

Friday, March 16, 2007
MARS MAGNETICS AND ATMOSPHERE: CORE TO IONOSPHERE
1:30 p.m. Crystal Ballroom A

Chairs: R. J. Lillis
J. T. Bergstralh

- 1:30 p.m. Arkani-Hamed J. * Seyed-Mahmoud B. Aldridge K.
Tidal Excitation of the Core Dynamo of Mars [#1430]
 Because the giant basins trace a great circle on Mars and the core dynamo ceased to exist at about the time of large impacts, we propose that the core dynamo of Mars was excited by elliptical instability of martian core excited by a large asteroid.
- 1:45 p.m. Kuang W. * Jiang W.
Numerical Simulation of Historical Martian Dynamo: Onset and Annihilation of the Dynamo Action [#2212]
 Martian dynamo that generates and maintains a strong internal field stopped in the early evolution period. Our numerical simulation results suggest that the martian dynamo could be sustained at subcritical energy levels (lower than that for the onset of dynamo) and be terminated abruptly.
- 2:00 p.m. Lillis R. J. * Frey H. V. Manga M. Mitchell D. L. Lin R. P. Acuña M. H.
Basin Magnetic Signatures and Crater Retention Ages: Evidence for a Rapid Shutdown of the Martian Dynamo [#1515]
 Crater retention ages and magnetic signatures of nine old, large martian impact basins are used to imply that the global magnetic field likely went from being significant to nonexistent over a geologically short period of time.
- 2:15 p.m. Espley J. R. * Connerney J. E. P. Jurdy D. M. Acuña M. H.
Downward Continuation of the Martian Magnetic Field [#2019]
 By downward continuing the MGS mapping orbit magnetic field measurements to lower altitudes, we present highly accurate regional maps of magnetic fields at Mars with high spatial resolution.
- 2:30 p.m. Hood L. L. * Richmond N. C. Harrison K.
Magnetic Anomalies in the Terra Cimmeria/Sirenum Region of Mars: A Magnetization Model and Possible Sources [#1389]
 A new analysis of MGS aerobraking data indicates that anomaly sources in this region have a fairly random distribution and are not elongated by more than ~500 km in any direction. Sources most probably consist of magmatic (e.g., dike) intrusions.
- 2:45 p.m. Milbury C. A. * Raymond C. A. Smrekar S. E. Kulikov I. K. Schubert G.
Regional Correlation of Magnetic and Gravity Anomalies on Mars [#2067]
 We observe an apparent correlation of magnetic and gravity anomalies in several regions on Mars. We invert magnetic and gravity field data to better understand the origin and evolution of Mars and structure of the crustal remanent magnetization.
- 3:00 p.m. Langlais B. * Tobie G. Quesnel Y. Robuchon G.
Magnetic Paleopole Associated with Apollinaris Patera, Mars, and Polar Wander [#1570]
 A magnetic anomaly is associated with Apollinaris Patera, Mars. This correlation with a tectonic structure allows magnetization directions to be accurately determined. The magnetic paleopole is close to the current rotation pole, which means that polar wander occurred prior to the dynamo shutdown.

- 3:15 p.m. Litvak M. L. * Boynton W. V. Golovin D. Kozyrev A. S. Mitrofanov I. G. Sanin A. B. Saunders R. S. Tretyakov V. I. Varenikov A.
Global Mapping of Northern Martian Seasonal Cap with HEND Instrument During 2002–2007 Years [#1567]
This abstract contains results of observations of martian northern seasonal cap from 2002 to 2007 years from HEND instrument onboard Mars Odyssey including estimations of CO₂ deposit column density, mass, volume density, search of inter-annual variations and comparison with other studies.
- 3:30 p.m. Vincendon M. * Langevin Y. Poulet F. Bibring J.-P. Gondet B.
Aerosols Above the South Polar Cap of Mars as Observed by OMEGA: A Progress Report [#1665]
We have analyzed the contribution of atmospheric dust in OMEGA near-IR observations of southern regions of Mars covered with CO₂ ice. The signal at 2.6 μm observed above surfaces of CO₂ ice free of dust is used to map the optical depth of aerosols.
- 3:45 p.m. Levine J. S. *
A Search for Potential Biogenic and Volcanic Gases Emanating from Point Sources on Mars [#1233]
Small, localized areas on the surface of Mars may be sources of potential biogenic gases (e.g., methane and ammonia), potential volcanic gases (e.g., sulfur dioxide and hydrogen sulfide) and water vapor resulting from possible present-day ground water seepage and surface run-off.
- 4:00 p.m. Ulrich R. * Chevrier V. Chittenden J. D. Kral T. Roe L.
Comparison of Numerical Modeling and Temperature Records from the Mars Pathfinder Landing Site [#1166]
Model predictions of martian temperatures on both diurnal and annual time scales were compared to two sets of data for the Mars Pathfinder landing site. Strong agreement was obtained indicating that the assumptions and computational approaches are reasonably valid.
- 4:15 p.m. Meslin P.-Y. * Sabroux J.-C. Chassefière E. Pineau J.-F.
Radon-222 and Polonium-210 in the Martian Atmosphere: A New Insight into the Exchange of Volatiles and the Dust Cycle [#1308]
We expose how ²²²radon and ²¹⁰polonium can be used as geochemical probes to characterize the subsurface (water and ²³⁸U content, gas exchange) and the dust cycle. We present the first evidence of ²¹⁰Po on Mars and make comparisons with the Moon.
- 4:30 p.m. Sprague A. L. * Boynton W. V. Kerry K. E. Janes D. M. Reedy R. C. Metzger A. E. Nelli S. M. Murphy J. R.
Measurements by the GRS on Mars ODYSSEY of Argon in Mars' Atmosphere: Two Full Mars Years and More [#2400]
Atmospheric argon measurements made by the gamma sensor (one part of the gamma ray spectrometer) on Mars Odyssey are presented. The measurements span slightly more than two Mars years. Seasonal and latitudinal variations are described with some discussion.