Tuesday, July 15, 2014
POSTER SESSION: SOIL AND GRAINS
4:00 p.m. Dabney Hall and Garden

Meslin P.-Y. Cousin A. Rapin W. Dehouck E. Lanza N. Forni O. Schröder S. Gasnault O. Wiens R. Goetz W. Nachon M. Mangold N. Maurice S. Pinet P. Fabre C. Sautter S. Anderson R. Lasue J. Clegg S. Ollila A. Clark B. Rampe L. Mezzacappa A. Vaniman D. Blank J.
Chemistry of Fine-Grained Particles in the Martian Soil, as Measured by the ChemCam Instrument on Curiosity **[#1363]**
We report on the submillimeter-scale analyses of chemical composition of the soil's fined-grained particles performed by ChemCam since Curiosity landing.

Goetz W. Madsen M. B. Bridges N. Clark B. Edgett K. S. Fisk M. Grotzinger J. P. Hviid S. F. Meslin P.-Y. Ming D. W. Newsom H. Sullivan R. Vaniman D. Wiens R.
Microscopic Views of Martian Soils and Evidence for Incipient Diagenesis **[#1443]**
We present high-resolution images of martian soils from different landed missions and interpret them in terms of microstructure and late diagenetic processes.

Chan M. A. Okubo C. H. Farrand W. H. Bowen B. B. Ormö J. Komatsu G.
A Retrospective of Mars Diagenesis: Terrestrial Analog Implications for Habitable Environments **[#1386]**
Authigenic minerals on Mars are proxy records of past waters, and comprise promising sites for habitable environments. Four major categories of diagenesis include: concretions, veins, alteration zones, and secondary porosity.

Millan M. Szopa C. Coll P. Buch A. Cabane M. Coscia D. Glavin D. P. Freissinet C.
In situ *Analysis of Organic Matter in Martian Soil: Laboratory Measurements Under Martian Operating Conditions Supporting Treatment and Interpretation of SAM GC-MS Data* **[#1117]**
This work presents laboratory measurements under martian operating conditions in comparison with the SAM GC-MS data provided by the Curiosity rover. Their treatment and interpretation supports the *in situ* analysis of organic matter on Mars.

Cousin A. Meslin P. Y. Wiens R. C. Rapin W. Mangold N. Fabre C. Gasnault O. Forni O. Tokar R. Ollila A. Schröder S. Lasue J. Maurice S. Sautter V. Newsom H. Vaniman D. Le Mouélic S. Dyar D. M. Berger G. Blaney D. Nachon M. Dromart G. Lanza N. Clark B. Clegg S. Goetz W. Berger J. Barraclough B. Delapp D.
Chemistry of Coarse Particles in Soils and Their Relationship with Local Rocks **[#1095]**
ChemCam has studied numerous soils up to sol 550. This study focuses on the evolution of the soils along the traverse, as well as the chemistry of the pebbles observed, and we try to understand the origin of these pebbles.

Pommerol A. Thomas N. Jost B. Beck P. Okubo C. McEwen A. S. Massé M. El-Maarry M. R.
Spectro-Photometry of Mars Soil Analogs **[#1311]**
Photometric and spectroscopic caracterization of dry, wet and icy analogs of martian soils in the laboratory and implications for the analysis of optical remote-sensing datasets.

Hanley J. Mellon M. T. Arvidson R. E.
Mechanical Strength of Martian Analog Soils **[#1470]**
Cohesion and angle of internal friction in martian analog soils depend on the water and salt content.

Mellon M. T. McKay C. P. Grant J. A.
Thermal Conductivity of Coarse and Fine Grained Soil Mixtures: Measurements and Mars Applications **[#1107]**
We report new measurements of the thermal conductivity of intimate mixtures of fine and coarse grained soils and soil analogs at a range of pressures.

Shukla A. D. Ray D. Pande K. Shukla P. N.
Formation of Paleosol (Fossil Soil) in Deccan Continental Flood Basalt: Alteration Style and Implications Towards Aqeous Environment of Early Mars **[#1194]**
Deccan red-boles suggest that the terrestrial clay formation processes are due to substantial leaching of elements in an open system, while a closed subsurface system with isochemical changes are important on Mars.

Berger G.
Alteration of Meteorite-Derived Kamacite in Martian Regolith: A new Insight of Chemical Processes in Martian Soils **[#1212]**
We experimented the idea that the martian regolith, which is assumed to be contaminated by meteoritic inputs, may have contained kamacite (Fe-Ni). The reactivity of an iron-based metal offers new perspectives for the alteration mechanisms.

Ruff S. W. Rogers A. D. Hamilton V. E. Kraft M. D.
The Misconception of a Mars Global Soil **[#1461]**
Recent results from Curiosity's investigation of the Rocknest sand shadow have reinvigorated the question of whether soils on Mars are globally mixed or locally derived. We present orbital and *in situ* evidence that refutes a global soil.

Kozakiewicz J.
The Size and Shape of Martian Sand Grains **[#1124]**
On the basis of images acquired during *in situ* missions the size and shape of martian grains were estimated. The method of image processing and analysis is presented as well as the results of statistical analysis of various types of martian sand.

Cornwall C. Schreiber C.
Earth Analogs of Grain Characteristics for Martian Aeolian Deposits: A Study of Mafic Sediment Maturity **[#1011]**
The surface of Mars is primarily mafic in composition, cold, arid and dominated by aeolian activity. A new sediment maturity index for Mars is needed to better understand sediment source, the transport cycle, weathering processes and paleoclimate.

Titus T. N. Hayward R. K. Fenton L. Horgan B.
Mars Dune Field Mineral Composition — A Pilot Study to Asses Sedimant Composition And Maturity **[#1091]**
A pilot study was conducted on 21 dune fields that spanned both latitude and stabilization index (SI) range. MGS Thermal Emission Spectrometer observations were used to estimate mineral abundances. Results are compared to thermal inertia and SI.

Ahrens C. J. Titus T. N.
An Assessment of the Reliability of Mineral Abundance Estimates Derived from TES Data over Dune Sites **[#1012]**
Overlapping and adjacent TES emissivity data of a dune site was analyzed to evaluate mineral abundances. An error analysis was done to test the repeatability of the data using the Analysis of Variance (ANOVA) technique.

Bishop J. L. Englert P. Patel S. Tirsch D. Boettger U. Hanke F. Jaumann R.
Mineralogical Analyses of Surface Sediments in the Antarctic Dry Valleys **[#1271]**
ADV surface sediments were investigated using reflectance and Raman spectroscopy and elemental analyses. The surface sediments are dominated by physical processes, while material a few cm subsurface experience chemical alteration.

McGlynn I. O. Fedo C. M. McSween H. Y. Jr.
Grain Size and Hydrodynamic Sorting Controls on the Composition of Synthetic Basaltic Sediment: Implications for Interpreting Martian Soils **[#1325]**
Basaltic bedrocks samples have been crushed and sieved into multiple grain-size fractions to identify their compositional variability. With known density data, rocks and minerals have been modeled to show that physical sorting can change composition.

Hayward R. K. Titus T. N. Fenton L. K.
Mars Global Digital Dune Database: Revising Global Dune Volumes **[#1002]**
We present dune morphometry/volume comparisons that will be the foundation for a revised volume estimate for dune fields on Mars.

Lapotre M. G. A. Ehlmann B. L. Arvidson R. E. Minson S. E. Ayoub F. Bridges N.
Two Tales of Martian Sands and Dust **[#1126]**
We invert for mineral abundances and grain sizes of dunes at Endeavour and Gale craters from CRISM data and Hapke's theory. Our results are consistent with ground truth from the rovers. We detect dust on dunes at Gale, and relate it to sand activity.