

Tuesday, March 11, 2008
POSTER SESSION I: MARS VOLCANICS AND MAGMAS
6:30 p.m. Fitness Center

Anderson S. W. Smrekar S. E. Stofan E. R. Ramsey M. S. Byrnes J. M.
Similarities in Emplacement Styles Between Crusted Lava Flows and Igneous Intrusions: Implications for Planetary Formation [#1782]

To better understand the lava flow interior structure, we consider the similarities between crusted lava flows and igneous intrusions. We designed a set of experiments, field studies, and theoretical models to better understand lava flow interiors.

Xiao L. Greeley R. Williams D. A.
Volcanism on Mars: Integrated Constraints and Implications for Martian Thermal History [#1038]

This study is to combine morphological analyses, temporal and spatial distributions of volcanos, and global compositional information with a geophysical model of the evolution of the interior to assess genetic relationships among these factors.

Young K. E. Sakimoto S. E. H.
A Survey of Pseudocrater Formation Modeling on Mars [#1785]

We look at previously developed models that describe the formation of rootless cones on Mars and refine them by redefining several parameters.

Brand H. E. A. Middleton C. A. Grindrod P. M. Fortes A. D. Wood I. G. Vocablo L.
Modelling of Gypsum and Ice Diapirs in the Martian Crust [#1641]

We have simulated the evolution of gypsum and ice diapiric bodies within the martian crust in order to determine the likely spatial scale of feature produced at the surface, and the timescale for ascent of the diapirs to the surface.

Kneissl T. Neukum G.
New Investigations of Possible Volcanic Edifices at the Martian North Pole — First Results [#1319]

Possible volcanic edifices at the martian North Pole were described mostly on the basis of Viking images and MOLA data. We analyzed the distribution and characteristics of these features in more detail based on new datasets of HRSC, THEMIS, and MOC.

Milazzo M. P. Jaeger W. L. Keszthelyi L. McEwen A. S. Beyer R. A.
The Discovery of Columnar Jointing on Mars [#2062]

We report the discovery of columnar jointing on Mars. On Earth, entablature formation requires substantial water volume. If columnar jointing is analogous on Mars, this discovery supports concurrent eruptions of water and lava in Elysium Planitia.

Korteniemi J. Hyvärinen M. Kostama V.-P. Aittola M. Raitala J.
Search for Dikes in the Hadriaca Patera Region, Mars: Preliminary Findings [#1829]

We search for dike-indicative formations in the region around Hadriaca Patera. So far, we have identified and documented a large number of straight/curvilinear ridges, fractures and grabens on the volcano as well as in its vicinity.

Pithawala T. M. Ghent R. R.
Cone-Chains in Isidis Planitia, Mars [#1465]

The purpose of this study is to conduct a systematic examination of thumbprint terrain features in Isidis Planitia using high-resolution imagery, and to propose a hypothesis for their genesis.

Jaeger W. L. Keszthelyi L. Galuszka D. M. Kirk R. L. HiRISE Team
Morphologic Characteristics and Global Distribution of Phreato-Volcanic Constructs on Mars as Seen by HiRISE [#2428]

We examine the morphology of pristine phreato-volcanic constructs (PVCs) in Athabasca Valles, identify an assemblage of features that is diagnostic of this class of PVC, and study HiRISE images of candidate PVC fields elsewhere on Mars.

Baloga S. M. Glaze L. S.
Regional Similarity of Leveed Lava Flows on the Mars Plains [#1492]

Viscosities and volumetric flow rates for large leveed Mars flows are comparable to large terrestrial basalts. The primary difference is the duration of lava supply on Mars (1–10 yrs) as opposed to hours to days for terrestrial analogs.

Tyson S. Wilson L. Mouginis-Mark P. J.
Morphology and Eruptive Processes of Three Volcanic Rift Vents in the Tharsis Province, Mars [#1246]

Geometrical measurements and detailed morphological analyses of 12 lava flows associated with an en echelon fissure vent system in Tharsis are used to estimate erupted volume, volume flux, and duration of each eruptive episode.

Hiesinger H. Reiss D. Dude S. Ohm C. Neukum G. Head J. W. III
Arsia, Pavonis, and Ascraeus Mons, Mars: Rheologic Properties of Young Lava Flows [#1277]

We report on the rheologic properties of young lava flows on Arsia, Pavonis, and Ascraeus Mons. We expand on our previous study in order to investigate possible similarities and differences among the late-stage lava flows of the Tharsis Montes.

Williams D. A. Greeley R. Ferguson R. Kuzmin R. O. Xiao L. Baratoux D. Pinet P.
McCord T. B. Coombe J.-P.

Peneus Patera: Analysis of Surface Morphology at Various Scales [#1005]

We discuss the morphology and processes that have affected Peneus Patera, a highland patera south of the Hellas basin using various Mars image data sets.

Trumble M. E. Bleacher J. E. de Wet A. Merritts D. J. Garry W. B.
Geomorphologic Mapping and Characterization of Channel Networks on the Tharsis Montes, Mars [#1698]

Several unique styles of channel networks exist on the flanks and rift aprons of the Tharsis Montes. Geomorphologic mapping suggests that they result from a combination of erosion by a flowing fluid and structural controls.

Filiberto J. Treiman A. H.
The Effect of Chlorine on Phase Relations of a Martian Basalt: Implications for Mantle Volatiles [#1431]

This study has shown that Cl complexes in the melt depressing the liquidus and multiple saturation pressure to a greater extent than water. Small amounts of Cl in the mantle will enable production of basalts at lower temperatures and pressures.

Ruedas T. Tackley P. J.
Phase Transition Evolution and Convection Style in the Martian Mantle [#1504]

We present 2D convection models of the martian mantle accounting for its thermoelastic properties and phase transitions on the basis of a mineralogical model. The models show the dynamical, thermal, and composition evolution of the mantle.

Toplis M. J. El Maarry M. R. Baratoux D. Gasnault O. Pinet P. C.
Are Small Differences in Phosphorous Content Responsible for Large Differences in the Composition of Terrestrial and Martian Magmatic Rocks? [#1282]

Small differences in the P₂O₅ content of the martian mantle compared to that of the Earth may explain many of the first-order differences between the composition and mineralogy of the magmatic rocks observed near the surface of these two planets.

Harrington A. D. McCubbin F. M. Elardo S. Nekvasil H. Lindsley D. H.

Irvine: A Parent to Backstay? [#2219]

Experimental phase equilibrium studies of Irvine composition liquids are used to investigate a possible link between Irvine and Backstay. While experiments under dry conditions do not produce Backstay, water-bearing experiments are ongoing.

McSween H. Y. Jr. Usui T.

Evolving Models for the Petrogenesis of Magmatic Rocks in Gusev Crater, Mars [#1028]

Picritic and alkaline volcanic rocks analyzed by the Spirit rover require more complex origins than previously appreciated. Here we explore partial melting of the Mars mantle to different degrees, with subsequent fractionation under different conditions.

Mangold N. Gendrin A. Gondet B. Le Mouélic S. Quantin C. Bibring J.-P. Langevin Y. Poulet F. Ansan V. Masson Ph. Hauber E. Neukum G.

Mineralogy of West Tithonium-Noctis Labyrinthus, Mars: Putative Volcanism on Noctis Canyons Floors [#1592]

A large number of pyroxene-rich areas are detected west of Valles Marineris with OMEGA spectral data. Most of them consist of sand dunes, but some rocky outcrops in the floor of Noctis could represent fresh lava flows formed inside the canyons.