Wednesday, March 25, 2009
SPECIAL SESSION: MESSENGER AT MERCURY:
A GLOBAL PERSPECTIVE ON THE INNERMOST PLANET
8:30 a.m. Waterway Ballroom 4

Chairs: **Sean C. Solomon**
Brett Denevi

8:30 a.m. Solomon S. C. * Freed A. M. Hauck S. A. II Head J. W. III Kerber L. Phillips R. J. Robinson M. S. Watters T. R. Zuber M. T.
MESSENGER's Newly Global Perspective on Mercury: Some Implications for Interior Evolution **[#1750]**
MESSENGER's first two flybys of Mercury have revealed a planet with a richer history of magmatism, deformation, and impact basin modification than heretofore appreciated, placing new constraints on the planet's formation and interior evolution.

8:45 a.m. Purucker M. E. * Johnson C. L. Anderson B. J. Korth H. Uno H. Blewett D. T. Sabaka T. J. Solomon S. C. Head J. W.
Mercury's Internal Magnetic Field from MESSENGER **[#1277]**
The internal magnetic field at Mercury is overwhelmingly of core origin, although small-scale fields of crustal origin may yet be shown to exist. None of the craters profiled during the MESSENGER flybys exhibit any magnetic signature.

9:00 a.m. Zurbuchen T. H. * Raines J. M. Gloeckler G. Slavin J. A. Krimigis S. M. Killen R. M. Sprague A. L. McNutt R. L. Jr. Solomon S. C.
First Ion Plasma Measurements in the Mercury Magnetosphere **[#2141]**
This paper discusses results from the two 2008 MESSENGER flybys. It addresses the relative importance of surface sputtering, chemical sputtering and micrometeoroid impact for the creation of Mercury's ionized exosphere.

9:15 a.m. Vervack R. J. Jr.* McClintock W. E. Bradley E. T. Killen R. M. Sprague A. L. Mouawad N. Izenberg N. R. Kochte M. C. Lankton M. R.
MESSENGER Observations of Mercury's Exosphere: Discoveries and Surprises from the First Two Flybys **[#2220]**
The MESSENGER flybys have provided excellent opportunities to probe the tenuous exosphere of Mercury, have led to the discovery of magnesium, and have revealed unexpected and puzzling structure in the spatial distributions of several species.

9:30 a.m. Lawrence D. J. * Feldman W. C. Goldsten J. O. Solomon S. C.
Identification of Neutron Absorbing Elements on Mercury's Surface Using MESSENGER Neutron Data **[#1761]**
Thermal neutrons provide a sensitive measure of elements such as Fe, Ti, Gd, and Sm. We present MESSENGER Neutron Spectrometer data along with an initial modeling analysis; implications for the abundance of neutron absorbing elements are described.

9:45 a.m. Izenberg N. R. * McClintock W. E. Holsclaw G. M. Blewett D. T. Helbert J. Solomon S. C. MESSENGER Team
Resolved Ultraviolet to Infrared Reflectance Spectroscopy of Mercury from the Second MESSENGER Flyby **[#1663]**
MESSENGER's MASCS instrument obtained resolved reflectance spectra from the ultraviolet to near-infrared (115–1450 nm) during the second Mercury flyby, sampling a variety of geologic terranes and units.

10:00 a.m. Denevi B. W. * Robinson M. S. Blewett D. T. Domingue D. L. Head J. W. III McCoy T. J. McNutt R. L. Jr. Murchie S. L. Solomon S. C.
MESSENGER Global Color Observations: Implications for the Composition and Evolution of Mercury's Crust **[#2247]**
A near-global view of Mercury from MESSENGER provides the first opportunity to perform a planet-wide assessment of Mercury's major geologic units and their significance.

10:15 a.m. Ernst C. M. * Murchie S. L. Barnouin-Jha O. S. Robinson M. S. Denevi B. W.
Exposure of Red Material by Impact Craters on Mercury: Implications for Buried Plains Material **[#1900]**
Occurrences of the red unit associated with impact craters on Mercury are examined using MESSENGER data to determine their extent, burial depth, and origin. The examination of one small area on Mercury reveals a complex local stratigraphy.

10:30 a.m. Blewett D. T. * Kerber L. Head J. W. Denevi B. W. Robinson M. S. Murchie S. L. Gillis-Davis J. J. Solomon S. C.
Mercury Pyroclastics: Color, Morphology, and Volatile Content **[#1793]**
We examine potential pyroclastic deposits with Mariner 10 and MESSENGER images. The best candidates have high reflectance and red spectral slope. Eruption physics calculations place constraints on magma volatile content, and suggest 1000s of ppm CO.

10:45 a.m. Zuber M. T. * Farmer G. T. Hauck S. A. II Ritzer J. A. Phillips R. J. Solomon S. C. Smith D. E. Head J. W. III Neumann G. A. Robinson M. S. Watters T. R. Johnson C. L. Oberst J. Barnouin-Jha O. McNutt R. L. Jr.
Observations of Ridges and Lobate Scarps on Mercury from Messenger Altimetry and Imaging and Implications for Lithospheric Strain Accommodation **[#1813]**
Ridges and scarps profiled by the Mercury Laser Altimeter on MESSENGER display offsets that significantly exceed those of martian wrinkle ridges. The structures can be used to constrain the early lithospheric structure and thermal state of Mercury.

11:00 a.m. Smith D. E. * Zuber M. T. Phillips R. J. Solomon S. C. Lemoine F. G. Neumann G. A. Head J. W. III Torrence M. H.
Does Mercury Have Lunar-like Mascons? **[#1802]**
In 2008 MESSENGER conducted two flybys of Mercury and experienced greater perturbation than expected. We investigated the possibility of gravity anomalies associated with surface features being the cause.

11:15 a.m. Prockter L. M. * Watters T. R. Chapman C. R. Denevi B. W. Head J. W. III Solomon S. C. Murchie S. L. Barnouin-Jha O. S. Robinson M. S. Blewett D. T. Gillis-Davis J.
The Curious Case of Raditladi Basin **[#1758]**
Raditladi Basin was imaged by MESSENGER during its flyby of Mercury. The basin appears to be very young – perhaps less than 1 Ga – and exhibits unusual extensional troughs. The presence of the troughs is at odds with Raditladi's apparent youth.

11:30 a.m. Head J. W. III* Solomon S. C. McNutt R. L. Jr. Blewett D. T. Chapman C. R. Domingue D. L. Gillis-Davis J. J. Hawkins S. E. III Helbert J. Holsclaw G. M. Izenberg N. R. McClintock W. E. Merline W. J. Murchie S. L. Phillips R. J. Prockter L. M. Robinson M. S. Denevi B. W. Sprague A. L. Strom R. G. Vilas F. Watters T. R. Zuber M. T.
The MESSENGER Mission to Mercury: New Insights into Geological Processes and Evolution from the First Two Encounters **[#2198]**
The first two Mercury MESSENGER mission encounters imaged much of the surface unseen by Mariner 10, establishing the widespread nature of volcanism, the presence of pyroclastic deposits, and the volcanic filling of impact craters and basins.