Monday, May 21, 2012
POSTER SESSION I: CONFERENCE POSTERS AND RECEPTION
(Highlighting Authors A–I)
7:00 p.m. Lakeside C

Adeli S. Hauber E. Le Deit L. Jaumann R.
Sedimentary Evolution of the Eridania Paleolake in the Atlantis Chaos Basin, Terra Sirenum **[#7047]**
Using the CTX and HiRISE images, and the HRSC and MOLA topographic data, we produce a geological map of the Atlantis basin, with the aim of studying its sedimentary history and the formation of its knob fields, which occupy partly the basin floor.

Andrews-Hanna J. C. Soto A. Richardson M. I.
The Hydrologic and Climatic Context of the Gale Crater Sedimentary Mound **[#7038]**
The origin of the Gale Crater deposit is investigated using a GCM and a groundwater hydrology model. Precipitation east of the Isidis Basin drove groundwater flow into Gale, explaining the formation of the hydrated lower formation.

Ansan V. Mangold N.
Evolution of Martian Valley Network Geometry from HRSC Dems: Implications for Martian Climate **[#7023]**
Extraction of geometry of dense valley networks from HRSC topography to compare the evolution of erosion power throughout the Mars history and determination of their relationships with climatic conditions.

Baker D. M. H. Head J. W.
The Noachian to Hesperian Hydrologic Evolution of the Ma'adim Vallis-Eridania Basin Region, Mars **[#7058]**
We examine the geology, stratigraphy, and fluvial geomorphology in the region of a large, Noachian lake basin on Mars. The basin captures an evolving system of large groundwater input in the Noachian with more limited water supply into the Hesperian.

Baker L. L. Strawn D. G. McDaniel P. A. Fairley J. P. Bishop J. L.
Hydrologic and Geochemical Controls on Nontronite Formation in Terrestrial Columbia River Basalts and Implications for Clay Formation on Mars **[#7011]**
We are studying the formation of Fe- and Mg-rich clays by weathering of terrestrial Columbia River basalts, and how clay mineralogy is controlled by groundwater geochemistry and basalt hydrology.

Barlow N. G. Atkins C. M. Landis M. E. Talbot M. S.
The Influence of Surface and Subsurface Volatiles in the Evolution of Arabia Terra, Mars **[#7027]**
The Arabia Terra region contains evidence of the long-term influence of both surficial and subsurface volatiles. This study is using impact crater morphologies and morphometries to investigate the role of H_2O on the geologic evolution of Arabia.

Beehr A. R. Catalano J. G.
Oxidation Pathways of Ferrous Iron Phyllosilicates: Insights into Martian Phyllosilicate Formation **[#7008]**
Experimental studies demonstrate that Fe(III)-bearing clays can form via the oxidation of precursor Fe(II)-clays, indicating that iron oxidation and basalt weathering to phyllosilicates did not have to occur contemporaneously in the Noachian.

Bost N. Westall F. Ramboz C. Meunier A. Georgiou-Morisseau E. Foucher F.
The Influence of Subsurface Processes on Martian Basalts: An Example of Hydrothermal and Acidic Basalt Alteration at the Skouriotissa Mine, Cyprus **[#7018]**
Basalts are the prevalent rock type on Mars and the products of aqueously altered basalts are of particular interest tracers or subsurface processes. We present an analogue site on Earth: the skouriotissa mine in Cyprus.

Catalano J. G. Beehr A. R. Arvidson R. E.
Thermodynamic and Mass Balance Constraints on Phyllosilicate and Evaporite Formation Scenarios on Early Mars **[#7010]**
Thermodynamic modeling demonstrates plausible formation processes for phyllosilicate and sulfate mineral assemblages observed on Mars that have not been previously considered.

Catling D. C. Leovy C. B. Wood S. E. Day M. D.
Does the Vastitas Borealis Formation Contain Oceanic or Volcanic Deposits? **[#7031]**
The Vastitas Borealis Formation (VBF) covers much of Mars' northern lowlands and a predominant view is that it contains ocean sediments. But small craters that penetrate above, into, and through the VBF suggest that the VBF contains mostly volcanics.

Chan M. A. Parker T. J. Jewell P. W. Komatsu G. Ormö J.
A Noachian "Greenhouse": Earth Models for a Global Hydrologic Budget of the Mars Northern Plains **[#7012]**
Prominent eustatic highs in Earth history provide models for comparisons to a Mars ocean. A Noachian "greenhouse" assisted by a high global water budget could preserve an extensive stratigraphic record in combination with shoreline evidence.

Clenet H. Quantin C. Andreani M. Ceamanos X. Allemand P. Pinet P. C.
Noachian Crust Composition and Early Alteration Processes in the Vicinity of Valles Marineris as seen from the Central Peaks of Impact Craters **[#7026]**
We studied impact craters central peaks. Variations in pyroxenes chemistry can be found at local and regional scale. A link with alteration products exists. This may represent various cristallyzation and environmental conditions during early Mars.

Clifford S. M. Parker T. J. Mouginot J. Pommerol A. Beck P. Kofman W.
Evidence and Arguments for an Early Martian Ocean **[#7082]**
The geomorphic, hydrologic, and radar evidence for the existence of AN early martian ocean are discussed.

Dehouck E. Gaudin A. Mangold N. Lajaunie L. Le Menn E.
Experimental Alteration of Basaltic Materials: Comparison Between Terrestrial and Simulated Early Martian Conditions **[#7025]**
We present the first results of an experimental alteration of Mg-olivine under terrestrial and simulated early martian conditions (CO_2, H_2O_2). FTIR and TEM analyses suggest the formation of Fe-Mg smectites precursors, even under CO_2 atmosphere.

Dohm J. M. Anderson R. C. Miyamoto H. Fairen A. G. El Maarry M. R. Komatsu G. Mahaney W. C. Rodriguez J. A. P. Baker V. R. Maruyama S.
Dynamic Early Mars **[#7055]**
The southern cratered highlands province (ACSHP) is one of several Martian provinces that when collectively pieced together distinctly detail the evolution of Mars. In particular, ACSHP unfolds an extremely dynamic early Mars.

Essefi E. Fairén A. G. Komatsu G. Rekhiss F. Yaich C.
Study of Cores from a Spring Mound at the Mars Analog of Boujmal, Eastern Tunisia: Coring Martian Spring Mounds as Potential Efficient Tool for a Geologic Exploration of Early Mars **[#7029]**
In this work, we show that the investigation of spring mounds at the terrestrial analog of Boujmal through coring techniques may satisfy some functions of analog studies.

Essefi E. Komatsu G. Fairén A. G. Rekhiss F. Yaich C.
Identification of Tephra Layers in Spring Mounds at the Terrestrial Analog of Boujmal, Eastern Tunisia: Repercussions and Limits of Tephrostratigraphy Application on Martian Stratigraphy and Paleoclimatology **[#7034]**
In this work, we investigated tephras layers on a spring mound at the terrestrial analog of Boujmal and their stratigraphic and paleo-climatic implications. Then, we discuss the possibility and the limits of tephrostratigraphy application to Mars.

Fastook J. L. Head J. W. Marchant D. R. Forget F. Madeleine J.-B.
A Warmer Atmosphere on Mars near the Noachian-Hesperian Boundary: Evidence from Basal Melting of the South Polar Ice Cap (Dorsa Argentea Formation) **[#7028]**
Eskers in the Dorsa Argentea Formation imply the presence of an ice sheet with a wet bed. With an ice sheet model, we examine a range of geothermal heat fluxes and warmer climates to determine what conditions could produce such an ice sheet.

Fortezzo C. M. Skinner J. A. Jr.
A Study of Inter-Crater Basin Evolution in the Martian Highlands: Runanga-Jörn Basin, Northeast Hellas, Mars **[#7083]**
The preliminary hypothesis for the geologic evolution of the "Runanga-Jörn basin" in northeast Hellas Planitia, east of Terby Crater, includes episodic volcanism mixed with hydrologic activity following the formation of Hellas.

Foucher F. Westall F.
Techniques Involved in the Study of Early Traces of Life **[#7021]**
This contribution is an overview of the techniques used to demonstrate the biogenicity and syngenicity of microscopic fossilized traces of life in early Earth and Mars rocks. The use of these techniques in *in situ* missions is also discussed.

Gaudin A. Dehouck E. Mangold N.
Evidence for Weathering on Early Mars from a Comparison with Terrestrial Weathering Profiles **[#7024]**
By analogy with terrestrial weathering profiles, we propose that some clay mineral assemblage detected on Mars is the result of long-term weathering. This could be the best evidence of a climate significantly warmer than the present one.

Gavin P. Daly T. Chevrier V. Ninagawa K. Gucsik A. Hasegawa S.
Experimental Investigation into the Effects of Heating and Impacts on the Spectral Properties of Phyllosilicates on Mars **[#7048]**
Spectral analysis of heated and shocked phyllosilicates help determine the degree of thermal alteration and whether phyllosilicates found in association with impact craters on Mars were pre-existing or formed post-impact by hydrothermal processes.

Goudge T. A. Mustard J. F. Head J. W.
Geologic History of a Paleolake in Kashira Crater, Mars and a Comparison to Terrestrial Lacustrine Mineralogy **[#7040]**
We present an analysis of the geology of a martian paleolake and its associated deposits, including two large kaolinite-bearing deposits. We test the hypothesis that these deposits are lacustrine in origin by examining terrestrial analogs.

Grady M. M. Melwani Daswani M. Tomkinson T. O. R. Franchi I. A.
Formation Environment of Noachian-Age Alteration Assemblages, as Inferred from Secondary Minerals in ALH 84001 **[#7086]**
Secondary minerals in ALH 84001 are mainly carbonates. There are additional minerals produced by alteration on Mars. We are investigating phyllosilicates and sulphides in ALH 84001, to constrain environmental conditions during the early Noachian.

Greenberger R. N. Mustard J. F.
Mineral Assemblages of Al-Phyllosilicate Deposits on Mars: Implications for Leaching Processes, Water Chemistry, and Atmosphere-Water Interactions **[#7063]**
Leaching basalt forms kaolinite + hematite assemblages on Earth. Al-clays on Mars may have formed through leaching but often are not associated with Fe-oxide. Leaching may have been at low pH or in a reduced atmosphere. Other models must be considered.

Halevy I. Head J. W. III
Climatic Effects of Punctuated Volcanism on Early Mars **[#7043]**
The dynamics of atmospheric sulfur chemistry and sulfate-bearing aerosols during phases of episodic volcanism, punctuated by long quiescent periods, warmed the surface of early Mars for multiple episodes of tens to hundreds of years.

Horgan B. Bishop J. L. Christensen P. R. Bell J. F. III
Potential Ancient Soils Preserved at Mawrth Vallis from Comparisons with Eastern Oregon Paleosols: Implications for Early Martian Climate **[#7074]**
The stratigraphy and mineralogy at Mawrth Vallis may be consistent with ancient clay-rich soils on Earth, suggesting that Mawrth Vallis may preserve a geochemical record of several million years of evolving climates and habitable environments.

Hynek B. M. Rogers K. L. McCollom T. M.
Gas-Dominated Volcanic Systems: An Important Habitable Environment for Mars **[#7037]**
Volcanic activity and magmatic outgassing were prevalent for most of Mars' history. Cerro Negro volcano in Nicaragua is an analog fumarolic environment and supports both thermoacidophilic and endolithic phototrophic communities.

Irwin R. P. III Wray J. J. Maxwell T. A. Mest S. C. Hansen S. T.
Wind-Eroded Stratigraphy on the Floor of a Noachian Impact Crater, Noachis Terra, Mars **[#7066]**
Many Noachian flat-floored craters have wind-eroded stratigraphy on their floors. An unnamed crater in Noachis Terra contains three units and many branching sinuous ridges. Mineral detections include feldspars, pyroxene, and weathering products.