

Tuesday, March 22, 2016

[T252]

SPECIAL SESSION:

PLANET 9 FROM OUTER SPACE: PLUTO GEOLOGY AND GEOCHEMISTRY

1:30 p.m. Waterway Ballroom 4

Chairs: Carey Lisse
Ross Beyer

- 1:30 p.m. Cruikshank D. P. * Stern S. A. Grundy W. M. Moore J. M. Young L. A. et al.
[*Pluto and Charon: Surface Colors and Compositions — A Hypothesis*](#) [#1696]
A hypothesis is proposed to explain the neutral color and exposed ammonia/ammonia hydrate on the otherwise water ice dominated surface of Pluto's moon Charon.
- 1:45 p.m. Cook J. C. * Cruikshank D. P. Dalle Ore C. M. Ennico K. Grundy W. M. et al.
[*The Identification and Distribution of Pluto's Non-Volatile Inventory*](#) [#2296]
Using data from New Horizons, water ice has been detected on Pluto. We analyze several specific spots. We find submicrometer water grains are present on Pluto.
- 2:00 p.m. Dalle Ore C. M. * Cook J. C. Cruikshank D. P. Ennico K. Grundy W. M. et al.
[*Charon's Near IR Ice Signature as Seen by New Horizons*](#) [#2122]
Analysis of part of Charon's surface as seen by NH/LEISA reveals wide-spread low-level amounts of NH₃ intimately mixed with H₂O ice mostly in crystalline form.
- 2:15 p.m. Soto A. * Rafkin S. C. R. Michaels T. I.
[*Atmospheric Circulation and Distribution of Nitrogen Ice on Pluto Due to Surface Ice and Topography*](#) [#1648]
Pluto general circulation simulations show that the presence of topography and regional ice strongly perturbs the circulation and volatile cycle.
- 2:30 p.m. Davies E. J. * Stewart S. T.
[*Beating Up Pluto: Modeling Large Impacts with Strength*](#) [#2938]
Pluto gets hit hard / Residual strength matters / Localizing heating.
- 2:45 p.m. Cheng A. F. * Summers M. E. Gladstone G. R. Strobel D. F. Young L. A. et al.
[*Haze Layers in Pluto's Atmosphere*](#) [#2316]
New Horizons images reveal optically thin hazes in Pluto's atmosphere, structured into intricate layers.
- 3:00 p.m. Schenk P. * Singer K. Robbins S. Bray V. Beyer R. et al.
[*Topography of Pluto and Charon: Impact Cratering*](#) [#2795]
Pluto and Charon, Twins in Space / Craters abound large and small / Some are eroded, some are still in place!
- 3:15 p.m. Singer K. N. * McKinnon W. B. Robbins S. J. Schenk P. M. Greenstreet S. et al.
[*Craters on Pluto and Charon — Surface Ages and Impactor Populations*](#) [#2310]
Pluto and Charon's craters give timeframes for episodes of geologic activity, and also help us constrain outer solar system impactor population characteristics.
- 3:30 p.m. Nimmo F. * Bierson C. Hamilton D. P. Moore J. M. McKinnon W. B. et al.
[*Loading, Relaxation, and Tidal Wander at Sputnik Planum, Pluto*](#) [#2207]
Sputnik Planum's location is due to Charon tidal torques acting on a positive gravity anomaly. This implies surface loading and a present-day subsurface ocean.

- 3:45 p.m. Keane J. T. * Matsuyama I.
[*Pluto Followed Its Heart: True Polar Wander of Pluto Due to the Formation and Evolution of Sputnik Planum*](#) [#2348]
Why is Pluto's heart / Aligned with tidal axis? / True polar wander!
- 4:00 p.m. Hammond N. P. * Barr A. C. Parmentier E. M.
[*Ocean Survival, Ice II Formation and Recent Tectonic Activity on Pluto*](#) [#2234]
We model the thermal evolution of Pluto and find two possible outcomes: (1) an ocean survives to the present; (2) the ocean freezes and Ice II forms at depth.
- 4:15 p.m. McKinnon W. B. * Nimmo F. Wong T. Roberts J. S. Schenk P. M. et al.
[*Thermal Convection in Solid Nitrogen, and the Depth and Surface Age of Cellular Terrain Within Sputnik Planum, Pluto*](#) [#2921]
Solid nitrogen / Overturned by Pluto heat / The Planum abides.
- 4:30 p.m. Trowbridge A. J. * Melosh H. J. Freed A. M.
[*Pluto's Geologic Activity and a Universal Criterion for Planetary Vigor*](#) [#2431]
We have developed a new parameterized convection model. Our results indicate that ammonium plays a pivotal role in Pluto's mantle convection.