

Tuesday, March 20, 2012

ICE IS NICE: ICY SATELLITE LANDFORMS, PROCESSES, AND STRUCTURE

1:30 p.m. Waterway Ballroom 1

Chairs: Louise Prockter
Michael Bland

- 1:30 p.m. McKinnon W. B. * Singer K. N. Schenk P. M. Moore J. M.
[Massive Ice Avalanches on Iapetus, and the Mechanism of Friction Reduction in Long-Runout Landslides](#) [#2823]
We report numerous long-runout landslides on Iapetus, and its extremely cold, airless surface provides an excellent control on landslide friction reduction compared with Earth and Mars, as there is little role for either trapped air or groundwater.
- 1:45 p.m. Wood S. E. * Moore J. M. Ivarson K. L. Danilina I. Johnson M.
[A New Hypothesis for the Origin of Mass Movements on Callisto](#) [#2901]
We will describe a new hypothesis for the origin of the large lobate mass movements seen on Callisto but not other Galilean satellites. The mechanism involves near-surface condensation of CO₂ vapor driven upward by the geothermal gradient.
- 2:00 p.m. Hammond N. P. * Phillips C. B. Nimmo F. Kattenhorn S. A.
[Determining Elastic Thickness on Dione from Flexure](#) [#2374]
Using stereo-derived digital elevation models, we measure flexure across tectonic features on Dione, an icy satellite of Saturn, in order to estimate local elastic thickness and corresponding heat flux.
- 2:15 p.m. Barr A. C. *
[Grooved Terrain Formation on Ganymede Driven by Mobile-Lid Convection](#) [#1319]
Mobile-lid convection in Ganymede's ice shell is shown to be a possible means of driving the formation of its grooved terrain.
- 2:30 p.m. Prockter L. M. * Shirley J. H. Dalton J. B. Kamp L. W.
[Apparent Resurfacing of a Pull-Apart Band in Argadnel Regio, Europa, Resulting from Trough Formation](#) [#2286]
We use Galileo SSI and NIMS data to investigate a distinctive wedge-shaped band within Europa's Argadnel Regio. The band appears to have been resurfaced along its northern portion as the result of the formation of a large regional depression.
- 2:45 p.m. Schmidt B. E. * Blankenship D. D. Patterson G. W. Schenk P. M.
[Insights into Europa's Shallow Water Mobility from Thraace and Thera Macula](#) [#2667]
Comparison of Thera and Thraace Macula shows evidence for shallow water mobility within Europa's crust and places constraints on the timescales and direction of hydraulic water flow, as well as the material properties of the ice.
- 3:00 p.m. Gavin P. * Vance S.
[Modeling Hydrothermal Vents on Europa](#) [#1683]
Simulations of potential hydrothermal vents at Europa's ocean floor are presented. The effects of differing initial rock composition and temperature are explored with respect to mineral formation and vent fluid composition.
- 3:15 p.m. Castillo-Rogez J. C. * Choukroun M. Young J. B.
[Opening the Black Box: A Laboratory-Based Dissipation Model for Water Ice — Description and Implications](#) [#2100]
We will introduce a new model for ice dissipation in the conditions of stress amplitude and frequency relevant to outer planet satellites.

- 3:30 p.m. Singer K. N. * Bland M. T. McKinnon W. B. Schenk P. M.
[Relaxed Impact Craters on Ganymede: Not All Sulci Are Created Equal](#) [#2775]
Relaxed craters on Ganymede indicate heat flows in excess of 40 mW/m² averaged over 2 Ga, which suggests even higher heat flows if they occurred over a shorter interval. Mapping of four areas illuminates possible regional differences in heating.
- 3:45 p.m. Bland M. T. * Singer K. N. McKinnon W. B. Schenk P. M.
[Crater Relaxation on Enceladus: Tales of High Heat Fluxes in Unexpected Places](#) [#2168]
Enceladus craters aren't deep, modified by slow viscous creep. High heat flows, they say, relax craters away, so thermal gradients must have been steep.
- 4:00 p.m. Phillips C. B. * Hammond N. P. Robuchon G. Nimmo F. Beyer R. A. Roberts J.
[Stereo Imaging, Crater Relaxation, and Thermal Histories of Rhea and Dione](#) [#2571]
We use crater relaxation as a probe for subsurface temperature structure on satellites of Saturn. Crater relaxation from Cassini DEM crater profiles is compared with theoretical results. We find Rhea and Dione were warmer than predicted by our model.
- 4:15 p.m. Wagner R. J. * Neukum G. Schmedemann N.
[Double and Multiple Craters on the Satellites of Saturn and Their Size Distribution](#) [#2469]
Double and multiple craters on the satellites of Saturn are identified and their crater size frequency is measured.
- 4:30 p.m. Hoogenboom T. * Schenk P. White O. L.
[Investigation of Secondary Craters in the Saturnian System](#) [#2579]
To derive accurate ages using impact craters, the impact source must be determined. We investigate secondary crater size, frequency, distribution, formation, and crater chain formation on icy satellites throughout the Jupiter and Saturn systems.