The MERCURY NEWSLETTER

by the Mercury Exploration Assessment Group (MExAG)

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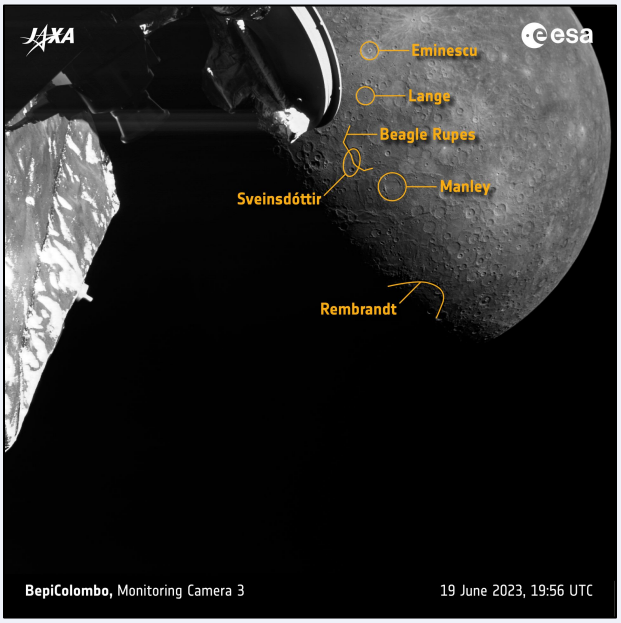
Please send Mercury community announcements and calendar items for inclusion in our next quarterly newsletter to mexag.sc@gmail.com.

MERCURY SCIENCE and EXPLORATION NEWS

- The MExAG Steering Committee has an open position for a **Geochemistry Discipline Member**. Details of this position and the application are found at this link. Applications are due 18 August 2023.
- The Mercury QuickMap tool has been updated with several new layers of information. This interactive web interface is resource for visualizing Mercury maps.
- Notices of Intent for submitting proposals to NASA's Discovery Data Analysis Program (DDAP) are due 6 September 2023. Proposals using both MESSENGER and BepiColombo data are relevant to the call.
- Congratulations to the BepiColombo team for its successful third flyby of Mercury on 19 June 2023! Follow along the journey with @BepiColombo



A "geologic bounty" seen during BepiColombo's recent Mercury flyby includes the newly named Manley crater – named in honor of Jamaican artist and art educator Edna Manley (1900-1987).

Image credit: ESA

WELCOME OUR NEW STEERING COMMITTEE MEMBERS

Mallory Kinczyk
Geology Discipline Member, 2023-2026
Johns Hopkins University Applied Physics Laboratory, Laurel, MD, USA

Mallory is a planetary geologist and uses geologic mapping and spatial statistics to gain insight into the evolution of Mercury's impact craters and heavily cratered terrains. She is also leading the effort to construct the US Geological Survey's global geological map of Mercury.

Jim Raines
Magnetosphere Discipline Member, 2023-2026
University of Michigan, Ann Arbor, MI, USA

Jim is a space plasma physicist whose work centers around building and operating plasma ion composition instruments. At Mercury, he is working to understand the role of planetary ions and their dynamics in Mercury's magnetosphere.

Megan Mouser
Early Career Member, 2023-2026
Carnegie Institute of Washington, Washington, DC, USA

Megan is a postdoctoral fellow at the Earth and Planets Laboratory. She utilizes high-pressure, high-temperature experimental techniques to understand the petrologic evolution of Mercury and other terrestrial bodies.

Océane Barraud
International Early Career Member, 2023-2026
Institute of Planetary Research, German Aerospace Center, Berlin, Germany

Océane uses spectroscopic observations and laboratory measurements to study Mercury's surface processes and composition. She is mainly interested in geological processes associated with volatile species: hollows and explosive volcanism.

TRANSITIONS WITHIN THE STEERING COMMITTEE

Carolyn Ernst
Chair, 2023-2025
Johns Hopkins University Applied Physics Laboratory, Laurel, MD, USA

Stephen Parman
Vice-Chair, 2023-2025
Brown University, Providence, RI, USA

Steven A. Hauck, II
Past-Chair, 2023-2024
Case Western Reserve University, Cleveland, OH, USA

Carolyn Ernst is the new **Chair** and **Steven Hauck** has rotated into the **Past-Chair** position. **Stephen Parman** has transitioned to **Vice-Chair** from Geochemistry Discipline Member.

The MExAG Steering Committee and Mercury community are incredibly thankful for the years of service **Gina DiBraccio**, **Christian Klimczak**, and **Ariel Deutsch** have volunteered! These three committee members rotated off the SC in June 2023.

MERCURY EARLY CAREER SPOTLIGHT

Annie Lennox
PhD Student
School of Physical Sciences, Open University, England
LinkedIn and Twitter

Annie is producing the first complete geological map of Mercury's south polar region, H15, and is researching lobate ejecta deposits, small-scale effusive volcanics, and DEI within space science.

Indhu Varatharajan
Postdoctoral Associate
Center for Planetary Exploration, Department of Geosciences, Stony Brook University, USA
Google Scholar

Indhu's work is focused on using machine learning approaches to characterize the surface mineralogy of Mercury by combining laboratory and remote spectral datasets.

Rui Xu
PhD Student
Planetary Environmental and Astrobiological Research Laboratory, Sun Yet-sen University, China
ORCID

Rui uses MESSENGER data to investigate the composition of dark Mercurian materials and model the origin of a curved ray formed by the Hokusai crater.

If you would like to be highlighted in our Spotlight, or know of an Early Career Researcher focusing on Mercury science and/or exploration, please email us at mexag.sc@gmail.com.

UPCOMING MEETINGS with MERCURY-RELATED CONTENT

Culturally Inclusive Planetary Engagement https://www.lpi.usra.edu/planetary-reach/workshops/	Workshops held throughout 2023. The next is 17-19 August 2023 in Miami, FL, USA.
DPS-EPSC 2023 Joint Meeting https://aas.org/meetings/dps55 Early registration ends 17 August 2023	1-6 October 2023 Hybrid: Virtual + San Antonio, TX, USA
GSA 2023 Partnered with Planetary Geologic Mapping https://community.geosociety.org/gsa2023/home Early registration ends 13 September 2023	15–18 October 2023 Pittsburgh, PA, USA
AGU Fall Meeting 2023 https://www.agu.org/Fall-Meeting Registration opens 22 August 2023	11–15 December 2023 Hybrid: Virtual + San Francisco, CA, USA
The Fourth MExAG Annual Meeting Stay tuned for updates! Planning is underway for an early February 2024 meeting	

RECENT MERCURY-RELATED PUBLICATIONS

View full list at https://www.lpi.usra.edu/mexag/publications/

2023 (as of August, new additions highlighted)

Abbot, D. S., Hernandez, D. M., Hadden, S., Webber, R. J., Afentakis, G. P., & Weare, J., (2023), **Simple Physics and Integrators Accurately Reproduce Mercury Instability Statistics**, The Astrophysical Journal 944, 2. https://doi.org/10.3847/1538-4357/acb6ff.

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Brown, G., & Hanno, R., (2023), **General relativistic precession and the long-term stability of the solar system**, Monthly Notices of the Royal Astronomical Society. https://doi.org/10.1093/mnras/stad719.

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Caminiti, E., Doressoundiram, A., Besse, S., & Wright, J., (2023), **A Spectral Study of the Caloris Basin on Mercury and the Origin of Associated Volcanic Smooth Plains**, Journal of Geophysical Research: Planets, 128, 5. https://doi.org/10.1029/2022JE007685.

Cardinale, M., Vaz, D. A., D'Incecco, P., Mari, N., Filiberto, J., et al., (2023), **Morphostructural mapping of Borealis Planitia, Mercury**, Journal of Maps 19, 1. https://doi.org/10.1080/17445647.2023.2223637.

Chambers, J., (2023), **Making the Solar System**, The Astrophysical Journal 944, 2. https://doi.org/10.3847/1538-4357/aca96f.

Charbonnier, G., Boulila, S., Spangenberg, J. E., Vermeulen, J., & Galbrun, B., (2023), **Astrochronology of the Aptian stage and evidence for the chaotic orbital motion of Mercury**, Earth and Planetary Science Letters 610. https://doi.org/10.1016/j.epsl.2023.118104.

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Deng, Q., Xiao, Z., Zhong, Z., Ye, M., Li, F., et al., (2023), L**ithospheric Elastic Thickness Beneath the Caloris Basin: Implications for the Thermal Structure of Mercury**, Journal of Geophysical Research: Planets, 128, 5. https://doi.org/10.1029/2023JE007796.

Edvardsson, S., (2023), **Relativistic gravitational force**, Celestial Mechanics and Dynamical Astronomy, 135, 3. https://doi.org/10.1007/s10569-023-10138-3.

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Griton, L., Issautier, K., Moncuquet, M., Pantellini, F., Kasaba, Y., & Kojima, H., (2023), **Electron density revealing the boundaries of Mercury's magnetosphere via serendipitous measurements by SORBET during BepiColombo first and second Mercury swing-bys**, Astronomy & Astrophysics 670. https://doi.org/10.1051/0004-6361/202245162.

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Morrissey, L., Schaible, M., Tucker, O., Szabo, P., Bacon, G., et al., (2023), **Establishing a Best Practice for SDTrimSP Simulations of Solar Wind Ion Sputtering**, The Planetary Science Journal 4, 4. https://doi.org/10.3847/PSJ/acc587.

Mouser, M. D., & Dygert, N., (2023), **On the Potential for Cumulate Mantle Overturn in Mercury**, Journal of Geophysical Research: Planets, 128, 7. https://doi.org/10.1029/2023JE007739.

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Nevskii, D. V., Lavrukhin, A. S., & Alexeev, I. I., (2023), **Automatic Detection of Bow Shock and Magnetopause Positions at Mercury's Magnetosphere Using MESSENGER Magnetometer Data**, Cosmic Research, 61, 3. https://doi.org/10.1134/S0010952522600081.

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Teolis, B., Sarantos, M., Schorghofer, N. et al., (2023), **Surface Exospheric Interactions**, Space Sci Rev 219, 4. https://doi.org/10.1007/s11214-023-00951-5.

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Weber, I., Reitze, M. P., Morlok, A., Stojic, A. N., Hiesinger, H., et al. (2023), **Mid-IR spectral properties of different surfaces of silicate mixtures before and after excimer laser irradiation**, Icarus, 404. https://doi.org/10.1016/j.icarus.2023.115683.

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Additional Mercury Publications?
Let us know! Send a note to mexag.sc@gmail.com for inclusion in our quarterly newsletter.