

Monday, March 18, 2013
PLANETARY DYNAMICS AND TECTONICS
2:30 p.m. Waterway Ballroom 6

[M155]

Chairs: Andrew Dombard
Patrick McGovern

- 2:30 p.m. Weller M. B. * Lenardic A.
[*Sensitivity of Tectonic States to Climatic Perturbations Over Geologic Time: Implications for Terrestrial Worlds*](#) [#1253]
 As the surface warms / Convection becomes perturbed / Plate tectonics wane.
- 2:45 p.m. Leone G. * Tackley P. J. Gerya T. May D. A. Zhu G.
[*3D Numerical Model for the Formation of the Martian Dichotomy and the Tharsis and Elysium Rises*](#) [#1089]
 We investigate impact of a 1600 km of radius impactor with 70% of iron (in radius) in the southern polar region of Mars for the origin of the dichotomy.
- 3:00 p.m. Lillis R. J. * Stewart S. T. Manga M.
[*Demagnetization by Basin Forming Impact on Early Mars: Contributions from Shock, Heating and Excavation*](#) [#1433]
 Simulations reveal the relative importance of thermal versus shock demagnetization, with implications for identifying the dominant magnetic mineral on Mars.
- 3:15 p.m. Karimi M. * Dombard A. J.
[*Using Large Quasi-Circular Depressions to Study the Thermal History of the Northern Lowlands of Mars*](#) [#2631]
 We constrain heat flux by simulating lower crustal flow beneath large QCDs. Our results show higher heat flux relative to that in the southern highlands.
- 3:30 p.m. Elder C. M. * Showman A. P.
[*Melt Migration Through Io's Convecting Mantle*](#) [#2993]
 We consider the effects of melt migration in a column of rock rising through Io's mantle between downwelling plumes.
- 3:45 p.m. Rhoden A. R. * Hurford T. A.
[*Obliquity-Controlled Lineament Azimuth Distributions on Europa*](#) [#2002]
 Fixed mentor's mistake / Non-synchronous rotation / Cannot explain cracks.
- 4:00 p.m. Bills B. G. * Stiles B. W. Kirk R. Howington-Kraus E. Redding B. et al.
[*Titan Rotation: Constraints from Cassini Radar*](#) [#1313]
 Cassini radar data constrain the rotational dynamics of Titan. The mean pole and spin rate are well determined. Variations are present, but enigmatic.
- 4:15 p.m. Hemingway D. * Nimmo F. Zebker H. Iess L.
[*Elastic Thickness of Titan's Ice Shell Estimated from a Combined Study of Gravity and Topography*](#) [#1656]
 Cassini-derived gravity and topography data suggest that Titan's ice shell is largely rigid and that its surface has undergone extensive erosion.
- 4:30 p.m. Cook C. * Barnes J. W. Kattenhorn S. A. Radebaugh J. Hurford T. et al.
[*Evidence for Global Contraction on Titan from Patterns of Tectonism*](#) [#2509]
 The goal of this study is to create a global map of the orientations of mountain chains on Titan in order to identify the sources of tectonic mechanism.