

Tuesday, March 8, 2011

POSTER SESSION I: ICY SURFACE-ATMOSPHERE INTERACTION

6:00 p.m. Town Center Exhibit Area

Dalton J. B. III Shirley J. H. Paranicas C. Cassidy T. Prockter L. M. Kamp L. W.

[*Sulfuric Acid Hydrate on Europa: Exogenic Controls on the Radiolytic Sulfur Cycle*](#) [#2678]

Spectral modeling of Galileo NIMS observations using cryogenic reflectance spectra can separate products of exogenic processing from endogenically-derived materials on Europa. H₂SO₄ hydrate abundances agree with predictions of electron and ion flux models.

Teolis B. D. Jones G. H. Miles P. F. Tokar R. L. Magee B. A. Waite J. H. Roussos E. Young D. T. Crary F. J. Coates A. J. Johnson R. E. Tsing W.-L. Baragiola R. A.

[*Formation, Distribution and Loss of Rhea's O₂-CO₂ Exosphere*](#) [#2663]

We will discuss the Cassini spacecraft's detection of an O₂-CO₂ exosphere at Saturn's icy satellite Rhea, including its origin, distribution, and Cassini's observations of pickup ions as evidence for ionization as a major exospheric loss mechanism.

Postberg F. Schmidt J. Hillier J. K. Kempf S. Srama R.

[*The Compositional Profile of Enceladus Icy Dust Plume from Cassini In-Situ Measurements*](#) [#1849]

Measurements by Cassini's dust detector during Enceladus plume crossings show strong variations in structure and composition. Salt-rich ice grains clearly dominate Enceladus' solid emissions strongly favoring an abundant liquid water source close to the icy surface.

Waite J. H. Jr. Magee B. Brockwell T.

[*The Effect of Flyby Velocity on the Composition of the Enceladus Gas Torus as Measured by Cassini INMS*](#) [#2818]

The observations of the Enceladus gas plume by the Cassini Ion Neutral Mass Spectrometer indicate changes in the H₂O, CO₂, CO, H₂, and unsaturated hydrocarbons as a function of the flyby velocity.

Chapman T. A. Yeoh S. K. Goldstein D. B. Varghese P. L. Trafton L. M.

[*Hybrid Model of Gas/Particle Plume of Enceladus*](#) [#1853]

Based on *in situ* data of Enceladus, we construct a hybrid model of its plumes. The model divides the plume into two regimes. Direct simulation Monte Carlo is used near the vents, while a free-molecular model simulates the far field.

Wasiak F. C. Luspay-Kuti A. Blackburn D. G. Roe L. Chevrier V.

[*A Facility for Simulating Titan's Environment*](#) [#1322]

We describe our facility for simulating Titan's environment to experimentally determine the short- and long-term stability of light organic volatiles at the surface and subsurface of Titan.

Luspay-Kuti A. Wasiak F. C. Chevrier V. F. Blackburn D. G. Roe L.

[*Measuring Evaporation Rates of Methane Under Simulated Titan Conditions*](#) [#1736]

It has been shown before that liquids exist on present-day Titan. In this work, Titan conditions are generated in our simulation chamber, and the evaporation rate of liquid methane is measured under surface temperatures of 90–94 K.

Wasiak F. C. Hames H. Tullis J. A. Blackburn D. G. Chevrier V. Dixon J.

[*On Characterizing the Stability of Titan's Lake Regions*](#) [#1321]

Characterizing the stability of Titan's lake regions using Geographic Information Systems (GIS).

Chopra N. Rivera-Valentin E. G. Lupsay-Kuti A. Chevrier V. F.

[Modeling the Stability of Liquid Methane on Titan](#) [#1643]

In order to understand liquid methane dynamics and replicate seasonal cycle on Titan, we construct a coupled heat and mass transfer model and study the stability of pure liquid methane under Titan's conditions.

Lupsay-Kuti A. Rivera-Valentin E. G. Chopra N. Chevrier V. F.

[Modeling the Stability of Ontario Lacus on Titan](#) [#1747]

The stability of Ontario Lacus is modeled, assuming a composition of pure CH₄. Based on our results and assuming 9 m for the depth, 1.4% of the lake is evaporated after a year. Shoreline variations are expected, in agreement with observations.

Turtle E. P. Perry J. E. Hayes A. G. Lorenz R. D. Barnes J. W. McEwen A. S. West R. A. Del Genio A. D. Barbara J. M. Lunine J. I. Schaller E. L. Ray T. L. Lopes R. M. C. Stofan E. R.

[Seasonal Changes in Titan's Meteorology Bring Rain to Low Latitudes](#) [#1459]

Titan's equinox / Brings equatorial clouds / Rain amid the dunes.

Coustenis A. Bampasidis G. Solomonidou A. Vinatier S. Achterberg R. Hirtzig M. Jennings D. Nixon C. Flasar M. Moussas X.

[Temporal Variations in Titan's Atmosphere and Surface](#) [#1676]

We present work on Titan's atmosphere and surface looking at variations in short and long periods of time.

Sharma P. Byrne S.

[Comparison of Titan's North Polar Lakes with Terrestrial Analogs Through Fractal Analysis](#) [#1572]

The purpose of this study is to perform a fractal analysis on terrestrial lake shorelines, compare the results with pre-published estimates of Titan's lake shoreline dimensions, and infer the dominant surface processes on Titan.

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

[Geology of Ontario Lacus on Titan: Comparison with a Terrestrial Analog, The Etosha Pans \(Namibia\)](#) [#2581]

The study of a terrestrial analog, the Etosha Pan (Namibia), for Ontario Lacus on Titan seems to indicate that Ontario might be a partially liquid-filled basin.

Mitchell K. L. Stiles B. W. Veeramachaneni C. Hayes A. Kirk R. L. Andrews-Hanna J. Lorenz R. D. Stofan E. R.

[Topography of Titan's Arctic Lake District: Implications for Subsurface Liquid Alkane Flow](#) [#2677]

Karstic Terrain is highly permeable, facilitating subsurface flow and hydraulic adjustment of fluids. We look for evidence of karstic subsurface flow in Titan's Arctic Lake district, based on high-resolution SARTopo data over lakes and surrounds.

Harrison K. P.

[A Preliminary Investigation of Interlake Groundmethane Transport on Titan](#) [#2533]

Topographic data are used to estimate methane flow rates in a hypothetical aquifer connecting lakes on Titan. Some rates are high enough to fill lakes over a few seasonal cycles, and compare favorably with evaporation rate estimates.

Drummond S. A. Burr D. M. Cartwright R. Black B. A. Perron J. T.

[Global Mapping and Morphologic Classification of Titan Fluvial Features](#) [#1919]

Global mapping of fluvial features has been completed in radar swaths through T71. Analysis of drainage network morphology has revealed evidence for tectonic activity globally; network link orientation may aid in defining stress fields.

Malaska M. Radebaugh J. Le Gall A. Mitchell K. Lopes R. Wall S.
[*High-Volume Meandering Channels in Titan's South Polar Region*](#) [#1562]

Morphological measurements of two wide meandering channels near Sikun Labyrinthus, Titan, reveal characteristics similar to high-volume rivers on Earth. The channels are compared to a stretch of the Mississippi River near Mayersville, Mississippi.

Newman C. E. Richardson M. I. Lian Y. Lee C.

[*Modeling Titan's Stratospheric Superrotation and Tropospheric Methane Cycle*](#) [#2626]

We will show that stratospheric superrotation similar to that observed is produced by the latest version of TitanWRF, and is generated during episodic angular momentum transfer events. We will also present surface methane predictions.