

Thursday, March 15, 2007
POSTER SESSION II: OUTER SOLAR SYSTEM
6:30 p.m. Fitness Center

Hendrix A. R. Johnson R. E.

Callisto: New Insights from Galileo UVS [#2359]

The full Callisto dataset from the Galileo Ultraviolet Spectrometer has been analyzed. We find spectral variations across the surface and explore whether an absorption feature could be due to organic species.

Stephan K. Hibbitts C. A. Jaumann R.

Reduction of Instrument-dependent Noise in Galileo NIMS Data of the Jovian Satellite Ganymede Using the Principle Component Analysis [#1950]

Applying the PCA to Galileo-NIMS data was found to be effective to remove instrument-dependent noise from each individual NIMS spectrum in such a way that each spectrum is still quantitatively analyzable.

Filacchione G. Capaccioni F. Coradini A. Cerroni P. Tosi F. Bellucci G. Brown R. H.

Baines K. H. Buratti B. J. Clark R. N. Nicholson P. D. Nelson R. M. Cuzzi J. N. McCord T. B.

Hedman M. H. Showalter M. R.

Cassini-VIMS Observations of Saturn's Main Rings [#1513]

The rings of Saturn are one of the main scientific objectives of VIMS experiment aboard Cassini: we report here some preliminary results retrieved through the analysis of the main rings (C, B, A) hyperspectral data in the 350–5050 nm range.

Verbiscer A. J. Peterson D. E. Skrutskie M. F. Cushing M. Nelson M. J. Smith J. D. Wilson J. C.

Simultaneous Spatially-resolved Near-Infrared Spectra of Pluto and Charon [#2318]

We present spectra 0.8–2.5 μm of Pluto and Charon which suggest the presence of ethane on Pluto and confirm the presence of ammonia hydrate on Charon. We model the surface of Charon's trailing hemisphere with crystalline water ice at 50 K and ammonia hydrate.

Crawford Z. A. Mullen M. E. Pappalardo R. T.

SatStress: A Web-Accessible Model of Viscoelastic Tidal Stresses in Icy Satellites [#2326]

We develop a viscoelastic treatment of the membrane stresses present on the surfaces of icy satellites, based on the gravitational potential, and describe the benefits of making the model and its source code publicly available via the WWW.

Han L. Showman A. P.

Implications of Shear Heating and Fracture Zones for Ridge Formation on Europa [#2277]

We present preliminary numerical simulations of convection to test the role of fractures zones and shear heating on European ridge formation.

Bland M. T. Showman A. P. Tobie G.

Ganymede's Orbital and Thermal Evolution and Its Effect on Magnetic Field Generation [#2020]

We suggest that tidal heating of Ganymede during passage through a Laplace-like resonance insulated the core, delaying cooling and magnetic field generation until the current epoch. This scenario is explored via a coupled orbital-thermal model.

Mitri G. Showman A. P.

Thermal Convection in the Ice-I Shells of Titan and Enceladus [#1797]

We explore the hypothesis for Titan and Enceladus that in the presence of an internal ocean, a conductive-convective transition of the ice-I shell can produce geological activity.

Vance S. D. Brown J. M. Abramson E. H.

Aqueous Solution Chemistry in Binary and Multi-Component Systems to 700 MPa Using the Method of Impulsive Stimulated Scattering [#2272]

We present equation-of-state measurements for aqueous magnesium sulfate (MgSO_4) obtained by the method of impulsive stimulated scattering (ISS) and discuss a strategy for examining pressure's influence in multi-component systems.

Vance S. D. Brown J. M. Abramson E. H.

ISIS: An Apparatus with Optical Access for In-Situ Measurements to 700 MPa [#2255]

We describe the equipment, principles of operation, and planned future applications of the Icy Satellite Interior Simulator (ISIS).

Dougherty A. J. Hogenboom D. L. Kargel J. S.

Volumetric and Optical Studies of High Pressure Phases of $\text{MgSO}_4\text{-H}_2\text{O}$ with Applications to Europa [#2275]

We use optical images of high-pressure phases of the $\text{MgSO}_4\text{-H}_2\text{O}$ system, coupled with measurements of pressure, temperature, and volume changes, to report eutectic transitions for pressures up to 200 MPa, with implications for modeling Europa's ocean.

Goldsby D. L.

Diffusion Creep of Ice: Constraints from Laboratory Creep Experiments [#2186]

Classical diffusion creep theory coupled with creep data for fine-grained ice samples are employed to estimate the rate of diffusion creep, a deformation mechanism of likely relevance for planetary ice flow.

McCarthy C. Goldsby D. L. Cooper R. F.

Transient and Steady-State Creep Responses of Ice-I/Magnesium Sulfate Hydrate Eutectic Aggregates [#2429]

The strength of ice-I/ MgSO_4 eutectic is ten times greater than that of pure ice, but transient creep is significant. Transformation of the creep curve allows estimation of the attenuation, which is much greater than predicted by a Maxwell model.

Hays C. C. Castillo J. C. Mitchell K. L. Barmatz M. B. Zhong F. Smythe W. D. Matson D. L.

Pappalardo R. T. Lopes R. M. C. Robshaw L. E. Neish C. Lunine J. I. Kargel J. S.

Thermophysical, Rheological, and Mechanical Measurements on Icy Compositions with Application to Solar System Ices [#1954]

We present the motivations and objectives of a new experimental cryo-ices initiative at JPL. This is a joint effort among experimentalists and theorists at JPL, in collaboration with specialists in ice properties.

Ganesan A. L. Brinckerhoff W. B. Coll P. Nguyen M-J. Raulin F. Cornish T. J. Ecelberger S. A.

Analysis of Titan Tholins by Laser Desorption Mass Spectrometry [#1948]

We present an analysis of Titan tholins by laser desorption time-of-flight mass spectrometry (LDMS). Included are analyses by a commercial instrument as well as a miniature LDMS instrument developed at APL.

Palmer E. E. Brown R. H.

Predictive Analysis for a Trace Carbon Dioxide Polar Cap on Iapetus [#1422]

We ran simulations showing the effect of insolation on CO_2 ice on Saturn's moon Iapetus. It establishes a limit of CO_2 that can be on the surface and its detectability. We also suggest a method to estimate polar cap ice thickness based on its width.

Benna M. Kasprzak W.

Modeling of the Interaction of Enceladus with the Magnetosphere of Saturn [#1759]

In this paper we present the latest results of the three-dimensional multi-fluid model of the interaction between Enceladus and the magnetosphere of Saturn. This model is based on the numerical code initially developed to simulate cometary atmospheres.

Dougherty M. K. Southwood D. J. Kivelson M. G. Russell C. T. Smith E. J. Burton M.

Rotation Rate of Saturn's Magnetic Field [#1675]

The work reports the latest results regarding Saturn's rotation rate from the Cassini magnetometer instrument.

Moses J. I. Liang M.-C. Yung Y .L. Shia R.-L.

Two-Dimensional Photochemical Modeling of Hydrocarbon Abundances on Saturn [#2196]

We have developed a two-dimensional (latitude/altitude) photochemical model to study meridional transport of hydrocarbons in Saturn's stratosphere. Results are compared with IR observations.