

Michael Manuel Sori

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Earth, Atmospheric, and Planetary Sciences
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RESEARCH INTERESTS

Geophysics, Surface Processes, Gravity, Topography, Ices, Volcanism, Impacts

EDUCATION

Ph.D.	2014	Massachusetts Institute of Technology (MIT), Planetary Science, Advisor: Maria Zuber 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–onward	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:

2020	Next Generation Planetary Geodesy, Caltech Keck Institute for Space Studies (KISS) Study Program
2019	Terrestrial planet evolution through gravity science, NASA PI Launchpad Workshop
2017–2020	Ice deposits in polar craters on Mars, NASA Mars Data Analysis Program (MDAP)

As co-investigator (Co-I):

2019–2020	Assessing dwarf planet Ceres' past and present habitability potential, NASA Planetary Mission Concept Studies
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AWARDS

2019	NASA RHG Exceptional Achievement for Science Award: The Dawn Science Team, Ceres encounter
2019	University of Arizona Outstanding Postdoctoral Scholar Award
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

SERVICE

2016–present	LPSC Session Chair, Dwornik Award judge
2015–present	NASA review panel member/group chief, multiple programs
2014–present	Reviewer for <i>Nature Geoscience</i> , <i>Nature Astronomy</i> , <i>Nature Communications</i> , <i>Geology</i> , <i>EPSL</i> , <i>JGR Planets</i> , <i>Icarus</i> , <i>Advances in Space Research</i> , <i>J. Glaciology</i>
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

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 AND MENTORSHIP

2020–present	Ph.D. advisor, Stephanie Menten
2020–present	Committee member, Austin Blevins and Prakhar Sinha
2017–2019	External thesis committee member, Sean O’Hara, University of Illinois at Chicago
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
2013–2014	Advised undergraduate student researcher Elizabeth Bailey
2011–2014	Mentored graduate student researchers Matthieu Talpe, Anton Ermakov, Zhenliang Tien, and Neesha Schnepf
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

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

[25] Johnson, B.C. and **M.M. Sori** (2020), Landslide morphology and mobility on Ceres controlled by topography, in review.

[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 (2019), [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* 125, e2019JE005975 (cover image).

[21] Johnson, B.C., **M.M. Sori**, and A.J. Evans (2020), [Ferrovolcanism 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

- [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. (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 PARTICIPATION (first author only)

[26] Sori, M.M., M.T. Bland, S. Byrne, J.C. Castillo-Rogez, A.I. Ermakov, A.J. Evans, B.C. Johnson, R.S. Park, C.A. Raymond, and J.E.C. Scully (2020), *An ice shell on Ceres*, LPSC 51st, 1651.

[25] Sori, M.M., A.M. Bramson, S. Byrne, P.B. James, and J.T. Keane (2020), *Gravitational constraints on mid-latitude ice... and the need for more gravity data at Mars*, 7th International Mars Polar Science conference, 6026.

[24] Sori, M.M., J. Bapst, P. Becerra, and S. Byrne (2019), *The paleoclimate record of outlier ice deposits near the Martian poles*, LPSC 50th, 1181.

[23] Sori, M.M.* and A.M. Bramson* (2019), *A story of water, ice, and fire on Mars: Conditions for generating liquid water under the south polar layered deposits*, LPSC 50th, 1073. (*Both authors contributed equally)

[22] Sori, M.M., M.T. Bland, S. Byrne, L.C. Quick, C.A. Raymond, J. Castillo-Rogez, P. Schenk, J. Scully, H.G. Sizemore, and M.V. Sykes (2018), *Hanging out on Ceres is stressful: overhanging cliffs reveal strong crust*, AGU Fall Meeting, 461549.

[21] **Sori, M.M.**, H.G. Sizemore, S. Byrne, A.M. Bramson, M.T. Bland, N.T. Stein, C.T. Russell, and C.A. Raymond (2018), *Cryovolcanic history of Ceres from topography*, Cryovolcanism in the Solar System Workshop, 2007.

[20] **Sori, M.M.**, H.G. Sizemore, S. Byrne, A.M. Bramson, M.T. Bland, and C.T. Russell (2018), *Ceres' cryovolcanic history*, LPSC 49th, 1628.

[19] **Sori, M.M.** (2018), *Mercury's thin crust*, LPSC 49th, 1048.

[18] **Sori, M.M.**, J. Bapst, and S. Byrne (2017), *Icy islands reveal similar volatile behavior on Pluto and Mars*, AGU Fall Meeting, 227639.

[17] **Sori, M.M.**, S. Byrne, and A.M. Bramson (2017), *Present-day flow rates of mid-latitude glaciers on Mars*, EPSC, 2017-382.

[16] **Sori, M.M.** and C.W. Hamilton (2017), *The maximum size of inflated flood lavas: implications for the origin and evolution of Athabasca Valles, Mars*, EPSC, 2017-390.

[15] **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*, LPSC 48th, 1116.

[14] **Sori, M.M.**, M.E. Landis, J. Bapst, A.M. Bramson, S. Byrne, V. Reddy, and M.K. Shepard (2017), *Ice stability on Psyche and implications for the planetary core hypothesis*, LPSC 48th, 2550.

[13] **Sori, M.M.**, S. Byrne, C.W. Hamilton, and M.E. Landis (2016), *The importance of ice flow at the north pole of Mars*, 6th International Mars Polar Science conference, 6001.

[12] **Sori, M.M.**, C.W. Hamilton, E. Lev, and S. Scheidt (2016), *Numerical modeling of lava flow behavior on Earth and Mars: A multi-layer rheological approach*, LPSC 47th, 2909.

[11] **Sori, M.M.**, S. Byrne, J.N. Bapst, P. Becerra, A.M. Bramson, and M.E. Landis (2016), *A Wunda-full world? Testing the plausibility of carbon dioxide frost on Umbriel*, LPSC 47th, 1053.

- [10] **Sori, M.M.**, S. Byrne, C.W. Hamilton, and M.E. Landis (2015), *Is viscous flow important at the Martian poles?* LPSC 46th, 1541.
- [9] **Sori, M.M.** and M.T. Zuber (2014), *The nature of lunar isostasy*, LPSC 45th, 1630.
- [8] **Sori, M.M.**, E.A. Bailey, J.T. Perron, P.J. Huybers, O. Aharonson, and A. Limaye (2013), *Ages and accumulation rates of the martian polar layered deposits estimated from orbital tuning*, AGU Fall Meeting.
- [7] **Sori, M.M.**, M.T. Zuber, J.W. Head, and W.S. Kiefer (2013), *GRAIL search for cryptomaria*, LPSC 44th, 2755.
- [6] **Sori, M.M.** and M.T. Zuber (2012), *Gravitational signatures of the Moon's near-surface features from GRAIL*, AGU Fall Meeting.
- [5] **Sori, M.M.** and M.T. Zuber (2012), *Anomalous shallowing of lunar impact craters in the South Pole-Aitken basin from Lunar Orbiter Laser Altimeter (LOLA) observations*, LPSC 43rd, 2707.
- [4] **Sori, M.M.**, J.T. Perron, P. Huybers, and O. Aharonson (2011), *Preservation of orbital signals in the Martian polar layered deposits: A statistical approach*, 5th International Mars Polar Science conference, 6063.
- [3] **Sori, M.M.** and M.T. Zuber (2011), *Investigation of the relationship between subsurface structure and crater morphology of lunar impact craters from Lunar Orbiter Laser Altimeter (LOLA) observations*, LPSC 42nd, 2694.
- [2] **Sori, M.M.**, J.T. Perron, P. Huybers, and O. Aharonson (2011), *Distinguishing orbital signals from stochastic variability in the martian polar layered deposits*, LPSC 42nd, 2461.
- [1] **Sori, M.M.** and M.T. Zuber (2010), *Preliminary measurement of depth-to-diameter ratios of lunar craters in the transition regime between complex craters and multiringed basins*, LPSC 41st, 2202.

CONFERENCE PARTICIPATION (co-authored)

[48] Miller, K.E., J.C. Castillo-Rogez, J.R. Brophy, M. Bland, D. Buczkowski, R. Grimm, A. Hendrix, T. Prettyman, L. Quick, C. Raymond, J. Scully, **M.M. Sori**, T. Titus, Y. Sekine, D. Williams, H. Yano, and M. Zolensky (2020), *Ceres Planetary Mission Concept Study: Exploration of Ceres' habitability*, AAS-DPS Meeting 52nd.

[47] Raymond, C.A., J.C. Castillo, A. Ermakov, R.R. Fu, R.S. Park, O. Ruesch, **M.M. Sori**, and L.C. Quick (2020), *Brines on Ceres: Origins and transport processes*, AGU Fall Meeting.

[46] Egea-González, I., P.C. Lois, A. Jiménez-Díaz, **M.M. Sori**, A.M. Bramson, and J. Ruiz (2020), *The stability of liquid-water below the south polar cap of Mars*, EPSC 2020-841.

[45] Cook, C.W., S. Byrne, and **M.M. Sori** (2020), *Deformation of the banded terrain of Hellas Planitia, Mars*, LPSC 51st, 1540.

[44] C.M. Elder, T.A. Nordheim, D.A. Patthoff, E. Leonard, R.J. Cartwright, C. Cochrane, C. Paranicas, M. Tiscareno, A. Masters, D. Hemingway, **M.M. Sori**, H. Cao, R.T. Pappalardo, B.J. Buratti, I. De Pater, W.M. Grundy, M. Showalter, W. Kurth, I. Jun, J.I. Moses, K.L. Aplin, and J. Casani (2020), *Uranus magnetosphere and moons investigator (UMaMI)*, LPSC 51st, 2277.

[43] J.C. Castillo-Rogez, M.T. Bland, D.L. Buczkowski, A.R. Hendrix, K.E. Miller, T.H. Prettyman, L.C. Quick, J.E.C. Scully, Y. Sekine, **M.M. Sori**, T. Titus, D.A. Williams, H. Yano, M. Zolensky, C.A. Raymond, J. Brophy, W. Frazier, G. Lantoine, B.G. Lee, and M.S. Kelley (2020), *NASA planetary mission concept study: Assessing dwarf planet Ceres' past and present habitability potential*, LPSC 51st, 1790.

[42] Scully, J.E.C., S.R. Baker, J.C. Castillo-Rogez, D.L. Buczkowski, D.A. Williams, and **M.M. Sori** (2020), *Potential landing sites for a future Ceres lander*, LPSC 51st, 1617.

[41] Castillo-Rogez, J.C., M. Melwani Daswani, **M.M. Sori**, N.T. Stein, B.L. Ehlmann, A.I. Ermakov, and C.A. Raymond (2020), *Rock thermal metamorphism*

as a late source of fluids and heat to the hydrospheres of volatile-rich bodies, LPSC 51st, 2987.

[40] Wilner, J.A., A.J. Evans, R.E. Milliken, and **M.M. Sori** (2020), *Spectroscopy of domes on Ceres and implications for emplacement*, LPSC 51st, 2798.

[39] Bramson, A.M., L.M. Carter, G.W. Patterson, L.M. Jozwiak, G.A. Morgan, **M.M. Sori**, C.A. Nypaver, and J.T.S. Cahill (2020), *Heterogeneities in composition and burial depth of the lunar Schiller-Schickard cryptomare*, LPSC 51st, 1353.

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