Thursday, March 16, 2006
POSTER SESSION II: MARS INTERIOR
7:00 p.m. Fitness Center

Redmond H. L. King S. D.
Are Both the Tharsis Rise and the Crustal Dichotomy a Result of Dynamic Mantle Processes? **[#2152]**
We numerically investigate an edge-driven convective instability at the crustal dichotomy boundary as a mechanism to generate volcanism at Tharsis Rise using a 3D spherical geometry.

Williams J.-P. Nimmo F. Moore W. B.
The Formation of Tharsis: What the Line-of-Sight Data is Telling Us **[#2364]**
Effective elastic thickness values for Tharsis are derived from LOS acceleration profiles from MGS. Results indicate the bulk of Tharsis was emplaced in the Noachian with continued volcanic activity persisting in the western half of the region.

Anderson R. C. Dohm J. M. Haldemann A. F. C. Pounders E. Golombek M. P.
Tectonic Evolution of Mars **[#1883]**
Detailed stratigraphic and structural mapping indicates that the Tharsis rise of the western hemisphere and the formation of Isidis Planitia and the Elysium rise of the eastern hemisphere dominate the tectonic history of Mars.

King S. D. Redmond H. L.
How Can We Reconcile Mars Thermal History with the Crustal Dichotomy, Magnetic Field, and Tharsis Volcanism? **[#1927]**
The interior heat engine is the primary driving mechanism for planetary-scale tectonic and volcanic processes; hence it is important to understand whether our picture of Martian thermal evolution is consistent with these events.

Wdowiak T. J.
A New Mechanism for H_2O Precipitation on an Earlier Mars **[#1214]**
The eruption of ancient Martian volcanoes likely resulted in the atmospheric introduction of magmatic H_2O (as water vapor) and ash aerosol substrate for its prompt nucleation and condensation under presumed low temperature early environmental conditions, with fallout over the planet.

Kargel J. S. Begét J. E. Wessels R. Skinner J. E. Jr.
"Bottom → Up" Geothermal Interactions and "Top → Down" Climatic Interactions with Permafrost and Hydrates on Mars **[#2308]**
Geothermal and volcanic heating of permafrost and climatically driven thawing result in different sets of unique processes and features on Earth and probably also on Mars. These features and thermal models explaining them will be presented.

Parsons R. A. Hustoft J. W. Holtzman B. K. Kohlstedt D. L. Nimmo F.
Surface Tension-driven Melt Flow in the Upper Mantle: An Experimental and Modeling Approach to Studying Silicate Melt Diffusion Through an Olivine Matrix **[#2446]**
In this study we focus on modeling melt diffusion resulting from surface tension during the static anneal. By matching model results to experimental data, we are able to place constraints on variables governing surface tension-driven flow.

Khan A. Connolly J. A. D.
Constraining the Composition and Thermal State of Mars **[#1283]**
We inverted a set of geophysical data to constrain martian mantle composition and thermal state. We find a mantle composition similar to the pyrolite model, except for FeO. For the core, a composition of Fe 14 wt% S and of ~1600 km radius is favoured, while CMB temperatures suggest it to be fluid.

Roberts J. H. Zhong S.
Degree-1 Mantle Convection and the Origin of the Martian Hemispheric Dichotomy **[#1447]**
The hemispheric dichotomy on Mars may have been formed by degree-1 convection. 3D models with a layered viscosity structure can generate a one-plume structure within 100 My, quickly enough to be associated with the dichotomy.

Roberts J. H. Zhong S.
Polar Wander of Mars Driven by Degree-1 Mantle Convection and Its Implications for the Formation of the Crustal Dichotomy and the Tharsis Rise **[#1206]**
The geoid associated with degree-1 mantle convection places the plume at the equator, forming an east-west crustal dichotomy. A 30 km lithosphere makes the geoid negative, moving the plume to the pole, and the dichotomy to its present position.