

**Friday, March 27, 2009**  
**MARS: EARLY HISTORY AND IMPACT PROCESSES**  
**1:30 p.m. Waterway Ballroom 1**

**Chairs:** **Shane Byrne**  
**Lon Hood**

- 1:30 p.m. Frey H. V. \*  
[\*New Large Late Heavy Bombardment Impact Basins on Mars Revealed in Crustal Thickness Data: Crater Retention Ages and Implications\*](#) [#1123]  
 Crater retention ages for newly identified large impact basins are not significantly older than for basins already known. The large impact late heavy bombardment on Mars was a relatively brief event or the record of previous large impacts was erased.
- 1:45 p.m. Rodriguez J. A. P. \* Kargel J. S. Tanaka K. L. Berman D. C.  
[\*Construction of a Volatile-rich Martian Upper Crust During the Impact Cataclysm\*](#) [#2347]  
 We have investigated the distribution of pristine and degraded impact craters and QCDs in the plateau surfaces forming the peripheries of the chasmata, chaotic terrains and outflow channels in order to investigate the construction of a volatile-rich crust in the region.
- 2:00 p.m. Lillis R. J. \* Halekas J. S. Louzada K. L. Stewart S. T. Manga M.  
[\*Impact Demagnetization at Mars: Using Multiple Altitude Magnetic Field Data to Constrain Properties of Crustal Magnetization\*](#) [#1444]  
 We use statistical magnetization modeling and magnetic field data at two separate altitudes (185 km and ~400 km) in order to constrain crustal magnetization properties at martian impact craters. At Hellas, the demagnetization radius is 1.18 times the basin radius.
- 2:15 p.m. Hood L. L. \* Harrison K. P. Langlais B. Lillis R. J. Poulet F. Williams D. A.  
[\*Correlations of Martian Crustal Magnetic Fields With Valley Networks, Phyllosilicate Exposures, and Volcanic Constructs: Implications for Magnetic Sources and Dynamo History\*](#) [#1747]  
 We report correlations of (a) phyllosilicate exposures identified using Mars Express OMEGA data with strong crustal fields and valley networks; and (b) weaker magnetic anomalies with the Medusae Fossae Formation adjacent to Apollinaris Patera.
- 2:30 p.m. Loizeau D. \* Bouley S. Mangold N. Meresse S. Costard F. Poulet F. Ansan V. Le Mouelic S. Bibring J.-P. Gondet B. Langevin Y.  
[\*Tyrrhena Terra: Hydrated Lobate Ejecta and Plains\*](#) [#2010]  
 Hydrated minerals as phyllosilicates have been identified with OMEGA/Mars Express in Tyrrhena Terra, both on crater ejecta blankets and alluvial plains. Hypothesis are formulated about their origin and link.
- 2:45 p.m. Schwenzer S. P. \* Kring D. A.  
[\*Impact-generated Hydrothermal Alteration on Mars: Clay Minerals, Oxides, Zeolites, and More\*](#) [#1421]  
 We explore alteration mineral assemblages produced in hydrothermal systems as a function of host rock variability and thermochemical conditions and compare the results to OMEGA and CRISM data.
- 3:00 p.m. Barnhart C. J. \* Nimmo F. Travis B. J.  
[\*Observable Effects of Post-Impact Hydrothermal Systems Incorporating Freezing\*](#) [#2013]  
 We model post-impact hydrothermal systems exposed to subfreezing temperatures and quantify observable geochemical and geomorphic signatures such as discharge rate, total discharge volume, and W/R ratios.

- 3:15 p.m. HiRISE Team Ivanov B. A. \* Melosh H. J. McEwen A. S.  
[Small Impact Crater Clusters in High Resolution HiRISE Images - II](#) [#1410]  
We present the analysis of new data on small craters and crater clusters accumulated by the HiRISE team for the first 10,000 orbits of MRO.
- 3:30 p.m. Burleigh K. J. \* Melosh H. J. Tornabene L. L. McEwen A. S.  
[Small Impacts Trigger Dust Landslides on Mars](#) [#1431]  
Small (~10 m diameter) recent craters on Mars triggered large numbers of small dust avalanches. Mapping reveals that the trigger mechanism is airblast by the incoming bolide, not seismic shaking.
- 3:45 p.m. Byrne S. \* Dundas C. M. Kennedy M. R. Mellon M. Shean D. Daubar I. Cull S. Seelos K. D. Murchie S. Cantor B. Arvidson R. E. Edgett K. McEwen A. Harrison T. Posiolova L. Seelos F. P. HiRISE Team CTX Team CRISM Team  
[Excavation of Subsurface Ice on Mars by New Impact Craters](#) [#1831]  
New impact craters, a few meters in size, have excavated ground ice in the martian mid-latitudes. HiRISE data show sublimation of this exposed ice over six months. We will describe this new discovery and discuss the implications of the ice-table depth.
- 4:00 p.m. Clevy J. R. \* Kattenhorn S. A.  
[Localized Seasonal Variations in Water Equivalent Hydrogen on Mars and Possible Relationship to Recent Impacts](#) [#2265]  
Seasonal variations in water equivalent hydrogen in the eastern equatorial region of Mars, as determined from neutron spectrometer data, are considered to be a potential result of recent impacts having exposed materials rich in water ice.
- 4:15 p.m. Kreslavsky M. A. \*  
[Dynamic Landscapes at High Latitudes on Mars: Constraints from Populations of Small Craters](#) [#2311]  
Statistical properties of populations of small impact craters at the high-latitude patterned ground on Mars indicate very quick modification and obliteration of craters and hence highly dynamic landscapes.
- 4:30 p.m. Hartmann W. K. \* Quantin C. Werner S. C. Popova O.  
[Ice Flow in Debris Aprons and Central Peaks, and the Application of Crater Counts](#) [#1204]  
We apply studies of decameter-scale craters to studies of probable ice-flow-related features on Mars, to interpret both chronometry and geological processes among the features. We find losses of decameter-scale craters relative to nearby plains, probably due to sublimation.