

Tuesday, May 22, 2012
POSTER SESSION II: CONFERENCE POSTERS AND RECEPTION
(Highlighting Authors J–Z)
7:00 p.m. Lakeside C

Jänchen J. Bauermeister A. Feyh N. deVera J.-P.

[*Water Retention of Extremophiles and Martian Soil Simulants Under Close to Martian Environmental Conditions*](#) [#7030]

We report data about interaction of moisture with soil simulants and extremophiles under martian environmental conditions contributing on atmosphere/surface modelling and on effects determining the water inventory of the upper soil layer of Mars.

Kahre M. A. Haberle R. M. Hollingsworth J. L. Vines S. K. Leovy C.

[*The Early Martian Climate: Effects of Airborne Dust, CO₂ Ice Cap Albedo, and Orbital Obliquity on Atmospheric Collapse*](#) [#7076]

The NASA Ames Mars GCM is used to explore early thick atmospheres with a range of dust loadings, CO₂ caps albedos, and obliquities to study how atmospheric dust affects the stability of the atmosphere against collapse into permanent CO₂ caps.

Kerber L. Forget F. Madeleine J.-B. Wordsworth R. Head J. W. Wilson L.

[*Explosive Volcanic Eruptions into the Early Martian Atmosphere: Implications for Fine-Grained Material on Mars*](#) [#7049]

Ash dispersal from explosive volcanic eruptions into the early martian atmosphere is modeled and results are compared to fine-grained geological units. Implications for the ability for volcanoes to contribute fine-grained material are discussed.

Langlais B. Thébaud E. Ostanciaux E. Mangold N.

[*A Late Martian Dynamo Cessation Time 3.77 Gy Ago*](#) [#7067]

We reconsider the timing the cessation of the dynamo by characterizing the magnetic field above and around craters larger than 200 km in diameter and six Noachian volcanoes. We conclude that the dynamo persisted up to a much later period, 3.77 Gy ago.

Le Deit L. Hauber E. Fueten F. Mangold N. Pondrelli M. Rossi A. Jaumann R.

[*Model Age of Gale Crater and Origin of its Layered Deposits*](#) [#7045]

We estimate the age of formation of Gale, which is fundamental for providing time constraints on early Mars conditions. We also produce a geologic mapping and geometric measurements of its layered deposits in order to better understand their origin.

Light B. Tang C. Catling D. C.

[*Laboratory Simulation of Low-Temperature Hydrated Salt Crystals Relevant to Water on Mars*](#) [#7064]

Preliminary work to experimentally freeze solutions of MgSO₄ and MgCl₂ to create laboratory-grown salt assemblages for comparison with microscope image data from Mars (e.g., past and future Mars rovers and Phoenix) is reported.

Lynch K. L. McGuire K. M. Ritter S. M. Schneider R. J. Munakata Marr J.

[*The Great Salt Lake Desert: Exploring the Habitability of Paleolakes on Earth and Mars*](#) [#7054]

The Great Salt Lake Desert is a potential terrestrial analog for inferred martian paleolakes. Here we present some of the preliminary results from an ongoing geobiological study.

Manga M. Patel A. Dufek J. Kite E. S.

[*Wet Surface and Dense Atmosphere on Early Mars suggested by the Bomb Sag at Home Plate*](#) [#7005]

We perform experiments to interpret the bomb sag found by Spirit at Home Plate. From the crater morphology we infer that the surface was water saturated. From the observed penetration depth we infer an atmosphere much more dense than at present.

Mangold N. Adeli S. Conway S. J. Ansan V. Langlais B.

[*A Chronology of Mars Hydrological Evolution from Impact Degradation*](#) [#7017]

Degraded craters are one of the main lines of evidence for a warmer climate on early Mars. Global altimetry and recent high resolution imagery enabled us to revisit this topic.

Marcucci E. C. Hynke B. M. McCollom T. M.

[*Acid-Sulfate Weathering of Cerro Negro Basalt: An Early Mars Analog*](#) [#7044]

Understanding the weathering in an acidic volcanic environment gives insights into paleoconditions that formed the sulfates we see on Mars today. A series of experiments and models show the main secondary minerals and controls on their formation.

Matsubara Y. Howard A. D.

[*Hydrology of Early Mars: Evidence from Lake Overflow and Valley Network Incision*](#) [#7020]

The hydrology of the flows forming the martian valley networks is characterized through analysis of overflowing lake basins and depth and volume of valley incision. The climate was minimally equivalent to the Pleistocene of the U.S. Great Basin.

Michalski J. R.

[*Did Mars Ever Have a Lively Underground Scene?*](#) [#7060]

I will discuss the geologic context and nature of groundwater on Mars, and implications for a deep biosphere.

Milazzo M. P.

[*Columnar Basalts: Terrestrial Analogs for Water-Lava Interactions on Mars*](#) [#7070]

Liquid water (and potential life) is the focus of NASA's Mars Exploration Program. Mars is fundamentally a volcanic planet; one of the most promising ways to locate past, near-surface water is to look for lava-water interaction features.

Miura Yas.

[*Fossil Minerals Survived at Abrupt Stopped Cyclic Systems on Mars*](#) [#7007]

Fragile remnants of short-life organic molecules are replaced to inorganic micro-fossil minerals by abrupt stopping with local composition. Martian fossil minerals will be discovered locally at underground sites or breccias from planetary collision.

Noe Dobrea E. Z. Swayze G. A.

[*Hydrothermal Alteration Products in the Circum-Hellas Region: Geologic Setting*](#) [#7071]

We identify hydrothermal alteration products in the circum-Hellas region and describe their geologic setting and astrobiological implications.

Nutman A. P. Bennett V. C. Friend C. R. L. Norman M. D.

[*Waves and Weathering on the Early Earth: Geological Evidence for an Equable Terrestrial Climate at 3.7 Ga*](#) [#7062]

Storm wave structures in Isua metasedimentary rocks and signatures of chemical weathering in Eoarchean igneous rocks support the idea that Earth's climate at 3.8–3.7 Ga was equable rather than entirely frigid.

Palucis M. C. Dietrich W. E. Howard A. Nishiizumi K. Kring D. A.

[*Origin and Evolution of Gullies on Crater Walls by Water: Estimating Discharge Rates and Flow Durations*](#) [#7088]

Field investigations suggest a morphodynamic model for gully systems formed by flowing water. Meteor Crater shows elements of this model and is being used to develop methods to calculate the frequency and volumes of water required for gully formation.

Parker T. J. Calef F. J.

[*Digital Global Map of Potential Ocean Paleoshorelines on Mars*](#) [#7085]

Our objective is to compile a global shoreline map, in the form of GIS shape files. This map will be used to investigate deviations from horizontal that might indicate neotectonic changes such as mass accumulations and crustal deformations over time.

Pilorget C. Bibring J.-P. MicrOmega Team

[*The MicrOmega Instrument Onboard ExoMars and Future Missions: An IR Hyperspectral Microscope to Analyze Samples at the Grain Scale and Characterize Early Mars Processes*](#) [#7006]

We present here the MicrOmega instrument, which is a hyperspectral microscope dedicated to *in situ* analyses at the grain scale. This technique is particularly relevant in order to characterize Early Mars processes.

Ruff S. W.

[*The Early History of Gusev Crater Revisited*](#) [#7042]

An abundance of orbital and *in situ* measurements of Gusev Crater provide a detailed look at its remarkable history of deposition, erosion, and aqueous environments in the late Noachian.

Salzman B. J.

[*Phyllosilicates in Nili Fossae*](#) [#7001]

This abstract is about finding phyllosilicates in the area Nili Fossae through visible imaging. By finding these phyllosilicates we can get a better understanding of where water was located and get a better idea of where life's signature was on Mars.

Singer S. F.

[*Reconstructing Mars' Early History — With Clues from Phobos and Deimos: A Hypothesis for the Origin of Life on Mars*](#) [#7015]

Analysis of the origin of Phobos and Deimos sheds light on development of a transient magnetic field, oceans, and atmosphere — persisting long enough to permit evolution of life.

Skok J. R. Mustard J. F.

[*Ancient Mars Crust Formation: Observations from Crater Central Peaks*](#) [#7052]

Spectral observations of martian crater central peaks provide a view of the ancient buried igneous crust. Observations of Fe-rich dunites and orthopyroxenites suggest massive volcanic eruptions and mineral segregation in the ancient crust.

Sprenke K. F. Baker L. L. Cleve J. R. Rember W. C.

[*Sediments Interbedded with Columbia River Basalts: A Mars Analog for Weathering, Mass Wasting, and Preservation of Biomolecules*](#) [#7013]

Sediments interbedded with Columbia River basalts present a potential Mars analog. These sediments contain exquisitely preserved biomolecules and preserve geochemical and mineralogical evidence of ancient environmental conditions.

Thollot P. Mangold N.

[*Widespread Late Hesperian to Amazonian Alteration Minerals in Noctis Labyrinthus, Mars*](#) [#7059]

The survey of ~100 CRISM cubes revealed ~10 classes of hydrated minerals, including Fe and Al phyllosilicates and Fe, Ca, and Al sulfates. Analysis of the geologic setting suggests a role of volcanic activity and a relatively young age of formation.

Tornabene L. L. Caudill C. M. Osinski G. R. McEwen A. S. Wray J. J. Mustard J. F. Skok J. R. Grant J. A. Mattson S.

[*A Crater-Exposed Bedrock Database for Mars with Applications for Determining the Composition and Structure of the Upper Crust*](#) [#7069]

A database (DB) of crater-exposed bedrock (CEB) on Mars using data primarily derived from instruments on MRO. Central uplifts are emphasized. Three macroscale textures are identified and appear to reflect local and regional geologic histories.

Urata R. A. Toon O. B.

[*Simulations of the Martian Water Cycle with a GCM and Implications for the Early Climate*](#) [#7041]

We present simulation results of an early martian climate with a 500-mbar carbon dioxide atmosphere and a reduced solar constant. A stable climate with global temperatures of 265 K can arise with forcing by water-ice clouds.

Warner N. H. Sowe M. Gupta S. Dumke A. Goddard K.

[*Flood Integration of Chaotic Basins in the Eastern Valles Marineris Region of Mars*](#) [#7036]

We demonstrate that linkage of basins east of Valles Marineris occurred by lake spillover and was controlled by the base level of each basin. The data indicate a mechanism for the formation of an extensive regional flow routing system on Mars.

Westall F. Loizeau D. Foucher F. Bost N. Bertrand M. Vago J. L.

[*A Philosophical Approach to the Search for Life on Mars and its Practical Implications*](#) [#7009]

Variability in the habitable conditions of early Mars may have influenced the appearance and evolution of martian life forms such that they remained extremely small and primitive with important consequences for their distribution and detection.

Wiseman S. M. Arvidson R. E. Mustard J. F. Andrews-Hanna J. C.

[*Sinus Meridiani and Arabia Terra: Phyllosilicate and Sulfate Stratigraphy*](#) [#7061]

Exposures in Sinus Meridiani are well suited to examine the transition between Noachian and Hesperian aqueous processes. Deposits record prolonged aqueous activity and changes in mineralogy reflect geochemical variations driven by hydrology.