

PRINT-ONLY PRESENTATIONS

Mars

Aittola M. Kostama V.-P. Lahtela H. Raitala J.

Fluvial Processes Modifications of the Impact Craters in the Greater Hellas Region, Mars [#1538]

The appearance of Martian impact craters is due to a number of pre- and post-impact factors. The changes in their appearance may provide information on the local surface geology and on the whole post-impact geological evolution of the area studied.

Bridges J. C. Seabrook A. M. Rothery D. A. Pillinger C. T. Sims M. R. Wright I. P.

Revised Target Co-Ordinates for the Beagle 2 Lander [#1606]

The revised, IAU 2000 target co-ordinates of the Mars Beagle 2 Lander are 11.6°N, 90.75°E.

Byrnes J. M. de Silva S. L.

Formation of Martian Paterae: Insights from Terrestrial Ignimbrite Shields [#1175]

Morphologic comparison of Martian paterae and terrestrial ignimbrite shields suggests similar formation processes: eruption of extensive pyroclastics from low eruption columns, followed by downsagging of the central region and extrusion of lava flows.

Caplinger M. A. Malin M. C.

A New Map of Mars [#1901]

We describe a new map of Mars compiled from MGS MOC and MOLA datasets.

Caruso P. A.

Seismic Triggering Mechanisms of Large-scale Landslides, Valles Marineris [#1525]

Large-scale landslides in Valles Marineris wallrock are analyzed using GIS in order to determine what triggering mechanisms caused the landslides. This work confirms that landslides occur where the seismic hazard map forecasts highest seismic slide potential.

Chapman M. G. Larsen G. Lucas S. G. Russell A. J. Tanner L. H. Thordarson T.

Study of Terrestrial Terrains Analogous to Martian Layered, Massive, and Thin-bedded Materials [#1890]

The Mars Orbiter Camera views have generated new views of possible widespread, layered sediments. In order to test the hypotheses of lacustrine vs. volcanic ash origin for the hematite/LMT deposits, we are studying terrestrial analog rocks.

Colton S. L. Ferrill D. A. Sims D. W. Wyrick D. Y. Franklin N. M.

Methodology for Computer-aided, Interactive Rapid Assessment of Local or Regional Stress Fields on Mars [#2054]

We present a method for rapid assessment of stress fields on Mars: (i) mapping geologic structures, (ii) calculating stress fields, and (iii) determining resolved stresses on faults. Preliminary results are presented for northern Utopia Planitia.

Cord A. M. Pinet P. C. Daydou Y. Chevrel S.

Experimental Investigation of the Potential Wavelength Dependence of Hapke Parameters in the Visible and Near Infrared Range [#1548]

The full Hapke model is fitted to observations in multiple wavelengths. We study the potential spectral dependence of each parameter.

Cremers D. A. Arp Z. Knight A. K. Scherbarth N. L. Wiens R. C. Maurice S. Sallé B.

Characteristics of Stand-Off Detection of Geological Samples at Mars Atmosphere Pressure Using Laser-induced Breakdown Spectroscopy (LIBS) [#1654]

Laser-Induced Breakdown Spectroscopy (LIBS) is being developed for use on Mars landers and rovers. For this application we are determining characteristics and capabilities of the method for stand-off detection of geological samples using compact lasers, spectrographs, and detectors.

Cull S. C.

Fractal Dimension of the Upland/Lowland Contact of Deuteronilus Mensae, Mars Implies Shoreline Erosion [#1100]

A series of escarpments along the upland/lowland contact of Deuteronilus Mensae, Mars, were analyzed for their fractal dimensions. The escarpments have fractal dimensions ranging from 1.20 to 1.25, nearly identical to fractals found in Earth shorelines.

de Pablo M. A.

An Alternative Hypothesis for the Origin and Evolution of Hebes Chasma, Mars [#1072]

Here is proposed a preliminary alternative hypothesis about the origin and evolution of Hebes Chasma based on the groundwater circulation and elaborated from the analysis of MOC/MGS images and MOLA/MGS topographic data.

Ferrill D. A. Morris A. P. Waiting D. J. Franklin N. M. Sims D. W.

Influence of Gravity on the Geometry of Martian Normal Faults [#2050]

Consideration of the effects of gravity on lithostatic stress on Mars indicates that dilational faulting found in the upper 2 km on Earth may extend to depths of 5 km on Mars.

Gatineau D. Mège D.

Topographic Profiles Across Valles Marineris Walls: Identification and Extent of Lava Layers in the Volcanic Basement [#1768]

Five to ten major strength discontinuities have been identified on Valles Marineris walls. They may represent boundaries between individual volcanic flows or deposits whose extent is on the order of 10^4 – 10^5 km² at least.

Greeley R. Doggett T. C. Davies A. G. Baker V. Dohm J. Ferre P. A. Hinnell A. Rucker D. Roden J. Stough T. Williams K. K. Beardmore G.

Airborne Radar Study of Mars Analogs in the Southwestern United States [#1779]

The search for surface and near-surface liquid water on Mars is a central part of current and planned future exploration. We present preliminary results from SAR analog studies at three test sites to remotely measure soil moisture content.

Gulak Yu. K. Dichko I. A.

On the Possible Dusty Rings Around Mars [#1077]

A prognosis of the possible dusty rings around Mars is proposed at the heights calculated by the Gulak theory (*Sov. Astron.*, 980, v. 24, N1, pp. 84–89): $225.5 + 190.5n$ kms and (or) commensurably with Phobos and Deimos orbits $1245 + 4639n$ kms ($n = 0, 1, 2, \dots$).

Hauber E. Kronberg P.

The Thaumasia "Rift", Mars: Is It a Rift? [#1541]

We describe the morphology of a large and complex graben structure in the western Thaumasia region (the Thaumasia graben or "rift"). We consider fault geometries, determine extension, and discuss shortly possible models for its origin.

LaClair D. A. Benison K. C.

Could Some Craters on Mars Have Acid Water Origins? [#1127]

Some craters on Mars may possibly be a result of acid water deposition. Physical sedimentology experiments using a 39% sulfuric acid solution produced small, circular crater-shaped depressions concentrated along the toes of alluvial fans.

Milam K. A. McSween H. Y. Jr. Moersch J. E.

A Wet, Dry, or Hot Gusev Crater?: Using THEMIS and MER to Test Depositional Hypotheses [#1071]

This study uses THEMIS, TES, MOC, and MOLA data, and a new surface unit map and stratigraphic sequence to evaluate various depositional hypotheses for Gusev crater. We further examine how a MER landing in Gusev might evaluate depositional models.

Miyamoto H. Baker V. R.

Role of the Manning Coefficient on Progressive Inundation by a Megaflood [#1731]

The empirical Manning equation is widely used to analyze megafloods on Earth and Mars, though the Manning resistant coefficient is not easily estimated. We discuss its theoretical background and its role in megaflood inundation processes by numerical simulations.

Morris R. V. Graff T. G. Ming D. W. Mertzman S. A. Bell J. F. III

Hydrothermal Alteration on Basaltic Mauna Kea Volcano as a Template for Identification of Hydrothermal Alteration on Basaltic Mars [#1900]

The mineralogy of alteration products on Mauna Kea is dominated by hydrolytic, low temperature alteration to palagonite, hydrothermal, acid sulfate alterations to jarosite, alunite, and phyllosilicates, and oxidation by dry heat to hematite.

Nezic Z. Salamuniccar G.

Topography Profile Diagrams of Mars: Architecture of the Density of Craters Curve Low-Pass Filter [#1415]

The architecture of the low-pass filter required for computation of filtered-density-of-craters curve that is part of topography-profile-diagrams (consisting of filling, gradient and plateau shift low-pass filter and ordinary low-pass filter).

Öhman T. Aittola M. Kostama V.-P. Raitala J.

Polygonal Impact Craters as an Indicator of Fracturing — An Example from Greater Hellas Region, Mars [#1311]

Polygonal impact craters are common in the solar system. They are induced by fractured target. The rim strikes of polygonal craters in greater Hellas region, Mars, reveal radial and concentric fracture patterns around Isidis and Hellas impact basins.

Polit A. T. Sakimoto S. E. H. Mitchell D. E. Grosfils E. B.

Geometric Properties of Possible Volcanoes in the South Polar Region, Mars [#1514]

We use MOLA data to characterize the geometry of mapped volcanoes, mountains, and previously unidentified possible volcanic edifices in the south polar region of Mars. There are probably 12 more volcanoes than previously identified and possibly more.

Rosenshein E. B.

Applicability of Complexity Theory to Martian Fluvial Systems: A Preliminary Analysis [#1660]

Terrestrial geomorphology has been revolutionized by the theories of self-organization and self-organized criticality. This work is a preliminary application of these theories to the problems of Martian fluvial landscape evolution.

Ruiz J. Fairén A. G. de Pablo M. A.

Thermal Isostasy on Mars [#1090]

Local changes in the thermal structure of the martian lithosphere may cause significant changes in the thermal buoyancy of the lithosphere. So, different thermal evolution in distinct areas on Mars must have an expression in the evolution of the martian topography.

Salamuniccar G.

Topography Profile Diagrams of Mars: A Step Toward the Formal Proof of Martian Ocean Recession, Timing and Probability [#1403]

Introduction to topography-profile-diagrams representation of Martian topography, including topography-profile, density-of-craters, filtered-density-of-craters and level-of-substance-over-time curve, indicating ocean influence on crater distribution.

Shean D. E. Head J. W.

Pavonis Mons Fan-shaped Deposits — Smooth Terrain Surface Ice Deposits [#1154]

The smooth facies of the Pavonis Mons fan-shaped deposits are characterized by broad, gentle slopes covered by vast dune fields. We interpret the smooth facies as residual glacier ice deposits that have persisted until the present.

Simpson R. A.

Highly Oblique Bistatic Radar Observations Using Mars Global Surveyor [#1270]

Transient surface echoes observed during MGS radio occultations are sensitive to antenna pointing errors but also respond to differences in Mars surface properties.

Sims D. W. Morris A. P. Ferrill D. A. Wyrick D. Y. Colton S. L.

Physical Models of Pit Chain Formation over Dilational Faults on Mars [#2099]

Analog modeling demonstrates that dilational faulting in cohesive rock beneath cohesionless material will produce pit chains, troughs, and grabens similar to those observed on Mars.

Tanaka K. L. Skinner J. A. Jr. Carr M. H. Gilmore M. S. Hare T. M.

Geology of the MER 2003 “Elysium” Candidate Landing Site [#1957]

Although chosen mainly for its safety characteristics, new Mars Global Surveyor and Mars Odyssey data suggest that the MER 2003 “Elysium” candidate landing site in southeastern Utopia Planitia also meets basic science requirements for the MER mission involving the geologic activity of water.

Thibodeaux C. J. Washington P. A. De Hon R. A.

Determining Water Levels in Maumee and Vedra Valles Using Equilibrium Sediment Transport Theory [#1256]

Equilibrium discharge requires water depths between 100 m and 250 m in Vedra Valles and between 125 and 440 m in Maumee Valles in response to longitudinal variations in channel width.

Utley J. A. Schultz R. A.

Continuity of Interior Deposits in Western Candor Chasma, Valles Marineris, Mars: Wiped Out by Faulting or Erosion? [#1424]

We look at the faulting or erosion of the interior deposits in western Candor Chasma as a first step in understanding their formation and development.

Venturini K. E. Jager K. M. Savasta K. J.

Preliminary Analysis of Pit Craters on Alba Patera, Mars Using MOC Data [#1063]

We mapped and analyzed small and large pit craters on Alba Patera, Mars using MOC data and MOLA profiles to determine their diameters and volumes.

Zuschneid W. Hauber E. Kronberg P. Jaumann R.

Extension Across Valles Marineris and the Thaumasia “Rift”, Mars [#1610]

We calculate extension from topographic profiles. We find the extension across the “Thaumasia Rift” (0.5–4.5 km), a large and complex graben system in the Claritas Fossae region, comparable to that across the Tempe Fossae Rift (2.5–3.1 km), but much lower than across Valles Marineris (9–20 km).