

Tuesday, March 20, 2012

**POSTER SESSION I: VOLCANISM ON MARS AND BEYOND:
NEW INSIGHTS FROM GEOLOGIC MAPPING, EMPLACEMENT DYNAMICS, AND MODELS
6:00 p.m. Town Center Exhibit Area**

Jodlowski P. Platz T. Michael G. G.

[*Preliminary Eruption History of the Syrtis Major Volcanic Province, Mars*](#) [#2494]

In our ongoing study to unlock the eruption history of Mars we present first results of the Syrtis Major volcanic province.

Harrison T. N.

[*Evidence for Volcanism in and Near the Chaotic Terrains East of Valles Marineris, Mars*](#) [#1057]

Volcanic features associated with martian chaotic regions, including small shield volcanoes and extensive lava flows, have been documented using the Mars Reconnaissance Orbiter (MRO) Context Camera (CTX).

Richardson J. A. Bleacher J. E. Connor C. B. Connor L. J.

[*Using Spatial Density to Characterize Volcanic Fields on Mars*](#) [#2314]

Kernel density estimation is presented as a new, non-parametric method for quantifying the spatial arrangement of volcanic fields. It is applied to two vent fields in Tharsis Province, Mars, to produce insightful spatial density functions.

Schierl Z. P. Spencer P. Signorella J. Collins A. Schwans B. de Wet A. P. Bleacher J. E.

[*Origin of Sinuous Channels on the SW Apron of Ascraeus Mons and the Surrounding Plains, Mars*](#) [#1602]

We used a variety of spacecraft imagery to determine the most likely origin for a network of sinuous channels found on the southwest apron of Ascraeus Mons and that extend out onto the surrounding plains.

Collins A. de Wet A. P. Bleacher J. E. Schierl Z. Schwans B. Signorella J. Judge S.

[*A Comparison and Analog-Based Analysis of Sinuous Channels on the Rift Aprons of Ascraeus Mons and Pavonis Mons Volcanoes, Mars*](#) [#1686]

The origin of sinuous channels on the rift aprons of Mars' Tharsis volcanos is debated. We show that the channels on the flanks of Ascraeus Mons and Pavonis Mons were likely formed by comparable processes, which were probably volcanic in nature.

Bleacher J. E. Williams D. A. Shean D. Greeley R.

[*Geologic Mapping of the Olympus Mons Volcano, Mars*](#) [#2186]

We discuss the current status for our project, geologic mapping of the Olympus Mons volcano, Mars.

Michalski J. R. Wright S. P. Bleacher J. E.

[*Discovery of a Possible Large Caldera in Northwestern Arabia Terra: Implications for Recognizing Ancient Volcanic Source Regions on Mars*](#) [#1392]

We present evidence for the presence of a large, ancient, previously unrecognized caldera in northwestern Arabia Terra.

Williams D. A. Garry W. B. Bleacher J. E. Shean D. Greeley R.

[*Geologic Mapping of Arsia and Pavonis Montes*](#) [#1528]

This presentation will discuss our progress in geologic mapping of Arsia and Pavonis Montes, Mars, and their surrounding lava flow fields.

Simon M. N. Carter L. M. Campbell B. A. Phillips R. J. Mattei S.

[*Studies of Lava Flows in Mars' Tharsis Region Using SHARAD Radar*](#) [#1595]

Models show that Tharsis area lavas, including long flows near Ascraeus and Pavonis Montes, had viscosities consistent with basaltic flows. We surveyed SHARAD radar data across the area to understand the composition and stratigraphy of these flows.

Lehmann T. R. Platz T. Michael G. G.

[*Ages of Lava Flows in the Hesperia Volcanic Province, Mars*](#) [#2526]

In our ongoing effort to unlock the eruption history of Mars we present first results from the Hesperia volcanic province.

Dundas C. M. Keszthelyi L. P.

[*Modeling of Steam Pressure Under Martian Lava Flows*](#) [#2554]

We model the buildup of steam pressures under lava flows during heating of martian ground ice. Shallow ice tables allow pressures to build high enough to drive rootless eruptions.

Ramsey M. S. Crown D. A. Price M. A.

[*Decoupling Lava Flow Composition and Emplacement Processes from Eolian Mantling Deposits Using Thermal Infrared Data*](#) [#2013]

Eolian processes influence Mars and cover many lava surfaces with sand and dust. We present recent results examining unusual thermophysical variations of the Arsia Mons lava flows and focus on a terrestrial analog study examining mantled lava flows.

Keszthelyi L. P.

[*Revisiting Simple Models Relating Lava Flow Dimensions, Emplacement, and Rheology*](#) [#2567]

A simple relationship linking the fluidity of a flow to the ratio of flow thickness and length and another linking effusion rate to flow area are derived. These appear to better match observed trends than previous formulations.

Graff M. A. Zimbelman J. R.

[*A Search for Inflated Lava Flows on Mars*](#) [#1144]

A search for inflated lava flows in the Tharsis Montes region of Mars identified five candidate flows out of 314 randomly selected CTX frames, indicating <2% of the frames included probable inflated flows.

Diniega S. Sigelmann L. Sangha S. Smrekar S. E.

[*Identification and Survey of Martian Lava Inflationary Features*](#) [#2537]

We are generating a comprehensive/global survey of martian inflationary features — positive topographic features found on basaltic flows that yield a useful connection between surface morphology of a lava field and subsurface/past lava dynamics.

Zimbelman J. R. Garry W. B. Bleacher J. E. Crumpler L. S.

[*Terraced Margins on the Inflated McCarty's Basalt Lava Flow, New Mexico: Constraints on Emplacement Mechanisms*](#) [#1831]

Terraces along the margin of the McCarty's lava flow have distinct topographic characteristics that indicate the features are one manifestation of the lava flow inflation process.

Diniega S. Smrekar S. E. Anderson S. Stofan E.

[*Lava Flow Dynamics Driven by Temperature-Dependent Viscosity Variations*](#) [#2556]

We investigate whether a viscosity-driven dynamic instability plays a significant role in initializing lava tubes and channels. This may improve interpretation of lava flow morphology and make it easier to compare flows in different sites/planets.

Ryan A. J. Christensen P. R.

[*Lava Coils and Drifting Patterned Ground in Cerberus Palus, Mars*](#) [#2552]

Lava coils have been identified in Cerberus Palus, Mars. The patterned ground here has also fractured and drifted, like a crust. These two observations indicate that the structures in Cerberus Palus are primarily volcanic, rather than ice-related.

Milazzo M. P. Weiss D. K. Jackson B. Barnes J.

[*Columnar Jointing on Mars: Earth Analog Studies*](#) [#2726]

Terrestrial analog modeling of martian columnar jointing suggests that some martian lavas cooled, in the persistent presence of liquid water, over a period of several to tens of years.

Weiss D. K. Jackson B. Milazzo M. P. Barnes J. W.

[*A New Look at Cooling Models for Martian Flood Basalt Columns*](#) [#1150]

We describe preliminary inferences of Martian basalt columns' thermal histories and emplacement conditions, and report on a field expedition to the CRBG, where we surveyed basalt column outcrops from the ground and air to ground-truth our data.

Mège D. Purcell P. G. Jourdan F.

[*Dikes and Linear Troughs: New Observations on the Somali Plate*](#) [#1317]

Linear troughs ("narrow grabens") are common on planetary surfaces, and are sometimes interpreted as dike emplacement. Linear troughs observed above individual dikes on the Somali Plate give new ideas as to the possible nature of their relationships.

Manfredi L. Greeley R.

[*Origin of Ridges Seen in Tempe Terra, Mars*](#) [#2599]

The authors investigate a regionally small unit in Tempe Terra (~15,000 km²) that is distinguished from nearby units by ridges that have no obvious formation process. These ridges are compared to terrestrial analogs to determine their origin.

Wyrick D. Y. Watson-Morris M. J. Morris A. P.

[*Physical Analog Modeling of Martian Dike-Induced Deformation*](#) [#2396]

Analog models of dike injection were performed to determine style and magnitude of structural deformation associated with the dike. Primary deformation style is contraction rather than extension, indicating that martian dikes may not create grabens.