

Tuesday, March 11, 2008

MARS SEDIMENTARY PROCESSES FROM VICTORIA CRATER TO THE COLUMBIA HILLS
1:30 p.m. Crystal Ballroom B

Chairs: R. E. Milliken
D. W. Ming

- 1:30 p.m. Lewis K. W. * Aharonson O. McEwen A. S. Kirk R. L.
Detection of Rhythmic Layered Deposits at Arabia Terra, Mars [#2413]
 We have measured the stratigraphic thicknesses of several layered deposits in Arabia Terra, using HiRISE stereo data. These measurements show highly periodic sequences, suggesting a cyclic depositional process, possibly driven by orbital variations.
- 1:45 p.m. Squyres S. W. * Arvidson R. E. Athena Science Team
Overview of Recent Results from the Opportunity Rover at Victoria Crater [#2192]
 The Opportunity rover has continued to explore Victoria Crater, examining eolian stratigraphy exposed on steep promontories, and chemical stratigraphy in the crater wall at Duck Bay.
- 2:00 p.m. Mittlefehldt D. W. * Schröder C. Gellert R. Klingelhöfer G. Jolliff B. L.
 Morris R. V. Athena Science Team
Chemostratigraphy and Fe Mineralogy of the Victoria Crater Duck Bay Section: Opportunity APXS and Mössbauer Results [#2404]
 The Mars Exploration Rover Opportunity has begun investigating the sedimentary rocks exposed in Victoria crater. We will describe the chemical and Fe mineralogy results obtained thus far.
- 2:15 p.m. Brückner J. * Gellert R. Dreibus G. Athena Science Team
Chemical Composition of Meridiani Sediments and Possible Precursor Material [#1653]
 A two-component mixing model for the Meridiani sediments allows combining a siliciclastic component with sulfates in an aqueous environment. Altered basalts found at Gusev match the composition of the siliciclastic precursor of the sediments.
- 2:30 p.m. Ming D. W. * Gellert R. Morris R. V. Yen A. S. Arvidson R. E. Brückner J. Clark B. C.
 Cohen B. A. Fleischer I. Klingelhöfer G. McCoy T. J. Mittlefehldt D. W. Schmidt M. E.
 Schröder C. Squyres S. W. Zipfel J.
Geochemical Properties of Rocks and Soils in Gusev Crater, Mars: APXS Results from Cumberland Ridge to Home Plate [#1068]
 The objective of this paper is to provide an update on the health of the Alpha Particle X-ray Spectrometer (APXS) onboard the MER Spirit rover and to expand the geochemical dataset from sol 470 to sol 1368.
- 2:45 p.m. Yen A. S. * Morris R. V. Clark B. C. Gellert R. Athena Science Team
A Simplified View of the Geochemical Diversity Surrounding Home Plate [#2364]
 The wide range of chemical variability across the samples analyzed on and near Home Plate can be represented by contributions from only six primary components.
- 3:00 p.m. Schröder C. * Di K. Morris R. V. Klingelhöfer G. Li R. Athena Science Team
An East to West Mineralogical Trend in Mars Exploration Rover Spirit Mössbauer Spectra of Home Plate [#2153]
 Mössbauer spectra show pyroxene, magnetite, little or no olivine, and little nanophase ferric oxides at the eastern rim of Home Plate. Olivine and nanophase oxide contents increase west and coincide with differences in elevation.

- 3:15 p.m. Schmidt M. E. * Farrand W. H. Gellert R. Hurowitz J. Johnson J. R. McCoy T. Athena Science Team
Lateral Mineralogical and Geochemical Variations at Home Plate: Implications for Fluid Flow and Hydrothermal Alteration [#2024]
This abstract summarizes systematic spectral, mineralogical, and compositional differences that have been found across Home Plate and suggests they are the result of hydrothermal alteration.
- 3:30 p.m. McAdam A. C. * Zolotov M. Yu. Mironenko M. V. Sharp T. G.
Formation of Martian Silica-rich Deposits Through Rock Alteration: A Theoretical Assessment [#2371]
Physical-chemical models of rock alteration show that silica-rich deposits, like those at Home Plate in Gusev crater, could form in cold and hot spring settings. Cold settings imply low pH conditions.
- 3:45 p.m. Crumpler L. S. * Athena Science Team
Geologic Context of High-Silica Deposits on Mars from In Situ Field Mapping, Columbia Hills, Gusev Crater, Mars [#1901]
The geologic and structural setting of high-silica deposits near Home Plate was mapped by the MER rover Spirit using field methods. The results favor the formation of the deposits at or near a paleosurface prior to the emplacement of overlying pyroclastic units.
- 4:00 p.m. Milliken R. E. * Swayze G. Arvidson R. E. Bishop J. L. Clark R. N. Ehlmann B. L. Grotzinger J. Morris R. V. Murchie S. L. Mustard J. F. Weitz C. M. CRISM Science Team
Spectral Evidence for Sedimentary Silica on Mars [#2025]
CRISM spectra of finely-layered Hesperian-Amazonian deposits on the plains around Valles Marineris exhibit features indicative of silica-rich phases, jarosite, and protoclays. The deposits are likely sedimentary in origin and represent aqueous activity.
- 4:15 p.m. McGlynn I. O. * McSween H. Y. Jr. Fedo C. M.
Textural and Chemical Evidence of Hydrodynamic Sorting in Sediments in Gusev Crater [#1332]
The physical sorting of sediments at Gusev Crater examined from MI images and APXS chemistry indicate aeolian processes may fractionate particles with different densities, producing soils with a relative depletion of heavy oxides.
- 4:30 p.m. Burt D. M. * Knauth L. P. Wohletz K. H.
Sedimentation by Impact Cratering on Mars [#2067]
Layered outcrops at Meridiani Planum and Home Plate (Gusev Crater) appear nearly the same, yet are interpreted to have formed differently. Occam's razor suggests that they and similar-appearing outcrops imaged from orbit formed via a common process.