Thursday, March 26, 2009
POSTER SESSION II: MARS ANALOGS: CHEMICAL AND PHYSICAL
6:30 p.m. Town Center Exhibit Area

Blackburn D. G. Ulrich R. Elwood Madden M. E. Leeman J. R. Chevrier V. F.
Experimental Study of the Kinetics of CO_2 Hydrate Dissociation Under Simulated Martian Conditions **[#1341]**
We performed an experimental study of the kinetics of CO_2 hydrate dissociation under simulated martian conditions, which indicated the hydrates are heat-transfer limited and do not exhibit anomalous self-preservation behavior at 6 mbar.

Gillot J. Roskosz M. Depecker C. Roussel P. Leroux H.
Calcite Formation from Nanoporous Amorphous Silicates in Interaction with Carbon Dioxyde **[#1755]**
In situ infrared spectroscopy and X-ray diffraction reveal that amorphous porous silicate dusts react readily with CO_2 to form calcite at ambiant temperature. Dry carbonation can then account for the formation of carbonates observed around stars.

Gillot J. Roskosz M. Depecker C. Roussel P. Leroux H.
Sol-Gel Synthesis and Crystallization of Magnesium and Calcium Rich Silicate Dust Analogs **[#1763]**
A new sol-gel method optimized to synthesize amorphous and porous silicate dust analogs is proposed. The crystallization of such analogs is metastable and polyphasic. Their high reactivity is probably due to high surface/volume ratio.

ten Kate I. L. Zuray M. S. Mahaffy P. R.
Dust Storm Electrification in a Mars Chamber — First Results **[#2273]**
Analogue studies and numerical simulations suggest that in martian dust devils and dusty convective storms large-scale electric fields are generated. A laboratory setup has been built to investigate their effects on the composition of the atmosphere.

Needham A. W. Smith C. L. Howard K. T. Sephton M. A. Martins Z. Foster N. J.
Franchi I. A. Russell S. S.
Gamma Irradiation Effects in Mars Analogues **[#1971]**
The effects of gamma irradiation on geological samples continue to be investigated in preparation for potential sterilisation of samples returned from the surface of Mars in the coming decades.

Cereti A. Mellon M. T. Sizemore H. G. Phillips R. J.
Measurements of Dielectric Properties of Mars Analog Soils with Variable Temperature and Moisture Content **[#2189]**
We performed impedance spectroscopy of various martian analog soils, with varying temperature and moisture content, to investigate how the complex dielectric permittivity depends on these factors, as this parameter can strongly affect radar signals propagation.

Ukstins Peate I. Cabrol N. A. Grin E. A. French R. Dressing C. Franklin T. Parsons K.
Piatek J. Chong G.
Mechanisms for Planetary Spherules Formation and Alteration: Salar Grande, Chile — An Example of Volcanic/Aqueous Processes Interactions **[#1435]**
Silica nodules and hematite spherules are observed at Salar Grande and Monturaqui, Atacama Desert, Chile. The Planetary Spherules Project investigates formation, deposition and alteration processes as analogs to Gusev Crater and Meridiani, Mars.

Chan M. A. Potter S. L. Bowen B. B.
Overview of Iron Oxide Concretions and Implications for Mars: Current Knowledge and Gaps **[#2187]**
Terrestrial concretion analogs indicate that small Mars “blueberries” likely formed quickly by diffusive mass transfer, under conditions of abundant iron supply in chemically reactive host rock.

Pompilio L. Tampella G. Lisotti A. Rossi A. P. Sgavetti M.
Multi-Resolution Approach to the Spectral Analysis of Martian Outcrops **[#1801]**
Here we present demonstrative results of the multi-resolution approach to the interpretation of the spectral variability of a multispectral survey for a terrestrial area, through multispectral Landsat TM5 data.

Kraft M. D. Alvarado C. M. Sharp T. G. Rampe E. B.
Spectral Indexing of Chemical Weathering in the Mid-Infrared: New Means to Evaluate Weathering on Mars **[#2289]**
Features of mid-infrared spectra from a large suite of weathered basalt can be indexed to distinguish weathered and unweathered surfaces, suggesting that weathering can be studied on Mars without using spectral modeling methods.

Mayer D. P. Arvidson R. E. Wang A. Sobron P. Zheng M. P.
Mapping Minerals at a Potential Mars Analog Site on the Tibetan Plateau **[#1877]**
A new mineral facies map of lacustrine deposits from the cold, arid Qaidam Basin, China shows hydrated sulfates, carbonates, chlorides and phyllosilicates. This area may offer insight into the history of evaporite deposits identified on Mars.

McKeown N. K. Noe Dobrea E. Z. Bishop J. L. Silver E. A.
Coordinated Lab, Field, and Aerial Studies of the Painted Desert, AZ, as a Potential Analog Site for Phyllosilicates at Mawrth Vallis, Mars **[#2509]**
One hypothesis for clay formation at Mawrth Vallis is an altered ash-fall, like bentonites in the Painted Desert, Arizona. We compare lab, field, and aerial data to determine if silicate spectral features are accurately captured in aerial datasets.

Sanders N. H. Sailer D. S. Kelley E. M. Clarke R. S. Davis S. J. Eckert-Erdheim A. M. Tsang S. W. R. Benson S. M. Fuerst A. J. Heyer K. M. Lee N. F. Oliver B. L. Sclotterer G. J. Suitt C. B.
Effects of Fine Sediment Mantle on the Thermal Inertia Signature of Underlying Materials **[#1195]**
Results of modeling the effect that overlying fine sediment has on materials underneath suggest that even as little as .5 cm of overlying fine sediment essentially masks the thermal signature of any underlying material.

Zheng M. P. Wang A. Kong F. J. Ma N. N.
Saline Lakes on Qinghai-Tibet Plateau and Salts on Mars **[#1454]**
The Qinghai-Tibet Plateau stands in the east of Asia, with an area of ~2.5 million km^2 and an average elevation of ~4500 m, and its general terrain slopes. It is a unique physicogeographical unit and also the youngest plateau on the Earth.

Irwin R. P. III Fortezzo C. M. Tooth S. E. Howard A. D. Zimbelman J. R. Barnhart C. J. Benthem A. J. Brown C. C. Parsons R. A.
Origin of Theater-headed Tributaries to Escalante and Glen Canyons, Utah **[#1644]**
Theater-headed tributaries to Glen Canyon, Utah, are important analogs to martian valley networks. Our field study suggests a hybrid model involving seepage weathering of Navajo sandstone, sheet fracturing, and transport of debris by flash floods.

Wynne J. J. Titus T. N. Jhabvala M. D. Cushing G. E. Cabrol N. A. Grin E. A.
Distinguishing Caves from Non-Cave Anomalies Using Thermal Infrared: Lessons for the Moon and Mars **[#2451]**
Research has shown one example differentiating caves from non-cave anomalies in the Mojave Desert, California. This work has important implications for detecting caves on the Moon and Mars.

Grudzinski B. P. Luo W. Pederson D.
Estimating Hydraulic Conductivity from Drainage Patterns Derived from DEM — A Case Study in the Oregon Cascades **[#2112]**
This study introduces a new method of estimating hydraulic conductivity from drainage dissection pattern derived from digital elevation model (DEM). Tests in Cascades region, Oregon show promising results. It has the potential to be applied to Mars.

Williams R. M. E. Irwin R. P. III
Morphology of Lava-Capped Inverted Valleys Near St. George, Utah: Analogs for Martian Sinuous Ridges **[#2413]**
We report on the morphological attributes of multiple lava-capped mesas near St. George, Utah that preserve portions of the ancestral Virgin River drainage in inverted relief.

Pain C . F. Clarke J. D. A.
Relief Inversion: Australian Analogs of a Common Feature of Martian Landscape Evolution **[#1100]**
The Australian continent is particularly favourable for the formation and preservation of inverted relief and therefore provides a wide range of potential analogs for similar features on Mars.

Kraal E. R.
Hyperarid Fans in the Atacama Desert are an Interesting Analog to Martian Fans **[#1104]**
Alluvial fans in the Atacama Desert, Chile are valuable analogs for understanding fan formation in hyperarid conditions that may be similar to those experienced on Mars.

Byram S. K. Ukstins Peate I. Reagan M. K. Cabrol N. A. Grin E. A.
U-Th Geochronological Constraints on Paleolake Levels and Climate Change Recorded in Carbonate Sedimentation at Laguna Lejía, Northern Chile **[#2137]**
The unique climate of the Atacama Desert makes it a useful analogue to the environment on early Mars. Paleoterrace deposits at Laguna Lejía record rapid climate change and give insight into the organisms that survive in such extreme environments.

Weidinger T. Istenes Z. Hargitai H. Tepliczky I. Bérczi Sz.
Micrometeorological Station at the Mars Analog Field Work, Utah, April, 2008 **[#1282]**
The 71st crew of MDRS, Utah, meteorological station dataset of near surface layers of temperate belt and desert environments, were compared as terrestrial to martian conditions showing differences between the two planetary environments.

Merrison J. P. Holstein-Rathlou C. Gunnlaugsson H. P. Nornberg P.
A Forthcoming European Mars Simulation Wind Tunnel Facility **[#1544]**
A unique European Mars Simulator Facility is close to completion at Aarhus University in Denmark. It is intended for scientific study and instrument testing and will be accessible to international collaborators and space agencies.