Wednesday, March 16, 2005
MARS VOLCANISM AND TECTONISM
8:30 a.m.  Salon C

Chairs:  H. Hiesinger
L. P. Kesztelyi

8:30 a.m. Bleacher J. E. *  Greeley R.  Williams D. A.  Bentley M.  Neukum G.
Hauber E.  HRSC Co-Investigation Team
Olympus Mons: Inferred Changes in Late Stage Effusive Activity Based on Lava Flow Mapping of
Mars Express High Resolution Stereo Camera Data [#1364]
Olympus Mons mapping, to estimate the percent of flows emplaced by lava tubes or channels,
indicates that late stage activity was typified by channel-forming eruptions with older tube-forming
eruptions being more important on the north flank.

8:45 a.m. McGovern P. J. *  Morgan J. K.
Spreading of the Olympus Mons Volcanic Edifice, Mars [#2258]
Topographic profiles of the Olympus Mons volcanic edifice on Mars suggest that the flanks have
spread outward to accommodate growth. We compare models of the volcanic spreading process to
observed profiles in order to infer the structure of the edifice.

9:00 a.m. Enevoldsen A. A. *  Sakimoto S. E. H.  Cooley C. R.
Elevation-dependent Flow Rates on Olympus Mons [#1595]
Using MOLA and THEMIS data, we determine the flow rates of small lava flows on Olympus Mons
and quantify the differences in flow rates of low- and high-elevation flows. The lowest flow rate we
found thus far is 40 m³/s and the highest is 5800 m³/s.

9:15 a.m. Hiesinger H. *  Head J. W. III  Neukum G.  HRSC Co-Investigator Team
Rheological Properties of Late-Stage Lava Flows on Ascraeus Mons: New Evidence
from HRSC [#1727]
We report on estimates of the rheological properties of late-stage lava flows on the eastern flank of
Ascraeus Mons, Mars, using HRSC data; we conclude that the lava flows investigated are likely to be
basaltic to andesitic in composition.

9:30 a.m. Wilson L. *  Shean D. E.  Head J. W. III
Subglacial Dike Emplacement on Mars: Radial Ridges Associated with the Pavonis Mons
Fan-shaped Deposit [#1189]
Ridges radial to Pavonis Mons and underlying the fan-shaped deposit on its NW flank are interpreted
to be the remnants of dikes emplaced beneath a cold-based tropical mountain glacier.

9:45 a.m. Murray J. B. *  van Wyk de Vries B.  Muller J.-P.  Neukum G.  Page D.
Late Stage Water Eruptions on the Flanks of Large Martian Volcanic Constructs [#1717]
Evidence is presented for water eruption at the foot of giant Martian volcanoes, a result of edifice
sinking into an icy, incompetent substratum. Analogies with Mt. Haddington, Antarctica, are striking.

10:00 a.m. Garry W. B. *  Gregg T. K. P.
Analysis of Downstream Transitions in Morphology and Structure of Lava Channels on Mars [#2019]
An analysis of stable, transitional, and dispersed flow zones in Martian lava channels. These zones
have been observed in terrestrial lava channels and simulated channels. We present a comparative
study of terrestrial, PEG, and Martian channels.
10:15 a.m. Gregg T. K. P. * Crown D. A.
What is Hesperia Planum, Mars? An Examination of Multiple Working Hypotheses  [#1962]
Hesperia Planum is the type locale for “Hesperian ridged plains” on Mars, and is commonly believed to be composed of flood lavas. However, its surface may not be entirely Hesperian, nor composed of a single material unit. We present alternative interpretations for Hesperia Planum.

10:30 a.m. Keszthelyi L. P. *
Some Simple Models for Rootless Cone Formation on Mars  [#1914]
Simple calculations and observations of terrestrial analogs suggest that rootless cones on Mars require intimate mixing of liquid lava and water.

10:45 a.m. Okubo C. H. * Schultz R. A.
Evidence of Normal Faulting and Dike Intrusion at Valles Marineris from Pit Crater Topography  [#1008]
Pit crater chain topography is found to be consistent with causative normal faulting and dike intrusion to the north of the Ius–Melas–Coprates chasmata, while causative normal faulting is the sole process identified to the south of this chasmata.

11:00 a.m. Megé D. * Peulvast J.-P.    Masson Ph.
A Planetary Example of Tectonic Inversion: Folding and Thrusting in the Valles Marineris Graben System on Mars  [#1772]
We describe folding and thrusting in Valles Marineris and propose that they result from sackung.

11:15 a.m. Vidal A. * Mueller K. M.    Golombek M. P.
Geometry of Thrust Faults Beneath Amenthes Rupes, Mars  [#2333]
Amenthes Rupes is a large lobate scarp which deforms a crater at the dichotomy boundary. Shortening estimates from this crater are made and combined with axial surface mapping and mechanical modeling to constrain fault depth.

11:30 a.m. Artita K. S. * Schultz R. A.
Significance of Deformation Band-like Strike-Slip Faults on Mars  [#2225]
We present new MOLA-, MDIM-, and THEMIS-based observations of strike-slip faults in East Coprates Planum (−19°S to −31°S, 300° to 310°). Our results indicate that strike-slip faults in the southern region behave like deformation bands, structures commonly found in porous, granular materials.