

Thursday, March 17, 2005
POSTER SESSION II: MARS INFRARED SPECTROSCOPY
7:00 p.m. Fitness Center

Stockstill K. R. Moersch J. E. McSween H. Y. Jr. Christensen P. R.
THEMIS Multipsectral Analysis of Proposed Paleolake Basins in the Aeolis Quadrangle of Mars [#2107]
We use THEMIS data to search for small-scale aqueous deposits within proposed paleolake basins in the Aeolis quadrangle of Mars.

Whisner S. C. Moersch J. E.
Correlating Remotely-sensed Nighttime Thermal Radiance Images with Field-mapped Geologic Units: A Terrestrial Case Study with Applications to Mars [#2103]
Dust (Mars) and vegetation (Earth) spectral features overwhelm compositional spectral features in SWIR. Nighttime TIR reveals deeper structural and lithologic complexities, confirmed by surface mapping in SE TN due to the greater sensing depth associated with diurnal thermal propagation.

Archinal B. A. Sides S. Weller L. Cushing G. Titus T. Kirk R. L. Soderblom L. A. Duxbury T. C.
Model Development and Testing for THEMIS Controlled Mars Mosaics [#2052]
We describe our algorithm for making controlled mosaics of Mars using THEMIS IR images. Also discussed are issues regarding making large area or global mosaics, such as automatic tiepointing, rejection of outliers, and block adjustment solutions.

Lane M. D.
Evidence for Aqueously Precipitated Sulfates in Northeast Meridiani Using THEMIS and TES Data [#2180]
An investigation using THEMIS and TES midinfrared spectral data has revealed a channel to the northeast of the Meridiani plains that contains aqueously precipitated sulfates. Sulfates are also identified in the surrounding plains.

Moersch J. E. Crumpler L. S. Arvidson R. E. Blaney D. L. Christensen P. R.
Ferguson R. Golombek M. P. Knudson A. Piatek J. Ruff S. Squyres S. Tornabene L. L.
Wyatt M. Athena Science Team
Comparison of Orbital Infrared Observations and Surface Measurements by the Mars Exploration Rover Spirit at Gusev Crater [#2020]
Thermal inertias derived from THEMIS night infrared images are correlated with rock population measurements made by the Mars Exploration Rover Spirit while traversing the plains between Bonneville crater and the Columbia Hills.

Dunn T. L. McSween H. Y. Jr. Milam K. A.
Using Thermal Emission Spectra to Model Modal Mineralogies of Alkalic Rocks: Applications for Mars [#1776]
Modal mineralogies of a suite of terrestrial alkalic rocks were determined by both electron microprobe mapping and deconvolution of thermal emission spectra. Modeled modes were then compared to laboratory measured modes to assess their accuracy.

Murphy N. W. Jakosky B. M. Rafkin S. C. R. Larsen K. Putzig N. E. Mellon M. T.
Thermophysical Properties of the Surface of Isidis Basin, Mars [#2218]
We investigated the properties of the high thermal inertia surface in Isidis basin by comparing thermal data from TES and THEMIS, visible data from THEMIS and MOC, ground-based radar data, and results of mesoscale atmospheric modeling.

Anderson F. S. Drake J. S. Hamilton V. E.
Extracting Compositional Variation from THEMIS Data for Features with Large Topography on Mars Via Atmospheric Equalization [#1852]
We present an atmospheric equalization for THEMIS IR data. This equalization permits analysis of composition in regions that are difficult to study because of differences in atmospheric path length resulting from large changes in surface elevation.

Rogers A. D. Bandfield J. L. Christensen P. R.

Global Spectral Classification of Martian Low-Albedo Regions with MGS-TES [#2131]

TES data are used to re-examine low-albedo surfaces for region-to-region differences in spectral response. Regional variations are present; the differences in spectral shapes indicate that they may differ in primary mineralogy or alteration history.

Rodricks N. Greenhagen B. Kirkland L. E. Herr K. C.

Composition Determined by Linear Mixture Modeling Varies with the Lab Spectra Used [#2388]

Composition determined by linear mixture modeling varies with the lab spectra used.

Gaddis L. R. Soderblom L. Kirk R. L. Titus T.

High-Resolution Topography of Layers in the Valles Marineris Via 'Thermoclinometry' [#2001]

This study addresses the use of high-resolution topographic data and morphologic analyses to study the origin of interior layered deposits in the Valles Marineris.

Sohl-Dickstein J. Johnson J. R. Grundy W. M. Guinness E. A. Graff T. Shepard M. K. Arvidson R. E. Bell J. F. III Christensen P. R. Morris R.

Modeling Visible/Near-Infrared Photometric Properties of Dustfall on a Known Substrate [#2235]

We present a comprehensive visible/near-infrared two-layer radiative transfer modeling study using laboratory spectrogoniometry of variable dust thicknesses deposited on substrates with known photometric parameters.

Kirkland L. E. Herr K. C. Adams P. M. Prothro L. B. Allen B. M.

The Search for Underground Hydrothermal Activity Using Small Craters: An Example from the Nevada Test Site [#2185]

This is an airborne (satellite analog) study of mineral indicators of hydrothermal activity exposed by manmade explosion craters in basalt at the Nevada Test Site. This draws mainly on non-NASA expertise, and develops discovery routes for Mars.

Wilcox B. B. Hamilton V. E.

THEMIS Observations of Compositional Variation in Elysium Planitia [#1557]

We identified a region in Elysium Planitia where dust is thin enough in local areas and certain Ls for the surface below to contribute to the emissivity spectrum. Initial analysis suggests it is olivine-rich and resembles neither Surface Type 1 or 2.

Byrnes J. M. King P. L. Ramsey M. S. Lee R. J.

Synthesis and Analysis of Silicate Glasses: Applications to Remote Sensing of Volcanic Surface Units on Earth and Mars [#2089]

A suite of glasses have been synthesized that represent end-member feldspars and volcanic glass analogs. Compositional and structural analyses of the glass samples have implications for thermal infrared remote sensing of volcanoes on Earth and Mars.

Witter J. B. Hamilton V. E. Houghton B. F.

Thermal Infrared Spectroscopy of Explosively Erupted Terrestrial Basalts: Potential Analogues for Surface Compositions on Mars [#1114]

We have acquired tephra samples from explosive (Plinian) basaltic eruptions of Etna (Italy), Tarawera (New Zealand), and Masaya (Nicaragua) volcanoes for spectral analysis and comparison to Martian infrared surface spectra.

Eluzkiewicz J. Cady-Pereira K. Uymin G. Moncet J.-L.

Martian Radiative Transfer Modeling Using the Optimal Spectral Sampling Method [#2181]

A new radiative transfer model for a wide range of Mars remote sensing applications will be described.