Tuesday, March 20, 2012
POSTER SESSION I: MERCURY: TECTONICS, TOPOGRAPHY, AND IMPACT CRATERING
6:00 p.m. Town Center Exhibit Area

Elgner S. Oberst J. Perry M. E. Zuber M. T. Robinson M. S. Solomon S. C.
Analysis of Mercury Limb Profiles from MESSENGER Images: Results from Least-Squares Adjustments of Crossover Heights **[#1469]**
We have analyzed images of Mercury's limb obtained by MESSENGER's Mercury Dual Imaging System for studies of the planet's global shape.

Di Achille G. Popa C. Massironi M. Ferrari S. Giacomini L. Mazzotta Epifani E. Pozzobon R. Zusi M. Cremonese G. Palumbo P.
Mapping Mercury's Tectonic Features at the Terminator: Implications for Radius Change Estimates and Thermal History Models **[#2176]**
We mapped Mercury's tectonic features at the terminator thus under optimal lighting geometry for their observation. This favorable illumination allowed us to infer reliable estimates of the average contractional strain and planetary radius decrease.

Watters T. R. Solomon S. C. Robinson M. S. Head J. W. Strom R. G. Klimczak C. Byrne P. K. Enns A. C. Ernst C. M. Prockter L. M. Murchie S. L. Oberst J. Preusker F. Zuber M. T. Hauck S. A. II Phillips R. J.
Tectonic Features on Mercury: An Orbital View with MESSENGER **[#2121]**
Oribital images combined with topographic data obtained from MESSENGER are revealing tectonic landforms, their morphometry, and topographic settings in unprecedented detail.

Dickson J. L. Head J. W. III Whitten J. L. Fassett C. I. Neumann G. A. Smith D. E. Zuber M. T. Phillips R. J.
Topographic Rise in the Northern Smooth Plains of Mercury: Characteristics from MESSENGER Image and Altimetry Data and Candidate Modes of Origin **[#2249]**
MESSENGER Mercury Laser Altimeter (MLA) data has revealed a broad topographic rise ~1000 km across in the northern smooth plains and more than 1.5 km high; we characterize the rise and outline a range of hypotheses for its origin.

Balcerski J. A. Hauck S. A. II Sun P. Klimczak C. Byrne P. K. Dombard A. J. Barnouin O. S. Zuber M. T. Phillips R. J. Solomon S. C.
Tilted Crater Floors: Recording the History of Mercury's Long-Wavelength Deformation **[#1850]**
Analysis of MESSENGER MLA profiles of flat-floored craters in Mercury's northern hemisphere indicates that a significant fraction have been tilted from horizontal. We find geographic correlations between these craters and long-wavelength topography.

Byrne P. K. Watters T. R. Murchie S. L. Klimczak C. Solomon S. C. Prockter L. M. Freed A. M.
A Tectonic Survey of the Caloris Basin, Mercury **[#1722]**
We map the tectonic structures of Caloris, the largest impact basin on Mercury, at unprecedented detail. Its extensional and contractional landforms are more complex than previously described, and do not appear to correlate to its unusual topography.

Klimczak C. Ernst C. M. Byrne P. K. Solomon S. C. Watters T. R.
Fault Restriction in the Caloris Smooth Plains: Implications for Mechanical Stratigraphy **[#1959]**
Fault displacement profiles from shadow measurements across graben in the Caloris smooth plains, Mercury, reveal the mechanical stratigraphy of the volcanic plains that fill the Caloris basin.

Blair D. M. Freed A. M. Byrne P. K. Klimczak C. Solomon S. C. Watters T. R. Prockter L. M. Melosh H. J. Zuber M. T.
Thermally Induced Graben in Peak-Ring Basins and Ghost Craters on Mercury **[#2501]**
The graben patterns seen in the interiors of mercurian peak-ring basins Rachmaninoff, Raditladi, and Mozart, and in the ghost craters of the northern plains of Mercury, can be attributed to thermal stresses in the cooling volcanic fill.

Massironi M. Di Achille G. Ferrari S. Giacomini L. Popa C. Pozzobon R. Zusi M. Cremonese G. Palumbo P.
Strike-Slip Kinematics on Mercury: Evidences and Implications **[#1924]**
Mercury is classically dominated by contractional features at a global scale. Nonetheless, numerous evidences of strike-slip kinematics have been found on Mercury Dual Imaging System (MDIS) camera images.

Banks M. E. Watters T. R. Strom R. G. Solomon S. C. Braden S. E. Chapman C. R. Xiao Z. Barlow N. G.
Stratigraphic Relationships Between Lobate Scarps and Young Impact Craters on Mercury: Implications for the Duration of Lobate Scarp Formation **[#2684]**
New results from MESSENGER MDIS images suggest that lobate scarp formation and development on Mercury occurred more recently than the formation of some Class 1 craters (Mansurian in age or younger) and may have continued into the Kuiperian system.

Preusker F. Oberst J. Blewett D. T. Gwinner K. Head J. W. Murchie S. L. Robinson M. S. Watters T. R. Zuber M. T. Solomon S. C.
Topography of Mercury from Stereo Images: First Samples from MESSENGER Orbital Mapping **[#1913]**
From stereo photogrammetric analysis using MDIS NAC/WAC stereo images from MESSENGER's orbital mapping we derived digital terrain models (DTM) with lateral spacing of 330 m/pixel and a vertical accuracy of 50 m.

Strom R. G. Xiao Z. Blewett D. T. Chapman C. R. Denevi B. W. Head J. W. III Fassett C. I. Braden S. E. Solomon S. C. Watters T. R. Banks M. E.
Impact Crater Populations on Mercury **[#1115]**
For the first time a "pure" Population 2 distribution has been found on Mercury. This result strengthens the conclusion that there are two different crater populations in the inner solar system.

Fassett C. I. Head J. W. III Baker D. M. H. Chapman C. R. Murchie S. L. Neumann G. A. Oberst J. Prockter L. M. Smith D. E. Solomon S. C. Strom R. G. Xiao Z. Zuber M. T.
Distribution, Statistics, and Resurfacing of Large Impact Basins on Mercury **[#1428]**
We map large impact basins ($D \geq 300$ km) on Mercury, whose distribution and characteristics are important to understand Mercury's geological history. The density of large basins appears lower on Mercury than the Moon, and basins are less well-preserved.

Prockter L. M. Murchie S. L. Ernst C. M. Baker D. M. H. Byrne P. K. Head J. W. III Watters T. R. Denevi B. W. Chapman C. R. Solomon S. C.
The Geology of Medium-Sized Basins on Mercury: Implications for Surface Processes and Evolution **[#1326]**
We investigate the morphology and stratigraphy of medium-sized basins (diameter 120–200 km) to determine how they are modified by volcanism, tectonics, and subsequent impacts, in order to learn about Mercury's history and surface evolution.

Gillis-Davis J. J. Markley M. M. Goudge T. A. Head J. W. Xiao Z. Gwinner K.
Large Pit Craters on Mercury: Global Distribution and Occurrence **[#2288]**
The distribution and geologic setting of large pit craters (>20 km across) on Mercury are further investigated using orbital images from the Mercury Dual Imaging System in order to retest and revise as needed our earlier hypotheses of their formation.

Gwinner K. Head J. W. Oberst J. Gillis-Davis J. J. Xiao Z. Strom R. G. Preusker F. Solomon S. C.
Morphology of Pit Craters on Mercury from Stereo-Derived Topography and Implications for Pit Crater Formation **[#1991]**
Pit craters on Mercury occur both inside impact craters and on intercrater terrain. Morphology derived from MESSENGER stereo images from orbit suggests formation by collapse above the crustal magma reservoir, a likely contribution of explosive eruptions.

Jozwiak L. M. Head J. W.
Mercury Pit-Floor Craters: Perspectives on their Origin from Lunar Floor-Fractured Craters **[#2424]**
Investigation of the presence of mercurian shallow magmatic intrusion. Mercury's floor fractured crater is similar to a lunar one, a lack of more suggests specialized formation conditions, maybe intrusion and volatile loss leading to pit floor craters.