

Thursday, March 22, 2012

POSTER SESSION II: GEOLOGICAL ANALOGS FOR DISTANT PLANETARY SURFACES

6:00 p.m. Town Center Exhibit Area

Di Primio M. Marinangeli L.

[Radar Stratigraphy of the Northern and Central Greenland Ice Cap: Groundtruth for SHARAD Data](#) [#1945]

In the Greenland ice sheet we recognized four different radar facies based on the CReSIS acquisition and correlated these units with the core microscopic analysis to provide modeling for radar interpretation of the Mars polar layered deposits (PLD).

Levy J. S. Fountain A. G. Nylen T. L. Head J. W. III Dickson J. L.

[Rapid Growth and Decay of Mars-Analog Gullies in Buried Ice and Sediment-Rich Substrates: New Views of Gullies as Disequilibrium Landforms in Garwood Valley, Antarctica](#) [#1100]

Garwood Valley gullies are an extreme case of rapid landscape change in response to strong disequilibria between ground ice and surface temperature conditions. They may be analogs for gully evolution on Mars driven by both “wet” and “dry” processes.

Socki R. A. Sun T. Niles P. B. Harvey R. P. Bish D. L. Tonui E.

[Antarctic Mirabilite Mounds as Mars Analogs: The Lewis Cliffs Ice Tongue Revisited](#) [#2718]

We have identified massive but highly localized Antarctic mirabilite mounds that may be derived from subsurface fluids and may provide insight into the processes associated with the subsurface. These mounds may be analogous to mounds found on Mars.

Cousins C. R. Crawford I. Gunn M. Harris J. K. Steele A.

[Detection and Identification of Mars Analogue Volcano — Ice Interaction Environments](#) [#1216]

Volcano-ice interaction produces many environments available to microbial colonisation. Similar processes are likely to have occurred on Mars, and are prime exobiology targets. Multi-instrument analyses of volcano-ice deposits are presented.

Pina P. Vieira G. Christiansen H. H. Barata M. T. Oliva M. Neves M. Bandeira L. Lousada M. Jorge M. Saraiva J.

[Analog Studies of Ice-wedge Polygons in Svalbard: 2011 Field Campaign, Topology and Geometry](#) [#2353]

A second field campaign was conducted in Svalbard to study ice-wedge polygons in the framework of project ANAPOLIS. Some results are shown from the mapping of a network, along with ideas on what they can signify for the analysis of martian polygons.

Essefi E. Komatsu G. Fairén A. G. Ben Jmaa H. Rekhiss F. Yaich C.

[Spring Mounds at Sidi El Hani Saline Environment, Eastern Tunisia: Terrestrial Analog for Mars](#) [#1289]

The development of spring mounds within the Sidi El Han saline environment is a slow and continuous process, taking place according to different stages. Similarly, the formation of some putative spring mounds on Mars may be explained by the same processes.

Matsubara Y. Howard A. D. Burr D. M. Williams R. M. Moore J. M.

[Meandering Channels in a Non-Vegetated Area: Quinn River, NV as a Martian Analog](#) [#2534]

Meander channels require cohesive banks. On Earth, this is obtained by vegetation. Meandering channels found on Mars raises the question of this paradigm. Quinn River meanders through an area with sparse vegetation and abundant mud and salt.

Irwin R. P. III Zimbelman J. R.

[Pluvial Shore Landforms in the Great Basin, USA: Analogs to Martian Paleolake Basins](#) [#2061]

Great Basin pluvial shore landforms are often topographically subtle. They should not have survived degradation since the Noachian or Early Hesperian, and detection in high-resolution data would depend on youth and ideal conditions for development.

Zheng M. P. Kong W. G.

[Application of Saline Lake Studies in Martian Geology and Paleoclimatology: Implication for Widespread Potassium Salts on Mars](#) [#1314]

On the basis of current understanding of martian salts, potassium salts are proposed to be widespread on the martian surface by applying the principles of terrestrial saline lake studies.

Cannon K. M. Fenwick L. A. Peterson R. C.

[Spotted Lake: Mineralogical Clues for the Formation of Authigenic Sulfates in Ancient Lakes on Mars](#) [#1989]

Spotted Lake in British Columbia has some of the highest sulfate concentrations in the world, and serves as a valuable analog for studying evaporation and freezing crystallization processes in martian paleolakes.

Ehlmann B. L. Kelemen P. B. Pinet P. Mustard J. F. Launeau P. Ceuleneer G.

[Aqueous Alteration of Ultramafic Rocks in Oman: An Analog for Understanding Carbonate and Serpentine on Mars](#) [#1471]

Abundance of carbonate and circulation of waters and geochemical reactions (serpentinization, carbonation) within ultramafic rocks are examined with hyperspectral airborne data coupled with laboratory infrared spectroscopy, XRD, and petrologic data.

Fleischer I. Klingelhöfer G. Schäfer M. Panthöfer M. Rosemann J. Fischer T.

[Alteration of Sulfate Minerals from Rio Tinto, Spain](#) [#2074]

The sulfate mineral jarosite was detected at Meridiani Planum, Mars, with the Mössbauer spectrometer MIMOS II on the MER Opportunity. Analog studies were performed with a lab MIMOS II version on sulfate samples from Rio Tinto region in Spain.

Komatsu G. Takemura K. Goto K. Shibuya H. Yamagishi A. Sekina Y. Ishimaru R.

[Beppu Hot Spring, Japan, as a Terrestrial Analog for Ancient Hydrothermal Systems on Mars](#) [#1096]

The Beppu Hot Spring on the Kyushu Island, Japan, is an active geothermal field notable for a variety of mineralogy, geochemistry, and microbial activities. This setting maybe comparable to the hypothesized ancient martian hydrothermal systems.

Williams A. J. Sumner D. Y.

[The Development and Preservation of Filamentous Fabrics as Mineralogic Biosignatures. Iron Mountain, California](#) [#2337]

This study investigates mineralogic biosignature formation in gossans related to Fe oxide precipitation in association with microbes. We explore the relevance and detection of these biosignatures within the detection limit of the Mars Science Laboratory.

McAdam A. C. Stern J. C. Mahaffy P. R. Blake D. F. Bristow T. Steele A.

Amundsen H. E. F. AMASE 2011 Team

[Evolved Gas Analysis of Mars Analog Samples from the Arctic Mars Analog Svalbard Expedition: Implications for Analyses by the Mars Science Laboratory](#) [#2318]

Data from samples collected during the Arctic Mars Analog Svalbard Expedition show that MSL SAM-like evolved gas analyses can give constraints on sample organic chemistry, organic matter-mineral associations, and volatile-bearing minerals.

Gurgurewicz J. Mège D. Carrère V. Cornen G. Gaudin A. Kostylew J. Morizet Y.

Purcell P. G. Le Deit L.

[Inferring Alteration Conditions on Mars: Insights from Near-Infrared Spectra of Basalts from Siberia and East Africa](#) [#1505]

An attempt is made to infer climate indicators from the alteration features of terrestrial basalts altered in arid cold and arid hot environmental settings.

Bhattacharya S. Jain N. Parthasarathy G. Chauhan P. Ajai
[Study of Hydrous Sulfates from the Deccan Volcanic Province \(DVP\) of Kutch, India: Implications for Aqueous Alteration Processes on Mars](#) [#1468]

The Deccan Volcanic Province (DVP) at Gujarat, India is considered as a good analogue for the study of clay and hydrous sulphate minerals. This study can lead in interpreting the environmental conditions on the early Mars.

Jain N. Bhattacharya S. Chauhan P. Ajai
[Hyperspectral Study of Hydrous Magnesium Minerals \(Serpentine\) from Ultramafic Rocks Along the Rikhabhdev Lineament, Rajasthan, India: As an Analogue for Hydrous Magnesium Minerals on Mars](#) [#1474]

The ultramafic rocks along the Rikhabhdev Lineament, Rajasthan, India is considered as a good analogue for the study of serpentine. This study helps in interpreting the environmental conditions on Mars in its past.

Gavin P. Chevrier V. F. Sayyed M. R. G. Islam R.
[Spectral Analysis of Deccan Intrabasaltic Bole Beds: Implications for Phyllosilicate Formation on Mars](#) [#1621]

This study compares IR spectra of the Deccan bole beds with those observed in Mawrth Vallis and links their formation processes. Our data suggests changing temperatures during formation then transformation without significant ion transfer.

de Morais A.
[Carbonate Diagenetic Deposits — Parallels Between Arenites at Bauru Region, South America and Rocks at Nili Fossae Region, Planet Mars](#) [#2942]

It is made specific comparisons among diagenetic processes on carbonate deposits on Earth and Mars to give a contribution — via the use of biased techniques and gained experience — for future exploration and better understanding of the Earth and planet Mars.

Potter-McIntyre S. L. Chan M. A. McPherson B. J.
[Iron \(Oxyhydr\)Oxide Biosignatures in the Brushy Basin Member of the Jurassic Morrison Formation, Colorado Plateau, USA: Analog for Martian Diagenetic Iron](#) [#1940]

Iron precipitates in modern microbial mats compared with iron cements in Jurassic alkaline saline lake sediments show that morphological and chemical biosignatures are present and preserved in oxidized, evaporative environments analogous to Mars.

Valdúeza J. E.
[Selection of the Guinsaung Rockslide in the Philippines as a Structural and Morphologic Analog to Rockslide Avalanches in Valles Marineris, Mars](#) [#2936]

This paper selects the Guinsaung landslide in the Philippines as a potential site to do terrestrial analog studies on Mars.

Halliday W. R. Favre G. Stefansson A. Whitfield P. Banks N.
[Occurrence and Absence of Lava Tube Caves with Some Other Volcanic Cavities; a Consideration of Human Habitation Sites on Mars](#) [#1613]

Field investigation of Hawaii's Kau Desert pit craters shows that they are not connected to lava tube caves. The Seven Sisters of Arsia Mons are unlikely to contain lava tube caves. Other types of caves on Mars may provide human habitation sites.

Edgar L. A. Grotzinger J. P. Southard J. B. Ewing R. C. Lamb M. P.
[Criteria for the Identification of Pyroclastic Surge Deposits on Mars: Insight from Hunt's Hole, New Mexico](#) [#2638]

We combine field observations, Terrestrial Laser Scanning (TLS), and hydrodynamic considerations to understand pyroclastic surge deposits at Hunt's Hole, New Mexico, and provide criteria for their identification on Mars.