Perl S. M.  McLennan S. M.  Athena Science Team  
*Comparison of Secondary Porosity and Permeability from Eagle to Victoria Craters, Meridiani Planum, Mars [#2246]*
This paper describes secondary porosity in sedimentary rocks abraded by the Opportunity rover between Eagle and Victoria craters to help constrain permeability and the environment of groundwater flow.

*Thermal Modeling of Fluvial Sediments [#1220]*
Using different size sediments from a terrestrial river system, we are developing thermal models that may allow us to identify fluvial systems on Mars. This project has been undertaken by the MONS team, a group of high school students from Durham, NC.

Herkenhoff K. E.  Squyres S. W.  Sullivan R.  Arvidson R. E.  Yingst A.  Athena Science Team  
*Overview of Recent Athena Microscopic Imager Results [#2106]*
Despite contamination suffered during the 2007 global dust storm on Mars, the Microscopic Imagers on the Mars Exploration Rovers continue to acquire interesting images. An overview of the results of the MI experiments will emphasize recent observations.

Yingst R. A.  Crumpler L. S.  Li R.  Farrand W. H.  Athena Science Team  
*Shape, Roundness and Texture of Particles along the Spirit Rover Traverse from Sol 450 to Sol 750 [#1867]*
Particle morphologies can be assessed quantitatively and qualitatively to classify rock types. Here we assess the size, shape, roundness, and texture of particles along the Spirit rover traverse from sol 450 to sol 750.

Royer D.  Burt D. M.  Wohletz K. H.  
*The Mars Spherule Size Distribution and the Impact Hypothesis [#1013]*
Opportunity Pancam images are used to determine the spherule size distributions from Endurance to Victoria. The Sequential Fragmentation/Transport model offers a coherent interpretation of these distributions implying formation by accretion.

*Sulfate Mineral Stratigraphy in Valles Marineris Interior Layered Deposits [#1891]*
Mineralogic, stratigraphic and tectonic study of exemplar sulfate-rich ILD in E Candor Chasma suggests either a complex evaporite sequence or kieserite formation with later atmospheric alteration to polyhydrated sulfate.

Le Deit L.  Bourgeois O.  Le Mouélic S.  Mège D.  Combe J.-Ph.  Sotin C.  Massé M.  
*Light-Toned Layers on Plateaus Above Valles Marineris (Mars) [#1740]*
From HiRISE, CTX, HRSC and MOLA data, we perform a geological study of the sites where extensive covers of layered deposits crop out on plateaus above Valles Marineris in order to constrain their history and their relationship with ILDs.

Sowe M.  Hauber E.  Jaumann R.  Neukum G.  
*Light-toned Layered Deposits of Chaotic Terrains on Mars [#1715]*
Light-toned layered deposits in chaotic terrains were analysed using high-resolution images and elevation as formation hypotheses are discussed. We looked at morphology, thickness, elevation, and thermo-physical properties.
OMEGA hyperspectral data indicate the presence of a layered cap containing sulfates and ferric oxides in Aram Chaos.

Light-toned deposits cropping out in Gale Crater (Mars) are analyzed here. We suggest that they have a local origin, possibly as a large multi-stage spring mound.

We propose that sulfates formed as evaporites in Valles Marineris following the alteration of martian basaltic crust, were then elevated by the Tharsis uplift, and transported to deposit in Meridiani Planum by periodic outbursts of water.

Fluvial sedimentary features (meander loops, scroll bars, point bar sequences, and epsilon cross-bedding) indicate a stable delta plain environment persisted within the Jezero crater lacustrine system during an interval of the Noachian.