

**Wednesday, March 12, 2008**  
**MARS VOLCANICS AND TECTONICS**  
**8:30 a.m. Crystal Ballroom B**

**Chairs: J. M. Dohm**  
**J. E. Bleacher**

- 8:30 a.m. Jaeger W. L. \* Keszthelyi L. McEwen A. S. HiRISE Team  
*Emplacement of Athabasca Valles Flood Lavas* [#1836]  
 The Late Amazonian flood lavas that drape Athabasca Valles and fill Cerberus Palus in the Elysium Planitia region of Mars were likely emplaced during a single, continuous fissure eruption with a duration of a few to several weeks.
- 8:45 a.m. Lang N. P. \* McSween H. Y. Jr. Tornabene L. L. Dunn T. L.  
*Re-Examining the Relationship Between Apollinaris Patera and Gusev Basalts* [#1914]  
 We use a topographic analysis to demonstrate that the basalts within Gusev Crater were probably not sourced from the Apollinaris Patera construct. Instead, the basalts were likely sourced from directly within the crater.
- 9:00 a.m. Kerber L. \* Head J. W. III Madeleine J. B. Wilson L. Forget F.  
*Modeling Ash Dispersal from Apollinaris Patera: Implications for the Medusae Fossae Formation* [#1881]  
 New simulations provide evidence that Apollinaris tephra could be a source of fine-grained debris for part of the Medusae Fossae Formation. Explosive volcanic eruptions could also supply volatiles to the MFF and other friable mantling units.
- 9:15 a.m. Byrne P. K. \* Van Wyk de Vries B. Murray J. B. Troll V. R.  
*Volcano Flank Terraces on Mars: Formation* [#2439]  
 We test lithospheric flexure as a flank terrace formation mechanism using analogue modelling techniques. We find that analogue flexure produces structures that closely correlate with features on Mars.
- 9:30 a.m. McGovern P. J. \* Morgan J. K.  
*Volcanic Spreading at Olympus Mons: New Models, with Implications for Martian Volcanic Edifice Structures and the Distribution of Phyllosian Sediments* [#2304]  
 The flank topography and tectonics of Olympus Mons are best explained by volcanic spreading upon basal sediments thickening with distance from Tharsis, if those sediments are clays from the proposed Phyllosian epoch.
- 9:45 a.m. Sakimoto S. E. H. \*  
*Martian Small Volcanic Shields and Shield Fields* [#1658]  
 Small volcanic shields show a strong correlation in explosive features vs. effusive features with latitude—perhaps from spatially variable subsurface magma/water interactions. Combined images and topography help confirm eruption styles.
- 10:00 a.m. Plescia J. B. \* Baloga S. M.  
*Tharsis Low Shields: Morphometry, Structural Control and Statistical Analysis* [#1888]  
 Location of volcanic vents in eastern Tharsis is controlled by tectonic stresses and proximity to the magma sources of Pavonis and Ascræus Mons. Almost all of the vents are low shields; all are buried by young lavas from Pavonis and Ascræus Mons.

- 10:15 a.m. Bleacher J. E. \* Glaze L. S. Greeley R. Hauber E. Baloga S. M. Sakimoto S. E. H. Williams D. A. Glotch T. D.  
*Spatial and Alignment Analyses for a Field of Small Volcanic Vents South of Pavonis Mons, Mars* [#1722]  
Nearest neighbor and two-point azimuth analyses indicate that small volcanic vents south of Pavonis Mons likely formed independently of each other and that their formation was controlled by a pre-existing north trending structural pattern.
- 10:30 a.m. Anderson R. C. \* Dohm J. M. Hare T. M. Pounders E.  
*Claritas Rise: The Oldest Record of Magmatic Activity Identified for Mars* [#2306]  
In this study, we examined the faults associated with an ancient magmatic-driven center of activity in the western hemisphere of Mars, Claritas rise, to better understand the tectonic evolution of the early Noachian period prior to the formation of Tharsis.
- 10:45 a.m. Dohm J. M. \* Anderson R. C. Baker V. R. Tanaka K. L. Hare T. M. Boynton W. V.  
*New Evidence for a Magmatic Influence on the Origin of Valles Marineris* [#1948]  
Stratigraphic, paleotectonic, paleoerosional, and geophysical information of Mars, compiled by geologists at global to local scales, demonstrate that magmatic-driven processes, including plume-driven tectonism, dominate the dynamic geologic history.
- 11:00 a.m. Dimitrova L. L. \* Holt W. E. Haines A. J. Schultz R. A.  
*Stress Models, Global Contraction, and Surface Faults on Mars* [#1848]  
We evaluate the contribution of global contraction as recorded by a global fault data set in the presence of a lithospheric stress field derived from horizontal GPE gradients. The associated radius decrease is small and ranges from 0.07 km to 0.37 km.
- 11:15 a.m. Kiefer W. S. \*  
*Exploring Early Tharsis: Gravity Observations of Radiating Dike Swarms in the Thaumasia Region of Mars* [#1671]  
Gravity observations in Thaumasia indicate the presence of several high density subsurface structures radiating away from Tharsis. The most likely interpretation is that these are dike systems associated with the Claritas Fossae graben system and in Solis Planum.
- 11:30 a.m. Lillis R. J. \* Bleacher J. E. Dufek J. Manga M. Greeley R.  
*Magmatic History of Southwestern Tharsis: Clues from Volcanic History, Thermo-Magnetic Modeling and Electron Reflection Magnetometry* [#1159]  
We fit electron reflection magnetic field signatures to a model of thermal demagnetization by magmatic intrusion, thus placing constraints on magnetic coherence scale and on the times and locations of magmatism in southwestern Tharsis.