

Friday, March 18, 2005

**MARS: FROM HYDROGEN TO ICE AND IMPLICATIONS FOR CLIMATE CHANGE**  
**8:30 a.m. Salon B**

**Chairs: J. L. Fastook**  
**J. S. Levy**

- 8:30 a.m. Feldman W. C. \* Prettyman T. H. Maurice S. Elphic R. C. Funsten H. O. Gasnault O. Lawrence D. J. Murphy J. R. Nelli S. Tokar R. L. Vaniman D. T.  
*Topographic Control of Hydrogen Deposits at Mid- to Low Latitudes of Mars* [#1328]  
 A close study of the correspondence between relative maxima in water-equivalent hydrogen abundances with relative maxima in the topography at mid- to low latitudes of Mars suggest that weather patterns control the deposition onto, and/or vapor diffusion into surface soils from the atmosphere.
- 8:45 a.m. Murray J. B. \* Muller J.-P. Neukum G. Werner S. C. Hauber E. Markiewicz W. J. Head J. W. III Foing B. H. Page D. Mitchell K. L. Portyankina G. HRSC Investigator Team  
*Evidence from HRSC Mars Express for a Frozen Sea Close to Mars' Equator* [#1741]  
 We present evidence for a presently-existing frozen sea, with surface pack-ice, at 5°N, 150°E, age ca. 5 million years. It measures ca. 800 × 900 km and averages ca. 45 m deep. It has probably been protected from complete sublimation by ash and a sublimation lag of exposed sediment.
- 9:00 a.m. McBride S. A. \* Allen C. C. Bell M. S.  
*Prospecting for Martian Ice* [#1090]  
 Relations between craters and ice-wedge polygons were examined on MGS images to constrain the thickness and age of a possible ice-rich mantle in the northern mid-latitudes. Results indicate the mantle is about 40 m thick and dates from before 5 Ma.
- 9:15 a.m. Fishbaugh K. E. \* Hvidberg C. S.  
*Effect of Flow on the Internal Structure of the Martian North Polar Layered Deposits* [#1331]  
 We investigate the effect of flow on the internal layer structure of the cap and compare the results to the actual structure observed in image data. The results have implications for interpretation of the climate record preserved in the layers.
- 9:30 a.m. Marchant D. R. \* Head J. W. III  
*Equilibrium Landforms in the Dry Valleys of Antarctica: Implications for Landscape Evolution and Climate Change on Mars* [#1421]  
 An understanding of the origin and evolution of equilibrium landforms in the Antarctic Dry Valleys may be helpful in elucidating the origin of some enigmatic landforms on Mars and in interpreting recent changes in the Martian climate.
- 9:45 a.m. Levy J. S. \* Head J. W. III Marchant D. R. Kreslavsky M. A.  
*Evidence for Remnants of Late Hesperian Ice-rich Deposits in the Mangala Valles Outflow Channel* [#1329]  
 We assess several possible origins for a smooth unit on the floor of Mangala Valles, interpreting it as an ice-rich remnant created by ponding and ice-cover deflation during the waning stages of the outflow channel flood emplacement.
- 10:00 a.m. Head J. W. III\* Marchant D. R. Agnew M. C. Fassett C. I. Kreslavsky M. A.  
*Regional Mid-Latitude Late Amazonian Valley Glaciers on Mars: Origin of Lineated Valley Fill and Implications for Recent Climate Change* [#1208]  
 Evidence is presented that lineated valley fill in the Deuteronilus mid-latitude region of Mars originated from snow and ice accumulation and glacial flow during periods of high obliquity in the Amazonian.

- 10:15 a.m. Helbert J. \* Benkhoff J.  
*Beyond the Equilibrium Paradigm — Glacial Deposits in the Equatorial Regions of Mars* [#1352]  
We will show, that even in the equatorial regions of Mars ground ice deposits can be stable over long periods of time. The main assumption we have to do is, that the near surface layer of Mars is not in an equilibrium state.
- 10:30 a.m. Elphic R. C. \* Feldman W. C. Prettyman T. H. Tokar R. L. Lawrence D. J.  
Head J. W. III Maurice S.  
*Mars Odyssey Neutron Spectrometer Water-Equivalent Hydrogen: Comparison with Glacial Landforms on Tharsis* [#1805]  
Mars Odyssey neutron spectrometer measurements indicate enhanced water-equivalent hydrogen abundances on the western slopes of the Tharsis Montes, possibly in association with relict buried ice.
- 10:45 a.m. Fastook J. L. \* Head J. W. III Marchant D. R. Shean D. E.  
*Ice Sheet Modeling: Mass Balance Relationships for Map-Plane Ice Sheet Reconstruction: Application to Tharsis Montes Glaciation* [#1212]  
We apply the properties of the Mars atmosphere to models of mass balance and spatial distribution on the flanks of Tharsis Montes; these lead to patterns that are strikingly similar to the geological evidence for ice accumulation and glacial flow.
- 11:00 a.m. Ishii T. \* Miyamoto H. Sasaki S.  
*Viscous Flows from Poleward-facing Walls of Impact Craters in Middle Latitudes of the Alba Patera Area* [#2172]  
Inclinations of poleward-facing crater walls are smaller than those of equatorward-facing walls in middle latitudes of the Alba Patera area, which suggests that viscous flows of ice-rich materials would occur preferentially on poleward-facing slopes.
- 11:15 a.m. Shean D. E. \* Head J. W. III Marchant D. R.  
*Debris-covered Glaciers Within the Arsia Mons Fan-shaped Deposit: Implications for Glaciation, Deglaciation and the Origin of Lineated Valley Fill* [#1339]  
We interpret flow-like features at Arsia Mons as debris-covered glaciers representing the most recent phases of glaciation in this region, providing insight into processes of glaciation and deglaciation on Mars. We discuss applications to other areas containing candidate glacial deposits.
- 11:30 a.m. Sakimoto S. E. H. \*  
*Central Mounds in Martian Impact Craters: Assessment as Possible Perennial Permafrost Mounds (Pingos)* [#2099]  
We characterize topography for and model martian polar region impact crater central mounds as potential perennial permafrost mounds (pingos).