Tuesday, March 16, 2004
ANCIENT MARS WATER AND LANDFORMS
8:30 a.m.  Salon B

Chairs: R. P. Irwin III
J. R. Zimbelman

8:30 a.m.  Werner S. C.* van Gasselt S. Neukum G.
Giant Lowland Polygons: Relics of an Ancient Martian Ocean? [#1905]
Crater size frequency distributions of the giant polygon terrain in Utopia and Acidalia Planitiae indicate a major resurfacing event, which occurred in a time span between 3.8 and 3.4 Ga. The regional geology and these ages are consistent with the existence of a proposed Martian ocean.

8:45 a.m.  Zimbelman J. R.* Williams S. H. Johnston A. K. Head J. W. III
Lake Shorelines: Earth Analogs for Hypothesized Martian Coastal Features [#1683]
Precise Differential Global Positioning System topographic surveys of shorelines from glacial Lake Lahontan are used for making new assessments of hypothesized shoreline features in the northern plains of Mars.

9:00 a.m.  Pondrelli M.* Baliva A. Di Lorenzo S. Marinangeli L. Rossi A. P.
Complex Evolution of Paleolacustrine Systems on Mars: An Example from the Holden Crater [#1249]
Many evidence for water-driven processes have been recognized in the Holden Crater, suggesting that a standing body of water occupied vast areas inside it. Fan features and the stratigraphic architecture depict a complex evolution for the paleolake.

9:15 a.m.  Irwin R. P. III* Howard A. D. Maxwell T. A.
Geomorphology and Hydraulics of Ma'adim Vallis, Mars, During a Noachian/Hesperian Boundary Paleoflood [#1852]
Crater counting, topography, and flow hydraulics provide quantitative support for development of Ma'adim Vallis during a brief overflow at the Noachian/Hesperian boundary, followed by a geologically brief period of tributary development.

9:30 a.m.  Crown D. A.* Bleamaster L. F. III Mest S. C.
Geologic Evolution of Dao Vallis, Mars [#1185]
Geomorphic and topographic analyses suggest a sequence of collapse, subsurface flow, and surface runoff events has occurred at different scales and at different times to create Dao Vallis.

9:45 a.m.  Tanaka K. L.* Skinner J. A. Jr.
Advances in Reconstructing the Geologic History of the Chryse Region Outflow Channels on Mars [#1770]
Based on updated geologic mapping, we present new findings that (1) elucidate Chryse channeling history, (2) constrain origin of the Vastitas Borealis Formation, and (3) may assist in understanding hematite formation in Aram Chaos.

10:00 a.m.  BREAK

10:15 a.m.  Coleman N. M.*
Ravi Vallis, Mars — Paleoflood Origin and Genesis of Secondary Chaos Zones [#1299]
Hydrologic calculations are presented for the paleoflood that carved Ravi Vallis. Incision of this channel spawned secondary breakouts of groundwater, forming new chaos zones. Water probably never filled this channel to its present depth.
10:30 a.m. Dinwiddie C. L. * Coleman N. M. Necsoiu M.
*Walla Walla Vallis and Wallula Crater: Two Recently Discovered Martian Features Record Aqueous History* [#1316]
The outflow channel Walla Walla Vallis (name provisionally approved by the IAU) was unresolved until THEMIS data became available. We present in-depth analyses of day/night IR THEMIS data and a high resolution digital elevation model to further resolve channel relationships in this region.

10:45 a.m. Harrison K. P. * Grimm R. E.
*Tharsis Recharge: a Source of Groundwater for Martian Outflow Channels* [#1691]
We demonstrate quantitatively that snowpack or glaciers on the Tharsis rise during past periods of high obliquity provide an efficient source of aquifer recharge and hydraulic head for circum-Chryse outflow channel formation processes on Mars.

11:00 a.m. Wilson L. * Head J. W. III Leask H. J. Ghatan G. Mitchell K. L.
*Factors Controlling Water Volumes and Release Rates in Martian Outflow Channels* [#1151]
We address the conditions under which outflow channels are likely to form on Mars and the factors controlling water discharge rates.

11:15 a.m. Rodriguez J. A. P. * Sasaki S. Miyamoto H. Dohm J. M.
*Significance of Confined Cavernous Systems for Outflow Channel Water Sources, Reactivation Mechanisms and Chaos Formation* [#1792]
Vast amounts of water released from the confined cavernous systems played an important role in the excavation of the outflow channels. Headsource reactivation happened due to ground subsidence and subsequent increase in hydrostatic pressure.

11:30 a.m. Stepinski T. F. * Coradetti S.
*Systematic Differences in Topography of Martian and Terrestrial Drainage Basins* [#1166]
We have extracted and analyzed 41 terrestrial and Martian drainage basins. The analysis reveals systematic differences between topography of basins on the two planets, and implies that Martian surfaces did not experience significant runoff erosion.

11:45 a.m. Lorenz R. D. * Kraal E. R. Eddlemon E. E. Cheney J. Greeley R.
*Waves on Seas of Mars and Titan: Wind-Tunnel Experiments on Wind-Wave Generation in Extraterrestrial Atmospheres* [#1038]
We report Mars Wind Tunnel experiments, finding a strong dependence of wave height on atmospheric pressure. Energy transfer between air and sea is suppressed at low pressures, perhaps explaining Mars’ lack of shoreline features. Kerosene (an analog for Titan seas) builds larger waves than water.