

Tuesday, March 20, 2012

POSTER SESSION I: PLANETARY HYDROLOGY: WET WORLDS

6:00 p.m. Town Center Exhibit Area

Cornet T. Bourgeois O. Le Mouélic S. Rodriguez S. Sotin C. Lefèvre A. Barnes J. W. Brown R. H. Baines K. H. Buratti B. J. Clark R. N. Nicholson P. D.

[*Shaping Titan's Landscapes by Dissolution and Evaporation: The Case of Ontario Lacus, a High-Latitude Semi-Arid Karst-Playa Landsystem*](#) [#1914]

The comparison between Ontario Lacus (Titan) and the Etosha Pan (Namibia), a semi-arid karst-playa landsystem, infer that dissolution/evaporation processes shaped Ontario Lacus' region until the present day, and perhaps as a whole, other Titan's lakes.

Cornet T. Magar S. S. Luspay-Kuti A. Wasiak F. C. Chevrier V. F. Welivitiya W. D. D. P. Roe L. Bourgeois O. Le Mouélic S.

[*Infrared Monitoring of Liquid/Solid Hydrocarbons Under Titan Simulated Conditions*](#) [#1849]

We investigate the spectral behavior of Titan relevant liquid/solid hydrocarbon compounds, between 1.0 and 2.6 μm , under Titan simulated conditions (1.5 bar of N_2 , 90–95 K).

Luspay-Kuti A. Wasiak F. C. Chevrier V. F. Welivitiya W. D. D. P. Roe L. A. Cornet T. Magar S. S.

[*Liquid Hydrocarbon Evaporation Under Simulated Titan Conditions*](#) [#2408]

Ethane and methane-ethane mixtures are condensed and monitored in our Titan simulation chamber, under Titan surface conditions. Results on the evaporation rate of these liquids that are most probably the main components of the lakes are presented.

Luspay-Kuti A. Wasiak F. C. Chevrier V. F. Magar S. S. Welivitiya W. D. D. P. Roe L. A. Cornet T.

[*Experimental Simulations of Liquid Methane Evaporation Under Titan Surface Conditions*](#) [#2287]

We simulate Titan surface conditions and the evaporation of methane, a major component of liquids. Our results may well quantitatively characterize methane liquid formed at the arid equatorial regions in possible occasional, heavy rainfall events.

Malaska M. Radebaugh J. Barnes J. Mitchell K.

[*Titan in a Fume Hood: Room-Temperature Simulation of a Titan Evaporite Playa Using a Multi-Component Mixture of Organic Compounds*](#) [#2139]

A multi-component mixture of organic compounds in heptanes was evaporated to simulate the formation of an evaporite playa on Titan. The deposition sequence of the analog materials and their implications for Titan geology will be presented.

Welivitiya W. D. D. P. Wasiak F. Tullis J. A. Blackburn D. G. Chevrier V. F.

[*A Remote Sensing and GIS Approach for Change Detection on Titan's Lakes Using Cassini Orbiter's SAR Data*](#) [#1678]

We present the results obtained by applying RS and GIS techniques to identify changes in Titan lakes using Cassini SAR data. We detected a transient change in an estuary-like feature in the Kraken Mare area on Titan.

Vixie G. Barnes J. W. Jackson B. Wilson P.

[*Temperate Lakes Discovered on Titan*](#) [#2766]

We have discovered two temperate lakes on Titan using Cassini's Visual and Infrared Mapping Spectrometer (VIMS). Three key features help to identify these surface features as lakes: morphology, albedo, and specular reflection.

Sharma P. Byrne S.

[*Modeling of Titan's Surface Processes Constrained by Shoreline Fractal Analysis and Comparison with Terrestrial Analogs*](#) [#1567]

We have carried out statistical analyses of Titan's north polar lake shorelines and terrestrial analogs, to constrain the spatial distribution of surface process types on Titan and perform landscape evolution modeling.

Harrison K. P.

[*Thermokarst Processes in Titan's Lakes: Comparison with Terrestrial Data*](#) [#2271]

Qualitative comparisons between Titan's lakes and terrestrial thermokarst depressions have revealed some intriguing similarities. A quantitative study of lake outlines provides further evidence that thermokarst processes modified Titanian lakes.

Magar S. S. Chevrier V. F. Ulrich R. Howe K. L.

[*Numerical Modeling of Titan Fluvial Channels*](#) [#2348]

Model for brines flowing in martian gullies will be modified under Titan conditions. It will place minimum constraints on the fluid properties within Titan's large channels in order to identify the maximum boulder sizes the channel could support.

Choukroun M. Sotin C.

[*Is Titan's Shape Caused by its Meteorological and Carbon Cycle?*](#) [#1760]

We show that Titan's global shape can result from the chemical interactions between the products of its atmospheric chemistry with subsurface materials, by subsidence associated to clathrate formation/substitution.

Parsons R. A. Moore J. M. Howard A. D.

[*Hydrology of Hesperian/Amazonian-Aged Valleys in Newton Basin, Mars: How Much Water for How Long?*](#) [#1728]

Applying sediment transport theory to martian valleys for a range of channel depths and sediment grain sizes suggest that the cumulative duration of fluvial activity lasted 0.5 to 10 years, and the largest valleys were cut by 1 km³ of water.

Head J. W. III

[*Mars Planetary Hydrology: Was the Martian Hydrological Cycle and System Ever Globally Vertically Integrated?*](#) [#2137]

New data (atmosphere models, mineralogy, surface geology, terrestrial analogs, and the influence of volcanism on the atmosphere) combine to suggest that the hydrological system of Mars might not have been vertically integrated in the Late Noachian.

Baker D. M. H. Head J. W.

[*Geology and Chronology of the Ma'adim Vallis-Eridania Basin Region, Mars: Implications for the Noachian-Hesperian Hydrologic Cycle*](#) [#1252]

We assess the hydrologic evolution of a large paleolake basin on Mars by analyzing the character of units and valleys within the basin's watershed. This analysis places constraints on the environmental conditions near the Noachian/Hesperian boundary.

Di Achille G. Hoke M. R. T. Rossi A. P. Hynek B. M. Esposito F. Hutton E. W. H. Kettner A. J.

[*Process-Response Sedimentary Modeling of Ancient Martian Deltas 1: Introduction and Case Studies*](#) [#2120]

We are carrying out a comprehensive study of the hydrology and sedimentology of martian deltas by using modified versions of state of the art terrestrial models whose concepts have been successfully tested in several different terrestrial settings.

Hoke M. R. T. Hynek B. M. Di Achille G. Hutton E.

[*Process-Response Sedimentary Modeling of Ancient Martian Deltas 2: Offshore Sedimentation and Formation Timescales*](#) [#2254]

We use a comprehensive three-dimensional model (Sedflux2.0) to explore the conditions of delta formation on ancient Mars. Our results show significant offshore sedimentation and longer formation timescales than otherwise determined by bulk transport calculations.

Erkeling G. Reiss D. Hiesinger H. Poulet F. Carter J. Ivanov M. A. Hauber E. Jaumann R.
[Valleys, Paleolakes and Possible Shorelines at the Libya Montes/Isidis Boundary: Implications for the Hydrologic Evolution of Mars](#) [#1762]

We describe the results of our morphologic, stratigraphic, and mineralogic investigations of fluvial landforms, paleolakes, and possible shoreline morphologies at the Libya Montes/Isidis Planitia boundary between 85°/86.5°E and 1.8°/5°N.

Carter J. Poulet F. Mangold N. Ansan V. Dehouck E. Bibring J.-P. Murchie S.
[Composition of Deltas and Alluvial Fans on Mars](#) [#1978]

A systematic survey for all alluvial fans and deltas on MARS using the CRISM imaging spectrometer reveals the presence of opaline silica, an alteration product formed in situ in an arid environment.

Petau A. Tirsch D. Jaumann J.

[Geomorphological Analysis of Mass Balances of Martian Valley Networks in Western Terra Sirenum](#) [#1834]

The intention of this study focuses on a geomorphological analysis of valley networks in the Western part of Terra Sirenum presenting calculations to improve the insight at a time in which there must have been other environmental and climate conditions.

Mercier D. Lowell R. P.

[Ice Melting Above a Convecting, Crystallizing Magmatic Sill on Mars](#) [#2275]

We investigate the melting of an ice layer above a vigorously convecting, crystallizing magmatic sill intruded in the martian crust. We show that the melt layer is 3.5 times the sill thickness, assuming crystals remain suspended in the melt.

Rhodes N. Hurtado J. M. Jr.

[A Magnetic Survey of Kilbourne Hole, Southern New Mexico: Implications for Near Surface Geophysical Exploration of Mars and the Moon](#) [#2914]

A detailed magnetic survey of Kilbourne Hole, a phreatomagmatic crater, to map the boundary of eruptive material, in order to quantify the size of the groundwater reservoir related to the magma-water interactions that caused the eruption.