Malliband C. C.  Rothery D. A.  Balme M. R.  Conway S. J.

*1:3M Geological Mapping of the Derain(H-10) Quadrangle of Mercury* [#6091]

We are making a high resolution geological map of the Derain quadrangle of Mercury. This is part of a coordinated project to create a global set of geological maps for BepiColombo.

Mangano V.  Milillo A.  Massetti S.  Orsini S.

*New Results of Statistical Analysis of the Na Exosphere Earth-based Observations of Mercury*

The THEMIS database of Na exosphere is re-analyzed in view of the most recent papers in the field of both magnetosphere and plasma interactions.


*Spectroscopy of Synthetic Planetary Analogs for MERTIS on the BepiColombo Mission* [#6078]

We present an overview of our work on a database of mid-infrared spectra of synthetic analogs for the MERTIS instrument on the BepiColombo mission.

Neumann G. A.  Sun X.  Cao A.  Deutsch A. N.  Head J. W.

*Reflectance of Mercury’s Polar Regions:  Calibration and Implications for Mercury’s Volatiles* [#6115]

Calibration of laser altimeter reflectances under widely varying conditions is supported by laboratory data from an engineering simulator to address the distribution of volatile deposits in Mercury’s polar cold traps.

Peterson G. A.  Johnson C. L.  Byrne P. K.  Phillips R. J.

*Distribution of Areal Strain on Mercury:  Insights into the Interaction of Volcanism and Global Contraction* [#6056]

Wrinkle ridges within volcanic plains on Mercury host just as much shortening strain as lobate scarps and high relief ridges, suggesting that wrinkle ridges have accommodated much more strain from global contraction than previously thought.


*The MIA (Mercury Ion Analyzer) Instrument Onboard Bepi Colombo MMO (Mercury Magnetospheric Orbiter)* [#6005]

Current status and future observation plan of MPPE-MIA (Mercury Plasma Particle Experiment — Mercury Ion Analyzer) on BepiColombo/MMO will be presented.

Pegg D. L.  Rothery D. A.  Balme M. R.  Conway S. J.

*Geological Mapping of the Debussy Quadrangle (H-14) Preliminary Results* [#6021]

We present the current status of geological mapping of the Debussy quadrangle. Mapping underway as part of a program to map the entire planet at a scale of 1:3M using MESSENGER data in preparation for the BepiColombo mission.

Schmude R. W. Jr.


I review brightness measurements of Mercury made since the 1960s. New J and H band brightness results are also presented.

Shread E. E.  Chabot N. L.

*Investigating Mercury’s South Polar Deposits with High-Resolution Determination of Illumination Conditions* [#6008]

High-resolution images acquired by MESSENGER’s Mercury Dual Imaging System were used to investigate the illumination conditions of Mercury’s south polar deposits and to map the areas of permanent shadow in the region to compare with radar imaging.
Stark A. Oberst J. Preusker S. Steinbrügge G. Hussmann H. 
**Mercury’s Reference Frames After the MESSENGER Mission** [#6114]
We provide an overview of Mercury’s reference frames based on MESSENGER observations. We discuss the dynamical, the principal-axes, the ellipsoid, as well as the cartographic frame, which was adopted for MESSENGER data products.

**Placing Tighter Constraints on Mercurian Surface Fe Abundances Through the Synthesis and Characterization of Fe-Poor Silicates** [#6011]
We have crystallized and characterized synthetic Fe-poor minerals to make advancements towards reconciling the discrepancy between the lack of a 1-µm absorption band observed on the surface of Mercury, despite wt% levels of Fe observed by XRS.

Varatharajan I. Maturilli A. Helbert J. Hiesinger H. 
**Emissivity of Ca-Sulfide in Mid-Infrared Under Simulated Extreme Thermal Environment of Mercury** [#6065]
Spectral evolution of emissivity of calcium sulfides in mid-infrared is studied for four Mercury daytime temperature cycles under simulated extreme thermal environment of Mercury.

**Nano-FTIR Spectroscopy to Investigate the Silicate Mineralogy of Mercury Analogues: Supporting MERTIS Onboard BepiColombo Mission** [#6067]
Nano-FTIR Spectroscopy is used to investigate the silicate mineralogy of synthetic Mercury analogues produced under reduced conditions representing different Mercury terrains. The study will support MERTIS payload onboard BepiColombo mission.

Wilbur Z. E. Udry A. McCubbin F. M. Vander Kaaden K. E. Rahib R. R. McCoy T. J. 
**Aubrite and Enstatite Chondrite Impact Melt Meteorites: Analogs to Mercury?** [#6034]
We study aubrite and enstatite chondrite impact melt meteorites and compare these data to the mercurian surface data collected by MESSENGER to better understand the mineralogy of Mercury.

Wright J. Rothery D. A. Balme M. R. Conway S. J. 
**Geological Mapping of the Hokusai (H05) Quadrangle of Mercury: Status Update** [#6062]
We present the current working version of the first geological map of the Hokusai quadrangle of Mercury.

Wright J. Rothery D. A. Balme M. R. Conway S. J. 
**Candidate Constructional Volcanic Edifices on Mercury** [#6064]
We describe two candidate constructional volcanoes on Mercury and suggest how they may have formed on a planet whose effusive volcanism has overwhelmingly generated plains.

Aizawa S. Delcourt D. Terada N. 
**Sodium Ion Dynamics in the Magnetospheric Flanks of Mercury** [#6090]
We examine the particle transport via the Kelvin-Helmholtz instability by using simulation. The heavy ions of planetary origin such as Na+ may experience prominent nonadiabatic energization as they ExB drift across large-scale rolled up vortices.

**The Mercury Electron Analyzers Onboard the Bepi Colombo Mercury Magnetospheric Orbiter** [#6003]
Onboard the Bepi Colombo Mercury Magnetospheric Orbiter (MMO), the Mercury Electron Analyzers (MEA) sensors constitute the experiment dedicated to fast electron measurements between 3 and 25,500 eV.
Anzures B. A.  Parman S. W.  Milliken R. E.  Head J. W.

*Interior Volatile Reservoirs in Mercury* [#6113]

More measurements of 1) surface volatiles, and 2) pyroclastic deposits paired with experimental volatile analyses in silicate minerals can constrain conditions of melting and subsequent eruption on Mercury.

Besse S.  Benkhoff J.  Bentley M.  Cornet T.  Moissl R.  Munoz C.  Zender J.

*Mercury Science Objectives and Traceability Within the BepiColombo Project: Optimising the Science Output of the Next Mission to Mercury* [#6083]

The BepiColombo Science Ground Segment is developing, in collaboration with the instrument teams, targeted science traceability matrix of each instrument. They are defined in such a way that they can be tracked during the observation lifecycle.


*Spectroscopy of Minerals Analogs of Mercury Under the Hermean Conditions: The Effect of the Temperature* [#6043]

We present a preliminary study of the effects of the strong variations of temperature on minerals of the surface of Mercury. We measured a loose powder (75-100 µm) of plagioclase and 5 mm diameter pellets made with the same powder.

Daniels J. W.  Neish C. D.

*Impact Melt Emplacement on Mercury* [#6018]

This work proposes that fresh craters on rocky bodies may deposit impact melt externally ultimately according to the strength of its surface gravity, regardless of the body’s surface topography and melt abundance.


*The MSA Instrument (Mass Spectrum Analyzer) Onboard Bepi Colombo MMO (Mercury Magnetospheric Orbiter)* [#6002]

The paper describes the ion spectrometer that will be flown on Bepi Colombo MMO as part of the MPPE consortium and that will provide information on the magnetospheric plasma composition.

Deutsch A. N.  Head J. W.

*Production Function of Outgassed Volatiles on Mercury: Implications for Polar Volatiles on Mercury and the Moon* [#6121]

We are interested in the flux of volatiles delivered to the polar regions of Mercury and the Moon through time. We integrate the production functions for volatile delivery from impacts, solar wind, and volcanism, which we focus on initially.

Fastook J. L.  Head J. W.

*Cold-Based Glaciation on Mercury: Accumulation and Flow of Ice in Permanently-Shadowed Circum-Polar Crater Interiors* [#6059]

Examining the potential for dynamic flow of ice deposits in permanently-shadowed craters, it is determined that the cold environment of the polar craters yields very small velocities and deformation is minimal on a time scale of millions of years.


*The Making of the 1:3M Geological Map Series of Mercury: Status and Updates* [#6075]

A complete global series of 1:3M-scale maps of Mercury is being prepared in support to the ESA/JAXA BepiColombo mission. Currently, ~35% of Mercury has been mapped and ~55% of the planet will be covered soon by the maps in progress.
Goossens S. Mazarico E. Genova A. James P. B.  
High-Resolution Gravity Field Modeling for Mercury to Estimate Crust and Lithospheric Properties [#6048]
We estimate a gravity field model for Mercury using line-of-sight data to improve the gravity field model at short wavelengths. This can be used to infer crustal density and infer the support mechanism of the lithosphere.

Grava C. Livi S. A.  
Modeling of Metals in the Hermean Exosphere: Predictions for the Mass Spectrometer Strofio Onboard BepiColombo [#6039]
We modeled metals in Mercury’s exosphere with a Monte Carlo code. We predict altitude profiles of density for comparison with in situ measurements of Strofio mass spectrometer onboard BepiColombo.

Guzzetta L. Galluzzi V. Ferranti L. Palumbo P.  
Geologic Map of the Shakespeare Quadrangle (H03), Mercury [#6107]
A 1:3M geological map of the H03 Shakespeare quadrangle of Mercury has been compiled through photointerpretation of the MESSENGER images. The most prominent geomorphological feature is the Caloris basin, the largest impact crater on Mercury.

Ivanovski S. L. Milillo A. Kartalev M. Massetti S.  
Coupled Kelvin-Helmholtz and Tearing Mode Instabilities at the Mercury’s Magnetopause [#6074]
A MHD approach for numerical simulations of coupled Kelvin-Helmholtz and tearing mode instabilities has been applied to Mercury’s magnetopause and used to perform a physical parameters study constrained by the MESSENGER data.

Jozwiak L. M. Head J. W. Wilson L.  
Characterizing the Morphology, Distribution, and Formation Geometry of Mercury’s Pyroclastic Vents [#6088]
We present a final catalog of pyroclastic vents on Mercury, identifying 104 candidate pyroclastic vents. We then assess the vent distribution, morphologic variation, and probable formation geometries.

Kinczyk M. J. Prockter L. M. Denevi B. W. Ostrach L. R. Skinner J. A.  
A Global Geological Map of Mercury [#6123]
An update on mapping progress for the global geological map of Mercury.

Lucchetti A. Pajola M. Galluzzi V. Giacomini L. Carli C. Cremonese G. Marzo G. A. Massironi M. Roush T.  
Spectral Clustering and Geomorphological Analysis on Mercury Hollows [#6028]
Characterization of hollows located in different craters to understand whether there is a similar trend from a compositional point of view, and whether a possible correlation exists between spectral behavior of hollows and geomorphological units.