Thursday, March 4, 2010
POSTER SESSION II: SATELLITES AND THEIR PLANETS
7:00 p.m. Town Center Exhibit Area

Crow-Willard E. N. Pappalardo R. T.
Global Geological Mapping of Enceladus **[#2715]**
We will present a global geological map of Enceladus, and interpretations of the stratigraphy and geological history that our mapping implies.

Yeoh S. K. Kizer J. R. Goldstein D. B. Varghess P. L. Trafton L. M.
Modeling the Gas/Particle Plume of Enceladus **[#2635]**
A water vapor composite plume was detected over the south pole of Enceladus in 2005. A hybrid model of the gas/particle plume is constructed using the DSMC method and a free-molecular model.

Rambaux N. Castillo-Rogez J. C. Williams J. G. Karatekin O.
Librational Response of Enceladus to Its Interior Structure **[#1883]**
We will present the rotational motion of Enceladus perturbed by planetary perturbations and tidal torques and describe the main librations and short librations at 1.37 days amplitude for various interior models (computed with the Andrade model).

Patthoff D. A. Kattenhorn S. A.
Old Tiger Stripes and the South Polar Dichotomy on Enceladus **[#2099]**
Our detailed fracture and fold maps explore the relationship between the present day tiger stripes and old, non active tiger stripes and the dichotomy which surrounds the most active region of the SPT on Enceladus.

Kirchoff M. R. Schenk P.
Global Impact Cratering Record of Saturn's Moon Dione: Constraining the Geological History **[#1455]**
We use the global impact crater distribution to constrain the geological history of Saturn's moon Dione. Of particular interest are the extent, formation time, and formation processes of the smooth plains and wispy terrains.

Burleigh K. J. Helfenstein P. Carcich B. Veverka J. Thomas P. West R. Denk T. Neukum G.
Linear Polarization and Albedo Reconnaissance for Regolith Texture on Saturn's Moon Iapetus **[#2607]**
We demonstrate the sensitivity of the Cassini Images Science Subsystem Narrow Angle Camera polarization images by revealing Umov's law. We make linear polarization (%P) and albedo images of Iapetus and plot %P vs. albedo from DN values of corresponding pixels.

Martin E. S. Jurdy D. M.
Iapetus: Construction and Analysis of a Global Crater Database **[#1437]**
Notwithstanding in-depth studies focused on Iapetus, no global digital database of craters exists. This work has mapped and recorded the location and diameter of craters (>1 km) on Iapetus into a global crater database.

Blackburn D. G. Buratti B. J. Ulrich R. Mosher J.
A Bolometric Bond Albedo Map of Iapetus from the Merger of Cassini VIMS and Voyager ISS Data **[#1242]**
We took advantage of the solar phase angle and wavelength coverage of the Cassini VIMS instrument to calculate the phase integrals and construct a bolometric Bond albedo map for Iapetus, supplementing coverage in the north with Voyager ISS.

Pitman K. M. Buratti B. J. Mosher J. A.
Bolometric Bond Albedos For Saturnian Satellites From Cassini VIMS: Leading and Trailing Hemispheres **[#2035]**
We present values of disk-integrated bolometric Bond albedo, phase integrals, and geometric albedos, derived using Cassini VIMS solar phase curves at 7-15 wavelengths, for the saturnian satellites Rhea, Dione, Tethys, Mimas, and Enceladus.

Filacchione G. Capaccioni F. Clark R. N. Cruikshank D. P. Coradini A. Cerroni P. Ciarniello M. Tosi F. Nicholson P. D. McCord T. B. Brown R. H. Buratti B. J. Nelson R. M. Jaumann R. Stephan K.
Spectral Classes and Surface Properties of the Saturnian Satellites Retrieved from Cassini-VIMS Disk-integrated Observations **[#1704]**
Analysis of the saturnian satellites disk-integrated observations returned by the VIMS experiment onboard Cassini. This investigation is focused on VIS spectral slopes and IR absorption bands variability.

Sharp P. W. Castillo-Rogez J. C. Grazier K. R.
Coupled Geophysical and Orbital Evolution of Saturn's Satellites **[#2238]**
We discuss preliminary results using coupled geophysical and orbital modeling for Mimas, Enceladus, Tethys, Dione, Rhea, and Iapetus.

Fukuzaki S. Sekine Y. Sugita S. Genda H. Kadono T. Matsui T.
Has Titan's Atmospheric N_2 been replenished from Crustal NH_3 Through Cometary Impacts? **[#1731]**
We evaluate the role of impact-induced N_2 production through cometary impacts after the accretion from reduced nitrogen-bearing materials proposed to be contained in Titan's crust, NH_3-H_2O ice ,for the replenishment of N_2 to the atmosphere over Titan's history (~ 4.5 Gyr).

Harris C. C. Matthews L. S. Hyde T. W.
The Development of a Probabilistic Model for Tholin Aggregation in Titan's Atmosphere **[#2334]**
A numerical model of coagulation of tholin particles in Titan's atmosphere includes the fractal geometry of the aggregates. Dipole charge interactions during collisions cause particles to rotate affecting the coagulation rate and the subsequent morphology of the grains.

Cornet T. Le Mouélic S. Bourgeois O. Rodriguez S. Sotin C. Barnes J. W. Brown R. H. Baines K. H. Buratti B. J. Clark R. N. Nicholson P. D.
Observation of Ontario Lacus on Titan with Cassini/VIMS at 17 Months Interval **[#1370]**
We are investigating an empirical method to correct the photometric and atmospheric effects in VIMS images of Titan's surface. This method is applied to T38 and T51 Ontario Lacus observations to determine whether surface changes occured between these two flybys.

Stephan K. Jaumann R. Brown R. H. Soderblom J. M. Soderblom L. A. Barnes J. W. Sotin C. Griffith C. A. Kirk R. L. Baines K. H. Buratti B. J. Clark R. N. Lytle D. M. Nelson R. M. Nicholson P. D.
Detection of a Specular Reflection on Titan by Cassini-VIMS **[#1692]**
We present the detection of a specularly reflected signal from Titan's surface associated with Kraken Mare, which indicates a liquid surface that is smooth on the scale of the observed VIMS signal at 5 µm.

Malaska M. Radebaugh J. Lorenz R. Mitchell K. Farr T. Stofan E.
Identification of Karst-like Terrain on Titan from Valley Analysis **[#1544]**
Valley network terrains in Titan's southern high latitudes show several characteristics that are similar to defined karst terrains on Earth.

Mitchell K. L. Stiles B. W. Kirk R. L. Stofan E. R. Cassini RADAR Team
Refinement of the Cassini Titan RADAR Mapper SARTopo Technique for Local Studies of Lakes **[#2740]**
We refine the SARTopo method for extraction of topographic from Cassini RADAR data of Titan for local studies. Our results reveal details in the morphology around polar lakes on Titan that were only previously possible using stereo or radarclinometric methods.

Dalton J. B.
A Cryogenic Reflectance Spectroscopy Facility for Characterization of Candidate Icy Satellite Surface Compounds in Support of Spacecraft Observations **[#1710]**
The Planetary Ice Characterization Laboratory at JPL has been established in order to provide relevant spectral measurements for determination of material abundances and distributions from visible and near infrared imaging spectroscopy of icy satellites.

Yamashita Y. Arakawa M. Kato M.
The Rheological Properties of Polycrystalline Nitrogen and Methane: Implications for Tectonic Process on Triton **[#1685]**
To investigate the evolution process of planetary surfaces in outer solar system, rheological properties of polycrystalline nitrogen and methane were studied by means of an uniaxial deformation system with a cryostat.

Desch S. Porter S.
Amphitrite: A Twist on Triton's Capture **[#2625]**
We propose Triton was captured by Neptune while it orbited a 2 $M_{\oplus}$ planet, Amphitrite, that then collided with either Neptune or Uranus. We present relevant dynamical calculations and discuss observational consequences for Uranus and Neptune.

Burton M. E. Dougherty M. K. Russell C. T.
Saturn's Internal Planetary Magnetic Field **[#2273]**
Based on Cassini magnetic field measurements we have detected a range of planetary rotation periods for which there is a measurable non-axisymmetric field component and derive models of Saturn's internal planetary magnetic field based on this rate.

Cao H. Russell C. T. Joy S. P. Yu A. Z. Y. Leinweber H. K.
Galileo Observations of Jupiter's Intrinsic Magnetic Field **[#1155]**
Previously unmodeled Galileo magnetic measurements, obtained interior to Io, are examined to determine their suitability for extending the modeled field to higher orders and to compare with Pioneer 11 measurements to constrain the secular variation.

Selvans Z. A. Pappalardo R. T.
Geological Superposition Networks on Europa: A Corroboration of the Nonsynchronous Rotation Hypothesis **[#2610]**
A Geological Superposition Network (GSN) constructed from the linear tectonic features on Europa shows superposition relationships strongly corroborating prograde nonsynchronous rotation (NSR) of <180°, where ~40% of the mapped features are attributable to NSR.

Quick L. C. Barnouin O. S. Patterson G. W. Prockter L. M.
Constraints on the Detection of Cryovolcanic Plumes on Europa **[#2247]**
This abstract will provide new insights on imaging requirements necessary to detect plumes on Europa, should they exist.

Kay J. P. Kattenhorn S. A.
An Open-Source GUI for Calculating Icy Moon Tidal Stresses Using SatStress **[#2046]**
We have used the open-source program SatStress to develop a graphic user interface (GUI) for calculating tidal stresses on the surface of a satellite with both elastic and viscoelastic rheology. SatStress GUI will eventually be open-source.

Phillips C. B. Dalton J. B.
Scattered Light Correction to Galileo Europa Data and Quantitative Spectral Comparisons **[#2661]**
We are combining the SSI and NIMS datasets for Europa, by performing a scattered light correction to provide a quantitative calibration to the SSI color data to allow for direct comparisons with NIMS.

Keszthelyi L. P. Jaeger W. L. Okubo C.
Paterae on Io: Insights from Slope Stability Analysis **[#2244]**
The near-vertical walls of paterae on Io require that the upper crust be composed of material with significant cohesion, such as basalt or cold sulfur. We continue to investigate if low-density sulfur/sulfur dioxide snow is also an option.

Barth B. Radebaugh J. McKean A.
Distribution and Comparison of Io's Paterae: Areas, Effective Diameters, and Active Volcanism. **[#2666]**
Accurate areas and effective diameters for Io's paterae were found using ArcGIS. Black material area measurements within paterae were also done and help us understand release of Io's heat.

Veeder G. J. Davies A. G. Matson D. L. Johnson T. V. Williams D. A. Radebaugh J.
Io: The Dark Paterae Component of Heat Flow **[#1221]**
We focus on the heat flow contribution from dark paterae on Io. We have estimated the areas of dark material within 130 paterae. We have analyzed their bimodal spatial distribution to constrain their total power.

Cheng A. F. * Weaver H. A. Nguyen L. Hamilton D. P. Stern S. A. Throop H. B.
A New Ring or Ring Arc of Jupiter? **[#2549]**
New Horizons LORRI observations of Himalia reveal a streak-like, extended emission feature that is interpreted as a new ring of Jupiter.