AGU ADVANCING EARTH AND SPACE SCIENCE | Planetary Sciences

March 2023 Newsletter

Greetings from Your Planetary Sciences Section Leadership!

With the start of 2023 came a change in leadership of the AGU Planetary Sciences Section. Michael Mischna has stepped down from his role as President, and I have taken on that role. Wendy Calvin is the new President-Elect, and Sarah Hörst is our new Section Secretary, succeeding Jenny Whitten.

Michael and Jenny have played crucial roles in the success of our Section, and we've been lucky to have them work on our behalf. Thank you, Michael and Jenny!

Together with Wendy and Sarah, I'm excited about our plans for the Section for the next two years. We'll continue working to increase access to Fall Meeting by expanding our student and caregiver grant offerings. We'll start to showcase the work of early-career Planetary Sciences members via this newsletter, and we'll also stand up a new effort to engage with Section members to best determine how AGU can serve your needs as planetary scientists. (Oh, and we'll update the Planetary Sciences Section website, too.)

In the meantime, if you have questions, concerns, or comments, don't hesitate to get in touch. You can reach me at paul.byrne@wustl.edu. If you have any deadlines, events or announcements you would like to share, please email Sarah Hörst at sarah.horst@jhu.edu.

I and your Planetary Sciences Section team look forward to hearing from you!

Paul

Paul Byrne, President
Wendy Calvin, President-Elect
Sarah Hörst, Secretary
Emma Dahl, Early Career representative
An Li, Student representative
Michael Mischna, Past President

Upcoming Deadlines & Events

Upcoming Deadlines

- **20–24 March 2023:** PLANET-ESLAB-2023 Understanding Planets in the Solar System and Beyond
- **27–30 March 2023:** Fifth Extreme Precision Radial Velocities (EPRV5) Conference
- **4-5 April 2023:** The First Steps in a Bold New Era of Human Discovery: Candidate Artemis III Landing Sites
- **10-15 April 2023:** Protostars and Planets VII
- **11-12 April 2023:** MEPAG Hybrid Meeting #40
- **16-21 April 2023:** 5th COSPAR Symposium: Space Science with Small Satellites
- **18-20 April 2023:** 4th Workshop on Thermal Models for Planetary Science
- **23-28 April 2023:** European Geosciences Union General Assembly 2023
- **24-25 April 2023:** Lunar Surface Innovation Consortium (LSIC) Spring Meeting
- **24-30 April 2023:** 2023 International Conference of Deep Space Sciences
- **25-27 April 2023:** Extraterrestrial Materials Analysis Group (Spring Meeting)
- **26 April 26 2023:** Lunar Surface Innovation Consortium (LSIC) Funding Workshop

Planetary Sciences Announcements/Updates

#1) AGU HONORS | Nominations due Wednesday 12 April 2023

Reward excellence in scientific research, education and outreach by nominating a colleague for an AGU Honor. This year features three new honors – two focused on Diversity, Equity and Inclusion; and one on Open Science. Honor a colleague today and submit a nomination by 12 April.

#2) The NASA/JPL-CALTECH 2023 PLANETARY SCIENCE SUMMER SCHOOL

11 May–4 August / 25 May–18 August, 2023 | Applications due Monday 27 March 2023

The NASA Planetary Science Summer School at JPL is a 3-month-long career development experience for doctoral students, recent Ph.D.s, postdocs and junior faculty who have a strong interest in science-driven robotic space exploration missions. Participants learn the process of

developing a hypothesis-driven robotic space mission in a concurrent engineering environment while getting an in-depth, first-hand look at mission design, life cycle, costs, schedule and the trade-offs inherent in each.

Program Manager: Leslie Lowes

Website

#3) AGU JOURNAL OF GEOPHYSICAL RESEARCH: PLANETS PUBLICATIONS, JANUARY ISSUE

Journal of Geophysical Research: Planets, Volume 128, Issue 1
https://agupubs.onlinelibrary.wiley.com/toc/21699100/2023/128/1

Articles starting with (OA) are published with open access

1. (OA) Hydration of a Clay-Rich Unit on Mars, Comparison of Orbital Data to Rover Data, by S. Czarnecki, C. Hardgrove, R. E. Arvidson, M. N. Hughes, M. E. Schmidt, T. Henley, L. M. Martinez Sierra, I. Jun, M. Litvak, I. Mitrofanov, J. Lightholder, https://doi.org/10.1029/2021JE007104
2. (OA) Constraints on Moon's Orbit 3.2 Billion Years Ago From Tidal Bundle Data, by Tom Eulenfeld, Christoph Heubeck, https://doi.org/10.1029/2022JE007466
3. (OA) Mars 2020 Perseverance Rover Studies of the Martian Atmosphere Over Jezero From Pressure Measurements, by A. Sánchez-Lavega, T. del Rio-Gaztelurrutia, R. Hueso, M. de la Torre Juárez, G. M. Martínez, A.-M. Harri, M. Genzer, M. Hieta, J. Polkko, J. A. Rodríguez-Manfredi, M. T. Lemmon, J. Pla-García, D. Toledo, A. Vicente-Retortillo, D. Viúdez-Moreiras, A. Munguira, L. K. Tamppari, C. Newman, J. Gómez-Elvira, S. Guzewich, T. Bertrand, V. Apéstigue, I. Arruego, M. Wolff, D. Banfield, I. Jaakonaho, T. Mäkinen, https://doi.org/10.1029/2022JE007480
4. The Geology of Eden Patera, a Type-Example of Plains Style Caldera Complexes on Mars, by Yin Yau Yoyo Chu, Joseph R. Michalski, A. Alexander G. Webb, https://doi.org/10.1029/2022JE007337
5. Geomorphological Map of the Soi Crater Region on Titan, by A. M. Schoenfeld, A. Solomonidou, M. J. Malaska, R. M. C. Lopes, S. P. D. Birch, S. Le Mouélic, M. Florence, T. Verlander, S. D. Wall, C. Elachi, https://doi.org/10.1029/2022JE007499
6. (OA) Compositions and Interior Structures of the Large Moons of Uranus and Implications for Future Spacecraft Observations, by Julie Castillo-Rogez, Benjamin Weiss, Chloe Beddingfield, John Biersteker, Richard Cartwright, Allison Goode, Mohit Melwani Daswani, Marc Neveu, https://doi.org/10.1029/2022JE007432
7. A Two-Martian Years Survey of the Water Vapor Saturation State on Mars Based on ACS NIR/TGO Occultations, by Anna Fedorova, Franck Montmessin, Alexander Trokhimovskiy, Mikhail Luginin, Oleg Korablev, Juan Alday, Denis Belyaev, James Holmes, Franck Lefevre, Kevin Olsen, Andrey Patrakeev, Alexey Shakun, https://doi.org/10.1029/2022JE007348

8. (OA) A Reevaluation of Cryolava Flow Evolution: Assumptions, Physical Properties, and Conceptualization, by Aaron A. Morrison, Alan G. Whittington, Karl L. Mitchell, https://doi.org/10.1029/2022JE007383
9. Thrust Faults Bound an Elevated Mantle Plug Beneath Several Lunar Basins, by Matthew S. Collins, Paul K. Byrne, Christian Klimczak, Erwan Mazarico, https://doi.org/10.1029/2022JE007682
10. Thermal Balance and Water Ice Sublimation on the Surface of Hyperactive Comet 103P/Hartley 2, by Yuxian Yue, Jiancen Liu, Xiaohui Wang, https://doi.org/10.1029/2022JE007329
11. (OA) Hydrothermal Alteration of Ultramafic Rocks in Ladon Basin, Mars—Insights From CaSSIS, HiRISE, CRISM, and CTX, by Daniel Mège, Joanna Gurgurewicz, Matteo Massironi, Riccardo Pozzobon, Gloria Tognon, Maurizio Pajola, Livio L. Tornabene, Alice Lucchetti, Beatrice Baschetti, Joel M. Davis, Ernst Hauber, Barbara De Toffoli, Sylvain Douté, Laszlo Keszthelyi, Lucia Marinangeli, Jason Perry, Antoine Pommerol, Loredana Pompilio, Angelo Pio Rossi, Frank Seelos, Francesco Sauro, Ruth Ziethe, Gabriele Cremonese, Nicolas Thomas, https://doi.org/10.1029/2022JE007223
12. Reflectance of Jezero Crater Floor: 1. Data Processing and Calibration of the Infrared Spectrometer (IRS) on SuperCam, by C. Royer, T. Fouchet, L. Mandon, F. Montmessin, F. Poulet, O. Forni, J. R. Johnson, C. Legett, S. Le Mouélic, O. Gasnault, C. Quantin-Nataf, P. Beck, E. Dehouck, E. Clavé, A. M. Ollila, C. Pilorget, P. Bernardi, J.-M. Reess, P. Pilleri, A. Brown, R. T. Newell, E. Cloutis, S. Maurice, R. C. Wiens, The SuperCam Team, https://doi.org/10.1029/2022JE007481
13. MAVEN/NGIMS Dayside Exospheric Temperatures Over Solar Cycle and Seasons: Role of Dayside Thermal Balances in Regulating Temperatures, by S. W. Bougher, M. Benna, M. Elrod, K. Roeten, E. Thiemann, https://doi.org/10.1029/2022JE007475
14. (OA) Revisiting Atmospheric Features of Mars Orbiter Laser Altimeter Data Using Machine Learning Algorithms, by Vincent Caillé, Anni Määttänen, Aymeric Spiga, Lola Falletti, https://doi.org/10.1029/2022JE007384
15. Long-Lived and Continual Volcanic Eruptions, Tectonic Activity, Pit Chains Formation, and Boulder Avalanches in Northern Tharsis Region: Implications for Late Amazonian Geodynamics and Seismo-Tectonic Processes on Mars, by Vivek Krishnan, P. Senthil Kumar, https://doi.org/10.1029/2022JE007511
16. Cryogenic Sulfuric Weathering and Challenges for Preserving Iron-Rich Olivine on Cold and Icy Mars, by Xiao-Wen Yu, Yu-Yan Sara Zhao, Yanxue Wu, Chao Qi, Dongdong Li, Honglei Lin, Shiling Yang, Jianzhong Liu, Xiongyao Li, https://doi.org/10.1029/2022JE007593
17. Influence of Target Properties on Wall Slumping in Lunar Impact Craters Within the Simple-To-Complex Transition, by M. Chandnani, R. R. Herrick, https://doi.org/10.1029/2022JE007369
18. Martian Meteoric Mg+: Atmospheric Distribution and Variability From MAVEN/IUVS, by M. M. J. Crismani, R. M. Tyo, N. M. Schneider, J. M. C. Plane, W. Feng, J. D. Carrillo-Sánchez, G. L. Villanueva, S. Jain, J. Deighan, S. Curry, https://doi.org/10.1029/2022JE007315
19. Mars' External Magnetic Field as Seen From the Surface With InSight, by A. Mittelholz, C. L. Johnson, M. Fillingim, R. E. Grimm, S. Joy, S. N. Thorne, W. B. Banerdt, https://doi.org/10.1029/2022JE007616

20. (OA) Diurnal and Seasonal Variations of Aerosol Optical Depth Observed by MEDA/TIRS at Jezero Crater, Mars, by Michael D. Smith, Germán M. Martínez, Eduardo Sebastián, Mark T. Lemmon, Michael J. Wolff, Victor Apéstigue, Ignacio Arruego, Daniel Toledo, Daniel Viúdez-Moreiras, Jose Antonio Rodriguez-Manfredi, Manuel de la Torre Juarez, https://doi.org/10.1029/2022JE007560
21. Solar Rotation Effects in Earth's and Mars' Thermospheric Densities as Revealed by Concurrent MAVEN, Swarm-C, and GOES Observations, by F. Gasperini, J. Hughes, E. M. B. Thiemann, https://doi.org/10.1029/2022JE007431
22. (OA) Dust Devil Frequency of Occurrence and Radiative Effects at Jezero Crater, Mars, as Measured by MEDA Radiation and Dust Sensor (RDS), by D. Toledo, V. Apéstigue, I. Arruego, M. Lemmon, L. Gómez, F. Montoro, R. Hueso, C. Newman, M. Smith, D. Viudez-Moreiras, G. Martínez, R. Lorenz, A. Vicente-Retortillo, A. Sanchez-Lavega, M. de la Torre Juarez, J. A. Rodriguez-Manfredi, I. Carrasco, M. Yela, J. J. Jimenez, E. García-Menendez, S. Navarro, F. J. Gomez-Elvira, A.-M. Harri, J. Polkko, M. Hieta, M. Genzer, N. Murdoch, E. Sebastian, https://doi.org/10.1029/2022JE007494
23. HCO+ Dissociative Recombination: A Significant Driver of Nonthermal Hydrogen Loss at Mars, by Bethan S. Gregory, Rodney D. Elliott, Justin Deighan, Hannes Gröller, Michael S. Chaffin, https://doi.org/10.1029/2022JE007576
24. Assessing Controls on the Incomplete Draining of Martian Open-Basin Lakes, by Timothy A. Goudge, Caleb I. Fassett, Marianne Coholich, Emily R. Bamber, https://doi.org/10.1029/2022JE007443
25. (OA) The Curiosity Rover's Exploration of Glen Torridon, Gale Crater, Mars: An Overview of the Campaign and Scientific Results, by Kristen A. Bennett, Valerie K. Fox, Alex Bryk, William Dietrich, Christopher Fedo, Lauren Edgar, Michael T. Thorpe, Amy J. Williams, Gregory M. Wong, Erwin Dehouck, Amy McAdam, Brad Sutter, Maëva Millan, Steven G. Banham, Candice C. Bedford, Thomas Bristow, Abigail Fraeman, Ashwin R. Vasavada, John Grotzinger, Lucy Thompson, Catherine O'Connell-Cooper, Patrick Gasda, Amanda Rudolph, Robert Sullivan, Ray Arvidson, Agnes Cousin, Briony Horgan, Kathryn M. Stack, Allan Treiman, Jennifer Eigenbrode, Gwénaël Caravaca, https://doi.org/10.1029/2022JE007185

#4) Recent Planetary Articles in AGU's Geophysical Research Letters

All GRL articles are now published with open access

1. New Types of Electron Pitch Angle Distributions on Mars: Funnel and Skirt Distributions, by Z. Z. Guo, H. S. Fu, J. B. Cao, Y. Y. Liu, Y. Xu, Z. Wang, Y. Yu, J. Wang, G. Chen, https://doi.org/10.1029/2022GL101874
2. New Detections of Feldspar-Bearing Volcanic Rocks in the Walls of Valles Marineris, Mars, by Jessica Flahaut, Vincent Payet, Frank Fueten, Martin Guitreau, Marie Barthez, Gen Ito, Pascal Allemand, https://doi.org/10.1029/2022GL100772
3. Gigantic Vortices From Barotropic Instability Observed in the Atmosphere of Venus, by Takeshi Horinouchi, Takehiko Satoh, Javier Peralta, https://doi.org/10.1029/2022GL101633

4. Two Types of Martian Magnetotail Current Sheets: MAVEN Observations of Ion Composition, by X. Z. Li, Z. J. Rong, M. Fraenz, C. Zhang, L. Klinger, Z. Shi, J. W. Gao, M. W. Dunlop, Y. Wei, https://doi.org/10.1029/2022GL102630
5. Modeling the Time-Dependent Magnetic Fields That BepiColombo Will Use to Probe Down Into Mercury's Mantle, by S. Zomerdijk-Russell, A. Masters, H. Korth, D. Heyner, https://doi.org/10.1029/2022GL101607
6. Experimentally Shock-Induced Melt Veins in Basalt: Improving the Shock Classification of Eucrites, by Haruka Ono, Kosuke Kurosawa, Takafumi Niihara, Takashi Mikouchi, Naotaka Tomioka, Junko Isa, Hiroyuki Kagi, Takuya Matsuzaki, Hiroshi Sakuma, Hidenori Genda, Tatsuhiro Sakaiya, Tadashi Kondo, Masahiro Kayama, Mizuho Koike, Yuji Sano, Masafumi Murayama, Wataru Satake, Takafumi Matsui, https://doi.org/10.1029/2022GL101009
7. A “Floatilla” of Airborne Seismometers for Venus, by Siddharth Krishnamoorthy, Daniel C. Bowman, https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2022GL100978
8. Locating the Largest Event Observed on Mars With Multi-Orbit Surface Waves, by M. P. Panning, W. B. Banerdt, C. Beghein, S. Carrasco, S. Ceylan, J. F. Clinton, P. Davis, M. Drilleau, D. Giardini, A. Khan, D. Kim, B. Knapmeyer-Endrun, J. Li, P. Lognonné, S. C. Stähler, G. Zenhäusern, https://doi.org/10.1029/2022GL101270
9. From Schrödinger to Von Kármán: An Intriguing New Geological Structure Revealed by the Chang'e-4 Lunar Penetrating Radar, by Huaqing Cao, Yi Xu, Luyuan Xu, Ling Zhang, Roberto Bugiolacchi, Feng Zhang, https://doi.org/10.1029/2022GL101413
10. A Large New Crater Exposes the Limits of Water Ice on Mars, by Colin M. Dundas, Michael T. Mellon, Liliya V. Posiolova, Katarina Miljković, Gareth S. Collins, Livio L. Tornabene, Vidhya Ganesh Rangarajan, Matthew P. Golombek, Nicholas H. Warner, Ingrid J. Daubar, Shane Byrne, Alfred S. McEwen, Kimberly D. Seelos, Donna Viola, Ali M. Bramson, Gunnar Speth, https://doi.org/10.1029/2022GL100747
11. Different Martian Crustal Seismic Velocities Across the Dichotomy Boundary From Multi-Orbiting Surface Waves, by Jiaqi Li, Caroline Beghein, Philippe Lognonné, Scott M. McLennan, Mark A. Wieczorek, Mark P. Panning, Brigitte Knapmeyer-Endrun, Paul Davis, W. Bruce Banerdt, https://doi.org/10.1029/2022GL101243
12. Io Hot Spot Distribution Detected by Juno/JIRAM, by F. Zambon, A. Mura, R. M. C. Lopes, J. Rathbun, F. Tosi, R. Sordini, R. Noschese, M. Ciarniello, A. Cicchetti, A. Adriani, L. Agostini, G. Filacchione, D. Grassi, G. Piccioni, C. Plainaki, G. Sindoni, D. Turrini, S. Brooks, C. Hansen-Koharcheck, S. Bolton, https://doi.org/10.1029/2022GL100597