gulick, C. Beghein, and C. Johnson (2020), The value of surface-based gravity and gravity gradient measurements at the Moon's south pole with Artemis III, *Artemis Science Definition* white paper.
- [11] **Sori, M.M.**, A.I. Ermakov, J.T. Keane, et al. (2020), Transformative science unlocked by future geodetic data at Mars, Venus, and Ocean Worlds, *Decadal survey on planetary science and astrobiology 2023–2032* white paper.
- [10] Cartwright, R.J., **et al.** (2020), The science case for spacecraft exploration of the Uranian satellites, *Decadal survey on planetary science and astrobiology 2023–2032* white paper.
- [9] Becerra, P., **et al.** (2020), The importance of the climate record in the Martian polar layered deposits, *Decadal survey on planetary science and astrobiology 2023–2032* white paper.
- [8] Smith, I.B., **et al.** (2020), A case for Mars Polar Science in the Solar System, *Decadal survey on planetary science and astrobiology 2023–2032* white paper.
- [7] Craft, K., **et al.** (2020), The importance of cryovolcanism in transporting subsurface material towards/to the surface, *Decadal survey on planetary science and astrobiology 2023–2032* white paper.
- [6] Castillo-Rogez, J.C., **et al.** (2020), Science motivations for the future exploration of Ceres, *Decadal survey on planetary science and astrobiology 2023–2032* white paper.
- [5] **Sori, M.M.** (2018), [Ice volcanoes in the asteroid belt](#), *Nature Astronomy* “Behind the paper” series.
- [4] **Sori, M.M.** and A.J. Brown (2018), [Introduction: The 6th special issue of Mars Polar Science](#), *Icarus* 308, 1.

[3] Sori, M.M. (2017), [A Wunda-full world? Carbon dioxide ice deposits on Umbriel and other moons of Uranus](#), International Association for Geomorphology Planetary Geomorphology Image of the Month.

[2] Sori, M.M. (2014), [Judging a planet by its cover: Insights into lunar crustal structure and martian climate history from surface features](#), Ph.D. thesis, MIT.

[1] Sori, M.M. (2008), Study and characterization of a gamma ray imaging system, Undergraduate senior thesis, Duke University.

CONFERENCE ABSTRACTS (first author by group member only)

(Superscripts of G, U, or P indicate an author that is a graduate student, undergraduate student, or postdoctoral researcher under Professor Sori's advisement)

[39] Sori, M.M., A.M. Bramson, S. Byrne, P.B. James, L. Ojha, and N.L. Wagner (2022), Gravity science constrains the presence and volume of mid-latitude ice sheets on Mars, *LPSC 53rd*, 2233.

[38] Lawrence, I.T.^U, M.M. Sori, and K. Izquierdo^P (2022), Topographic tests of liquid water at the south pole of Mars, *LPSC 53rd*, 2197.

[37] Menten, S.M.^G, M.M. Sori, and A.M. Bramson (2022), Tests of an endogenic origin for Mordor Macula on Charon, *LPSC 53rd*, 2008.

[36] Pamerleau, I.F.^G, M.M. Sori, and J.E.C. Scully (2022), Insolation-driven topographic evolution of Ceres, *LPSC 53rd*, 1711.

[35] Sori, M.M., A.I. Ermakov, J.T. Keane, C.J. Bierson, B.G. Bills, A.M. Bramson, S. D'Amico, A.J. Evans, D.J. Hemingway, K. Izquierdo^P, P.B. James, B.C. Johnson, M.A. Kahre, T. Navarro, J.G. O'Rourke, L. Ojha, H.J. Paik, R.S. Park, M. Simons, D.E. Smith, S.E. Smrekar, K.M. Soderlund, G. Steinbrügge, S.M. Tikoo, S.D. Vance, N.L. Wagner, R.C. Weber, H.A. Zebker (2022), Compelling science enabled by gravity investigations at Mars, *Low-cost science missions concepts for Mars exploration*, 5034.

[34] Sori, M.M., P. Beccera, R.A. McGlasson, J. Bapst, and S. Byrne (2021), Morphology of crater ice deposits on Mars reveals Earth-like Milankovitch climate forcing, *AGU Fall Meeting*, 812204.

[33] Izquierdo, K.^P, M.M. Sori, J.M. Soderblom, B.C. Johnson, and S.E. Wiggins (2021), Lunar megaregolith boundary revealed by GRAIL gravity data, *AGU Fall*

Meeting, 819392.

[32] Menten, S.M.^G, **M.M. Sori**, and A.M. Bramson (2021), A cryovolcanic origin for Mordor Macula on Charon, *AGU Fall Meeting*, 832192.

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