

Thursday, March 13, 2008
POSTER SESSION II: MARS ORBITAL DATA — METHODS AND INTERPRETATION
6:30 p.m. Fitness Center

Farrand W. H. Johnson J. R. Schmidt M. E. Bell J. F. III
VNIR Spectral Differences on Natural and Brushed/Wind-abraded Surfaces on Home Plate, Gusev Crater, Mars: Spirit Pancam and HiRISE Color Observations [#1774]

Color differences between the eastern and western rims of Home Plate are examined using Spirit Pancam and HiRISE color observations. Differences between near-field and remote observations are considered.

Rice M. S. Bell J. F. III Wang A. Cloutis E. A.
Vis-NIR Spectral Characterization of Si-rich Deposits at Gusev Crater, Mars [#2138]

The Spirit rover has discovered high concentrations of silica at Gusev Crater, and a distinct spectral feature near 1000 nm appears to be diagnostic of these materials. We hypothesize that the presence of H₂O or OH may be responsible for this feature.

Combe J.-Ph. McCord T. B.
Mars-Express/HRSC Spectral Data of MER Landing Sites Analyzed by a Multiple-Endmember Linear Spectral Linear Unmixing Model (MELSUM) [#2381]

HRSC multispectral data are analyzed for mapping the main surface spectral components and photometric properties of Mars. The unique geometry of observation of this dataset is investigated. Results will be compared to field observations from the MERs.

Hauber E. Gwinner K. Gendrin A. Fueten F. Stesky R. Pelkey S. Reiss D. Zegers T. E.
 MacKinnon P. Jaumann R. Bibring J.-P. Neukum G.
Hebes Chasma, Mars: Slopes and Stratigraphy of Interior Layered Deposits [#2375]

We present new data from HRSC and CTX on the topography, stratigraphy, and structure of Interior Layered Deposits in Hebes Chasma, Valles Marineris, Mars.

Williams L. H. Allison Z. Bynum P. Dawkins B. Evans T. Field E. Flynn D. Peters K. Russo T.
 Witzleben C. Tsang S.
Geological Survey of Terra Cimmeria [#1994]

Terra Cimmeria contains one of the most researched craters on the surface of Mars, Gusev Crater. This paper examines the history of Gusev Crater.

Michalski J. R. Bibring J.-P. Bishop J. L. Golombek M. Loizeau D. Mangold N.
 Noe Dobrea E. Z. Poulet F.

The Case for Mawrth: Rationale for Selecting the Mawrth Vallis Region as the MSL Landing Site [#1634]

This paper describes the science rationale for selecting the mineralogically and lithologically diverse Mawrth Vallis region as the landing site for the Mars Science Laboratory mission in 2009.

Viviano C. E. Moersch J. E. Piatek J. L.
A Search for Phyllosilicates in Mawrth Vallis, Mars, Using THEMIS Thermal Infrared Multispectral Data [#2474]

High temperature daytime THEMIS images in the Mawrth Vallis region allow for possible mapping of clays through spectral indices. An attempt has been made to find an expression that is sensitive to only phyllosilicates, and not regions of high albedo.

McKeown N. K. Bishop J. L. Noe Dobrea E. Z. Ehlmann B. L. Michalski J. R. Mustard J. F.
 Murchie S. L. Silver E. Bibring J.-P. CRISM Team

The Distribution of Phyllosilicates in Mawrth Vallis as Seen by CRISM [#1400]

Several phyllosilicate species have been positively identified in Mawrth Vallis using CRISM and plotted geographically. The results support multiple widespread alteration processes, requiring extensive liquid water in the mid-to-late Noachian.

Schieber J.

Features of Geologic Interest Within the Proposed Eberswalde Crater Mars Science Lab (MSL) Landing Ellipse [#2117]

The Eberswalde MSL site has multiple valuable targets. They include likely exposures of sedimentary rocks, inverted and branching channels of probable fluvial/deltaic origin, light-toned potentially clay bearing deposits, and exposures of megabreccia.

Kuzmin R. O. Mironenko M. V. Evdokimova N. A.

Mars: Spectral and Thermodynamic Restrictions on the Gypsum Existence in the Juventae Chasma [#1575]

We presents the results of the chemical thermodynamic modelling of sulfates precipitation sequence in conformity with existence of the sulfates in the Juventae Chasma.

Bishop J. L. Parente M. Weitz C. M. Noe Dobrea E. Z. Calvin W. M. Milliken R. E. Roach L. H. Murchie S. L. McKeown N. K. Mustard J. F. CRISM Team

Characterization of Light-toned Sulfate and Hydrated Silica Layers at Juventae Chasma Using CRISM, OMEGA, HiRISE and CTX Images [#2334]

The light-toned deposits in inverted channels on the plains exhibit hydrated Al/Si spectral features and color variations, whereas the bright blocky mounds within the chasmata are spectrally dominated by kieserite and contain sedimentary-type layers.

den Haan J. Zegers T. E. Rossi A. P. van Ruitenbeek F. J. A.

Detection and Context of Hydrated Mineralogy in the Tyrrenna Terra and Libya Montes Regions Using HRSC, OMEGA and CRISM [#1743]

In this study we attempt to positively identify hydrated mineralogy in the Terra Tyrrenna and Libya Montes regions of Mars. The geological context of hydrated deposits is then studied in order to derive the underlying process of formation.

Lineberger H. Annex A. Tsang S. Jones M. Tobias M. Grigsby B. Malaret E. Seelos K. D. Murchie S. L. Turney D.

Preliminary Findings of the Mars Exploration Student Data Teams Using CRISM Data [#1662]

The Mars Exploration Student Data Teams (MESDT), a program involving high school students in an authentic research project created at Arizona State University, use CRISM data to make interpretations of an area within the Terra Tyrrenna region of Mars.

Poulet F. Platevoet B. Bardintzeff J.-M. Mangold N. Bibring J.-P. Mustard J. F. Langevin Y. Vincendon M. Aleon A. Gondet B. Pinet P.

Modal Composition of Martian Low Albedo Regions from OMEGA Reflectance Spectra: Implications for Upper Crustal Petrology [#1760]

OMEGA reflectance data are used to examine martian low albedo surfaces for region-to-region differences in modal mineralogy. A comparison with previous TES analysis and compositions of SNCs are discussed. The implications for the evolution of the upper crust are derived.

Milam K. A. Moersch J. E. McSween H. Y. Jr.

Distribution and Variation of Plagioclase Compositions on Mars [#1334]

TES data have been used to determine plagioclase compositions for the martian surface. Plagioclase compositional maps show the distribution and variation of plagioclase across Mars.

Wendt L. Combe J.-Ph. McCord T. B. Neukum G.

Mapping of Martian Surface Units using HRSC Color Data [#1242]

We studied the color dataset of HRSC to uniquely map surface units of Mars. Illumination and observation angles and surface roughness have to be considered. Further investigations are necessary to understand these effects.

Malaret E. Hash C. Murchie S. L. Seelos F. P. McGuire P. Arvidson R. E. Wolff M. J. Smith M. Mustard J. F. Pelkey S. Martin T. McGovern A. Choo T. Humm D. Shyong W.-J. CRISM Team
Construction of the CRISM Global Multispectral Map of Mars [#2081]

CRISM is generating a 200 m/pixel, 72-wavelength map of Mars. Three parallel versions include I/F, Lambert albedo corrected for photometric and atmospheric effects, and summary products. The first parts of the map were released in December 2007.

Honma A. Bishop J. L. McKeown N. K. Brown A. J. Parente M.

Constraining Phyllosilicate Abundances on Mars Using CRISM Spectra and Laboratory Mixtures [#1457]

Phyllosilicate mixture experiments were conducted to place constraints on phyllosilicate abundance on the martian surface. Band depths of OH features in CRISM spectra from Mawrth Vallis were compared to those determined from lab mixture spectra.

Clark J. T. Bishop J. L. Parente M. Brown A. J. McKeown N. K.

Constraining Sulfate Abundances on Mars Using CRISM Spectra and Laboratory Mixtures [#1540]

Sulfate mixture experiments were performed in order to provide constraints on the abundances of sulfate mineral detections on Mars. Band depths of lab mixture spectra indicate up to 50 wt.% kieserite may be present in Juventae Chasma.

Jouglet D. Poulet F. Langevin Y. Bibring J.-P. Gondet B. Vincendon M.

Hydration of the Martian Southern Hemisphere Using the OMEGA Dataset [#1752]

We present our results about the surface hydration of the martian southern hemisphere seen by MEx/OMEGA at 3 μm . This new coverage was obtained thanks to our recalibration of the OMEGA L channel non-nominal data.

Pommerol A. Schmitt B. OMEGA Team

Water-of-Hydration Near-IR Bands on Mars: Distinguishing Between the Effects of Hydration State and Surface Texture using OMEGA and TES Datasets [#1861]

We analyze the origins of the 3 μm water-of-hydration band strength spatial variations on the martian surface to discriminate the effects of albedo, particle size, and hydration state variations.

Glotch T. D.

Mid-IR Optical Constants of Six Iron Oxide/Oxyhydroxide Minerals [#1912]

The mid-IR optical constants are derived for hematite, magnetite, maghemite, goethite, akaganeite, and lepidocrocite. Optical constants and related dispersion parameters are available at http://ms.cc.sunysb.edu/~tglotch/optical_constants.htm.

Castano R. Gilmore M. S. Bornstein B. Hojnacki S. Greenwood J. P.

A Comparison of Two Methods for Automated Mineral Detection in Visible/Near-Infrared Spectra [#1933]

We are developing a series of algorithms to automate the processing and analysis of hyperspectral images to identify the presence of constituent spectra. We demonstrate our methods on an Earth scene (AVIRIS) and a Mars scene (OMEGA).

Rampe E. B. Kraft M. D. Rogers A. D. Sharp T. G.

Effects of Chemical Weathering on the Detection of Igneous Minerals in Thermal Infrared Spectral Models [#2058]

We investigate the effects of chemical weathering on the ability to detect igneous minerals in thermal infrared spectral models of physical mixtures. Weathering products affect modeled relative abundances of plagioclase, pyroxene, and olivine.

Stockstill-Cahill K. R. Anderson F. S. Hamilton V. E.

A Thermal Emission Study of Hawaiian Foidite Rocks and Comparison to TES Data of Mars [#2185]

Recent work suggests that some deposits on Mars may have low silica contents that classify them as foiditic rocks. This paper presents thermal infrared spectra of foidite rocks from the Honolulu Volcanic (HV) suite.

Lane M. D.

Sulfide Minerals Studied Using Thermal Emission Spectroscopy [#2205]

Sulfide minerals are common in primitive IDPs, meteorites, and throughout the solar system. Sulfides occur in terrestrial volcanic terrains, hence should be present on Mars. This work presents thermal emissivity spectra of sulfide minerals.

King P. L. Dufresne C. D. M. Dalby K. N.

Effect of SiO₂, Total FeO, Fe²⁺/Fe³⁺ and Alkalis in Glasses on Thermal Infrared Spectra [#2256]

We present TIR data for rhyolitic to basaltic glasses. The ~9 μm and ~8.3 μm frequencies depend on SiO₂ wt% and the full-width at half-maximum depends on alkali wt%. The TIR spectra of basaltic glasses do not vary with Fe_{total} and Fe³⁺/Fe²⁺.

Roush T. L. Brown A. J.

Derivation of the VNIR (0.4–4.0 μm) Optical Constants of Nontronite and an Application to Mars: Modeling Single Scattering Albedo of Candidate Martian Dust Grains [#2436]

We derive optical constants of nontronite using two scattering theories. Mie scattering models compare palagonite and nontronite as putative martian atmospheric dust and show the importance of knowing these optical constants for quantitative interpretation of CRISM spectra.

Maturilli A. Helbert J.

Martian Analogues Emissivity Spectra from the Berlin Emissivity Database (BED) in the [3–50] μm Spectral Region [#1278]

The Berlin Emissivity Database (BED) contains emissivity measurements of several planetary analogues measured in the wavelength range from 3 to 50 μm as a function of particle size. Martian analogues spectra are shown and discussed in the paper.