

Monday, March 19, 2012
MOVERS AND SHAKERS: PLANETARY DYNAMICS AND TECTONICS
2:30 p.m. Waterway Ballroom 5

Chairs: Jeffrey Andrews-Hanna
H. Jay Melosh

- 2:30 p.m. Morschhauser A. * Grott M. Lesur V.
[*A New Model of the Lithospheric Field of Mars Using MGS-MPO Data and L1-Regularization*](#) [#1963]
 We present a SH model (degree 90) of the martian lithospheric field. The model was regularized using a L1-Norm. Hence, strong anomalies are well represented, while still accounting for the normal distribution of errors in the data.
- 2:45 p.m. Sandu C. * Kiefer W. S.
[*Crustal Growth and Degassing of the Martian Mantle: Constraints from Numerical Experiments*](#) [#1310]
 We used a one-dimensional parameterized convection thermal evolution model to calculate the thermal evolution of Mars and the effect of temperature and water content on the crustal and degassing evolution.
- 3:00 p.m. Karimi M. * Dombard A. J. Williams R. M.
[*A Study of the Thermal Evolution of Mars via Viscoelastic Relaxation of Large Craters*](#) [#2712]
 We constrain Mars' heat flux by simulating deformation of large craters. Our results reveal a secular cooling of Mars and a regional variation consistent with higher heat fluxes closer to the Crustal Dichotomy boundary persisting to the mid-Noachian.
- 3:15 p.m. Weller M. B. * Lenardic A.
[*Plate Tectonics on Terrestrial Planets: A Hysteresis of States in Mantle Convection Systems*](#) [#1557]
 The viability of plate tectonics (PT) have been argued for extrasolar terrestrial planets. The modeling results are: (1) Most will have PT; and (2) most will not have PT. Can both results be correct? We explore path dependence to explain the hysteresis.
- 3:30 p.m. Lognonne P. * Banerdt W. B. Hurst K. Mimoun D. Garcia R. Lefeuvre M. Gagnepain-Beyneix J. Wiczorek M. Mocquet A. Panning M. Beucler E. Deraucourt S. Giardini D. Boschi L. Christensen U. Goetz W. Pike T. Johnson C. Weber R. Larmat K. Kobayashi N. Tromp J.
[*Insight and Single-Station Broadband Seismology: From Signal and Noise to Interior Structure Determination*](#) [#1983]
 The goal of the InSight Seismometer is to determine interior structure and seismic activity of the planet. We summarize the flow from instrument performance to expected science performance in terms of interior structure and activity determination.
- 3:45 p.m. Melosh H. J. * Blair D. M. Freed A. M.
[*Origin of Superisostatic Gravity Anomalies in Lunar Basins*](#) [#2596]
 Superisostatic gravity anomalies in lunar basins are the inevitable consequence of the cooling and contraction of deep melt pools formed by large impacts into a warm early Moon.
- 4:00 p.m. Andrews-Hanna J. C. *
[*The Origin of Non-Mare Mascon Gravity Anomalies on the Moon*](#) [#2804]
 Some lunar basins possess mascon gravity anomalies in excess of that which can be explained by mare loading. These are shown to result from the flexural uplift of an annulus of thickened but sub-isostatic crust surrounding the basin.

- 4:15 p.m. Han L. * Showman A. P.
[*On the Formation of the Hemispheric Dichotomy of Enceladus*](#) [#2028]
We present three-dimensional models of Enceladus that demonstrate (1) how localized active regions can result from brittle deformation, and (2) how topography on the silicate core can modulate convection and allow tectonic activity to be focused in one hemisphere.
- 4:30 p.m. Matsuyama I. M. *
[*Tidal Dissipation in the Subsurface Oceans of Icy Satellites*](#) [#2068]
Previous studies considering tidal dissipation in the subsurface oceans of icy satellites ignore the effect of an overlying ice shell. We extend these studies by taking into account the presence of an overlying ice shell.