

Tuesday, March 2, 2010
**TERRESTRIAL PLANET CRYOSPHERES:
 ICE TABLES, GLACIERS, AND PERIGLACIAL LANDFORMS**
 8:30 a.m. Waterway Ballroom 4

Chairs: Stephen Clifford
 Douglas Kowalewski

- 8:30 a.m. Grimm R. E. * Painter S. L.
[*The Secular Loss of Groundwater on Mars* \[#1329\]](#)
 The instability of ice at low latitudes on Mars also leads to massive groundwater evaporation. If loss has been retarded by lateral heterogeneity, the mid-latitude northern plains may be the last, best hope for accessible groundwater.
- 8:45 a.m. Clifford S. M. * Lasue J.
[*The Evolution and Fate of Groundwater on Mars: The Influence of Modeling Assumptions and Consistency of Predictions with Observational Constraints* \[#2739\]](#)
 Two models of the hydrologic evolution of Mars are compared to identify the basis for their differing conclusions regarding the survival and distribution of present-day groundwater.
- 9:00 a.m. Plaut J. J. * Holt J. W. Head J. W. III Gim Y. Choudhary P. Baker D. M. Kress A. SHARAD Team
[*Thick Ice Deposits in Deuteronilus Mensae, Mars: Regional Distribution from Radar Sounding* \[#2454\]](#)
 Radar sounding data from SHARAD on MRO are used to map the distribution of mid-latitude ice in the Deuteronilus Mensae region of Mars. Ice is widespread in the region, with thicknesses up to 1 km.
- 9:15 a.m. Kadish S. J. * Head J. W.
[*Impacts into Ice-rich Deposits on Mars: Excess Ejecta Craters, Perched Craters, and Pedestal Craters* \[#1017\]](#)
 We compare formation mechanisms based on impacts into ice-rich material for excess ejecta craters, perched craters, and pedestal craters. We offer evidence for a genetic relationship based on their topography, morphology, and geographic distribution.
- 9:30 a.m. Byrne S. * Banks M. E. Dundas C. M. Mattson S. Russell P. S. Herkenhoff K. E. McEwen A. S.
[*North Polar Ice Accumulation Modeled from Impact Crater Statistics* \[#1697\]](#)
 The population statistics and morphological evolution of 100 newly-discovered impact craters in the north polar ice cap of Mars are modeled to relate current climate to polar surface mass balance.
- 9:45 a.m. Kreslavsky M. A. * Head J. W. Maine A. Gray H. Asphaug E.
[*North-South Asymmetry in Degradation Rates of Small Impact Craters at High Latitudes on Mars: Implications for Recent Climate Change* \[#2560\]](#)
 Density of small (5–50 m) impact craters on patterned ground at high latitudes is much lower in the N than in the S. This is explained by climate-precession-driven deposition of icy mantles ~1 ka ago in the N and ~20 ka ago in the S.
- 10:00 a.m. Séjourné A. * Costard F. Gargani J. Soare R. J. Marmo C.
[*The Polygon Junction Pits as an Evidence of a Particularly Ice-rich Area in Utopia Planitia* \[#2113\]](#)
 The western part of Utopia Planitia contains different periglacial landforms. With HiRISE imagery we show that the polygon junction pits have a geographic distribution coinciding with an ice-rich unit and a thermokarst morphological evolution.

- 10:15 a.m. Hauber E. * Reiss D. Ulrich M. Krohn K. Preusker F. Trauthan F. Zanetti M. Hiesinger H. van Gasselt S. Jaumann R. Johansson L. Johnsson A. Olvmo M.
[*Debris Flow Fans and Permafrost Landforms on Svalbard \(Norway\): Terrestrial Analogues for Martian Mid-Latitude Periglacial Landscapes*](#) [#1922]
Young water- and ice-related landforms on Mars show a latitude-dependent distribution and bear a record of the recent climatic past. Morphological analogues from Svalbard help to develop evolutionary scenarios of martian permafrost environments.
- 10:30 a.m. Kowalewski D. E. * Morgan G. A. Marchant D. R. Head J. W. III
[*Influence of Textural and Topographic Variability on Sublimation of Buried Ice: Implications for Near Surface Ice Stability in Antarctica and Mars*](#) [#2511]
Our vapor diffusion modeling suggests surface textures, topography, and the presence of salt layers demonstrably alter sublimation rates in the McMurdo Dry Valleys and offer insight into similar environments in the hyper-arid cold climate of Mars.
- 10:45 a.m. Marchant D. R. * Mackay S. L. Head J. W. III Kowalewski D. E.
[*Documenting Microclimate Variation and the Distribution of Englacial Debris in Mullins Glacier, Antarctica: Implications for the Origin, Flow, and Modification of LDA and LVF on Mars*](#) [#2601]
Our results suggest that variations in both englacial-debris concentration and local environmental conditions impart first-order changes in the surface morphology of Mullins Glacier. Results can be applied toward understanding the distribution of debris in LDA and LVF.
- 11:00 a.m. Baker D. M. H. * Head J. W. Marchant D. R.
[*Plains and Transitional Textures Adjacent to Lobate Debris Aprons in Deuteronilus Mensae, Mars*](#) [#1378]
Analyses suggest that glacial ice in the northern mid-latitudes of Mars was more extensive in the recent past. Plains units and textures surrounding lobate debris aprons in Deuteronilus Mensae are examined in search of former glacial maxima.
- 11:15 a.m. Mège D. * Bourgeois O.
[*Destabilization of Valles Marineris Wallslopes by Retreat of Ancient Glaciers*](#) [#1713]
Deep-seated gravitational spreading of most Valles Marineris inter-chasma basement ridges strongly argues in favor of a minimum of 1 km of glacial infill, probably during the Hesperian.
- 11:30 a.m. Vincendon M. * Mustard J. Forget F. Kreslavsky M. Spiga A. Murchie S. Bibring J.-P.
[*Discovery of Buried Perennial Ice at Low Latitudes on Mars*](#) [#1249]
We show that the observed stability of seasonal CO₂ ice at low to mid-latitudes on Mars requires a high thermal inertia subsurface that can only be water ice. Ice is inferred in the southern hemisphere down to 25° latitude on pole facing slopes.