

Tuesday, March 20, 2012
POSTER SESSION I: A SEASON IN THE SATURN SYSTEM:
TITAN, RINGS, AND OTHER THINGS
6:00 p.m. Town Center Exhibit Area

Jia Y.-D. Russell C. T. Khurana K. K. Gombosi T. I.

[*Constraining Seasonal Changes of the Enceladus Plume*](#) [#2620]

We have deduced the outgassing rates by comparing calculated and observed plasma and field values using our MHD models but no significant variations are found.

Martin E. S. Kattenhorn S. A.

[*Crater Induced Fracture Reorientation on Enceladus*](#) [#2883]

We present characterization of crater fracture interactions on Enceladus in order to understand what is driving a crater's ability to reorient fractures.

Patthoff D. A. Kattenhorn S. A. Cooper C. M.

[*Effects of Nonsynchronous Rotation Stresses on the South Polar Terrain of Enceladus*](#) [#2527]

Nonsynchronous rotation and diurnal tidal stresses for the SPT of Enceladus are modeled to show how fracture initiation in the ice shell could occur. These results demonstrate how fracture sets of differing ages can coexist in the SPT.

Miller M. S. Martin E. S. Patthoff D. A. Kattenhorn S. A.

[*Pit Chains on Enceladus: An Experimental Test of the Impact of Fault Geometry on Pit Chain Growth*](#) [#2925]

We present experimental work examining the effect of segmented pit chain geometries on pit nucleation. Our modified experimental setup will allow us to determine if segmented fault systems result in larger or more numerous pits.

Travis B. J. Schubert G.

[*Hydrothermal Flow Within Enceladus*](#) [#2695]

A numerical model of fluid flow and heat and salt transport in Enceladus results in long-lasting transient flow restricted to polar regions with a very non-uniform ice shell distribution.

Wood C. A. Radebaugh J.

[*Trouble on Titan — Speculative Interpretation of How It Works as a World*](#) [#1628]

Titan has few identified volcanoes but based on planetary comparisons and degassing it may have other unrecognized volcanic terrains. Boring mid-latitude plains may be fluid lavas, accounting for the paucity of craters and the replenishment of CH₄.

Liu Z. Y. C. Radebaugh J. Harris R. Christiansen E. H. Kirk R. L. Neish C. D. Lorenz R. D.

Stofan E. R. Cassini Radar Team

[*Evidence for an Endogenic Origin of Mountains on Titan*](#) [#2378]

The purpose of this study is to test the hypothesis of the origin of mountains (exogenic vs. endogenic) on Titan by analyzing (1) mountain heights and (2) structural mapping.

Cook C. Barnes J. W. Radebaugh J. Hurford T. Kattenhorn S. A.

[*Global Patterns of Tectonism from Mountain Ranges to Virgae*](#) [#2484]

This research is focused on global patterns of tectonism on the surface of Titan. The orientations of mountain chains and virgae, which are of possible tectonic origin, may provide clues to the dominate mechanism driving tectonism on Titan.

Mills N. T. Radebaugh J. Savage C. J. Le Gall A.

[*Ongoing Measurements of Dune Width and Spacing on Titan Reveal Dune Field Properties*](#) [#2812]

Modeling of dune parameters on Titan, such as dune width and spacing have yielded important results concerning dune field maturity. New measurements have been made on the T25 swath that use new methods that better correlate width and spacing.

Arnold K. Radebaugh J. Le Gall A. Turtle E. P. Lorenz R. D. Cassini Radar Team
[Sand Volume Estimates on Titan from Cassini Radar and ISS: Fensal and Aztlan Sand Seas](#) [#2893]

This is the first detailed study of sand sea areas using images from Cassini's ISS in conjunction with Cassini SAR images. Preliminary results for the total area of dunes in Fensal/Aztlan is about 2.3 million km² and total volume is ~70,000 km³.

Dalba P. A. Buratti B. J. Baines K. H. Barnes J. Brown R. H. Clark R. N. Nicholson P. D. Sotin C.
[The Rain in the Plain on Titan](#) [#1717]

Analysis of spectral changes as revealed by the Cassini Visual Infrared Mapping Spectrometer (VIMS) instrument shows that between 2009 and 2011 hydrocarbon rainstorms occurred in the Senkyo region of Titan.

Wasiak F. C. Androes D. Blackburn D. G. Chevrier V. F. Dixon J.

[Characterization of Ligeia Mare in the North Polar Region of Titan](#) [#1720]

The characterization of Titan's Ligeia Mare and surrounding geologically diverse terrain, including active processes.

Larson E. J. L. Sekine Y. Sugita S. Sasamori T. McKay C. P.

[Tholin Sensitivity to Atmospheric Methane Abundance and the Implications for Multiple Stable States of Titan's Climate System](#) [#1427]

We investigated the effect of methane concentration in tholin production and tholin optical constants in laboratory experiment. We used these results in a simple model to explore the stability of Titan's climate.

Rodriguez S. Le Mouélic S. Barnes J. W. Hirtzig M. Rannou P. Sotin C. Brown R. H. Bow J. Vixie G. Cornet T. Bourgeois O. Narteau C. Courrech du Pont S. Griffith C. A. Jauman R. Stephan K. Buratti B. J. Clark R. N. Baines K. H. Nicholson P. D. Coustenis A.

[Singular Regional Brightening Events on Titan as Seen by Cassini/VIMS](#) [#1158]

We present here the observation with VIMS of intense brightening at Titan's tropics, very close to the equinox. These events all appear spectrally and morphologically distinct from all previous observed surface features or atmospheric phenomena.

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

[Investigating the Surface of Titan in the 1–2.8 \$\mu\text{m}\$ Range with Cassini/VIMS Hyperspectral Images](#) [#1745]

We focus in this presentation on the global mapping of the surface of Titan using data from the Visual and Infrared Mapping Spectrometer (VIMS) onboard Cassini. The objective is to produce seamless mosaics in the short-wavelength surface windows.

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

[A Facility for Simulating Titan's Surface Environment](#) [#1374]

We simulate Titan conditions within our laboratory and subject relevant samples to experiments under those conditions. The properties of our facility are presented, including experimental results.

Blackburn D. G. Buratti B. J. Rivera-Valentin E. G.

[Exploring the Impact of Thermal Segregation on Dione Through a Bolometric Bond Albedo Map](#) [#1536]

Next to Iapetus, Dione exhibits the greatest albedo dichotomy of any object in the solar system. We explore whether the dichotomy on Dione, which is probably exogenically created by the E-ring, can be sustained by a thermal transport mechanism.

Stephan K. Jaumann R. Wagner R. Clark R. N. Cruikshank D. P. Dalle Ore C. Brown R. H. Giese B. Roatsch T. Matson D. Baines K. Filacchione G. Capaccione F. Buratti B. J. Nicholson P. D.

[Spectral Properties of the Saturnian Satellites Tethys as Derived from Cassini-VIMS Data](#) [#2119]

Results of the spectroscopic analysis of the saturnian satellite Tethys will be presented.

West R. Mitchell K. Stiles B. Anderson Y. Le Gall A. Hayes A. Janssen M. Kirk R. Lopes R. Lorenz R. Wall S. Wye L. Zebker H.

[Observation Design and Early Results from Cassini Radar SAR Imaging of Enceladus](#) [#2602]

On November 6, 2011, Cassini RADAR obtained a unique data set during a flyby of Enceladus. We will discuss the observation design and processing and present the data in preliminary form.

Hansen G. B. Romain J.

[Modeling of Layers of Micron Sized Water Ice Over Enceladus Surface to Fit the 1 to 5 Micron Spectra From the Cassini VIMS Instrument](#) [#2625]

We are modeling Enceladus surface as larger grained ($>5 \mu\text{m}$) ice covered by a fine-grained ice with a roughly monolayer depth. This accurately fits the $>3 \mu\text{m}$ VIMS spectrum and provides a more accurate estimate of the underlying grain size.

Galuba G. G. Denk T. Neukum G.

[Dark Terrains on Iapetus: From the Local to the Global Perspective and Back](#) [#2153]

The surface of Iapetus is famous for its global albedo dichotomy. A thermal feedback process is proposed as cause. For the proposed global instance of this effect and a local one the triggering mechanism must differ in their characteristic lengths.

Rivera-Valentin E. G. Blackburn D. G. Ulrich R. K.

[On the Mass Balance at Iapetus' Poles: Exploring the Limiting Effects of the Dark Overburden](#) [#1033]

By modeling the mass balance at the Iapetian poles including the limiting effects of the overburden on Cassini Regio, we show there exists sufficient inbound ice to overcome exogenic darkening.

Rivera-Valentin E. G. Schenk P. White O. L.

[Small Diameter Crater Shapes and Geometry on Iapetus and Rhea](#) [#2042]

We use high-resolution topography maps of Iapetus and Rhea in order to investigate their small diameter crater d/D ratio, specifically comparing the two satellites and analyzing the Iapetian equatorial ridge.

Reffet E. Ferrari C.

[Comparison of Cassini-CIRS Thermal Observations of Saturn's B Ring to a New Multi-Scale Heat Transfer Model](#) [#1979]

The thermal evolution of Saturn's B ring has been monitored using the Cassini-CIRS spectrometer. Confrontation to a new multiscale heat transfer model allows retrieval of the physical properties of the particles and the structure of the ring.

Tseng W.-L. Elrod M. K. Johnson R. E.

[Seasonal Variability of Saturn's Ring Atmosphere and Its Effects](#) [#1975]

We predicted would-be seasonal variations in the ring atmosphere due to the orientation of the ring plane to the Sun. Therefore, it would exhibit seasonal variations in the magnetospheric O_2^+ ion density. We also confirmed the result by CAPS data.

Poppe A. R. Horanyi M.

[On the Edgeworth-Kuiper Belt Dust Flux to Saturn](#) [#1365]

We describe the model-predicted flux of Edgeworth-Kuiper belt dust grains into the saturnian system. We compare our model with previous estimates of the incoming dust flux and discuss implications for physical processes in the saturnian system.