

Thursday, March 18, 2004
SPECIAL SESSION: MARS CLIMATE CHANGE
1:30 p.m. Salon B

Chairs: K. E. Fishbaugh
M. A. Mischna

- 1:30 p.m. Litvak M. L. * Mitrofanov I. G. Smith D. E. Zuber M. T. Kozyrev A. S. Sanin A. B. Tretyakov V. Boynton W. V. Hamara D. K. Shinohara C. Saunders R. S.
One Martian Year on Orbit: Redistribution of CO₂ Seasonal Deposits Between the North and South Polar Regions of Mars from HEND/Odyssey Data and MOLA/MGS [#1569]
 We present analysis of the HEND results along with elevation changes from the MOLA on MGS to address the seasonal cycling of CO₂ between the atmosphere and surface of polar latitude regions of Mars.
- 1:45 p.m. Montmessin F. * Haberle R. M. Forget F.
Making Water Ice Permanent at the South Pole 25,000 Years Ago [#1312]
 Whereas most of studies on recent climate change address the fate of water with changing obliquities, we would like to show how the precession cycle might affect the stability of the north polar cap on much faster timescales.
- 2:00 p.m. Milkovich S. M. * Head J. W. III
Characterization and Comparison of Layered Deposit Sequences Around the North Polar Cap of Mars: Identification of a Fundamental Climatic Signal [#1342]
 Quantitative techniques are used to analyze the layered deposits within the north polar cap of Mars. Fourier analysis reveals a dominant wavelength in a majority of images which is likely the signature of the climatic processes forming this deposit.
- 2:15 p.m. Fishbaugh K. E. * Head J. W. III
Origin of the Martian North Polar Basal Unit and Implications for Polar Geologic History [#1156]
 An eolian origin of the basal unit indicates that during the Mid to Late Amazonian, classic polar layered deposits were not forming in the north, implying significant climate change. Instead, water ice and dust were mixed with migrating sand.
- 2:30 p.m. Russell P. S. * Head J. W. III Hecht M. H.
Evolution of Ice Deposits in the Local Environment of Martian Circum-Polar Craters and Implications for Polar Cap History [#2007]
 A numerical energy balance model of ice stability in the local environment of a complex crater assess (1) effects of topographic geometry on ice stability and (2) evolution of crater-interior ice deposits and implications for polar geology and climate.
- 2:45 p.m. Manning C. V. * McKay C. P. Zahnle K. J.
The Last 10 Myr on Mars: Comparing Atmospheric Simulations with Recent Geology [#1818]
 We develop a fully coupled, obliquity-driven linear model of the evolution of Mars' CO₂ atmosphere. Correlations between program output and recently emplaced layered geological features enable an understanding the climate during recent "ice-ages".
- 3:00 p.m. BREAK

- 3:15 p.m. Longhi J. *
CO₂-H₂O Phase Equilibria: Residual Ice Layers and Basal Melting of the Martian Polar Ice Caps [#1857]
Shifts in saturation surfaces with pressure favor residual layers of solid CO₂ at the martian south pole. Basal melting of solid-CO₂ layers within polar ice caps during periods of low obliquity may lead to storage of liquid CO₂ in the Martian crust.
- 3:30 p.m. Christensen P. R. *
A View of Meridiani from Above: Evidence for Deposition in Standing Water from THEMIS, TES, and MOLA [#1961]
The preferred model for Meridiani is deposition of precursor Fe-oxyhydroxides in water-filled basins. This model accounts for the sharp upper boundary of the hematite unit, goethite as a precursor, embayment relationships, remnants in isolated craters, and basalt as the major component.
- 3:45 p.m. Head J. W. III* Carr M. H. Russell P. S. Fassett C. I.
Martian Hydrology: The Late Noachian Hydrologic Cycle [#1379]
Analysis of Noachian geologic features and structures provides information about the nature of late Noachian hydrological cycle.
- 4:00 p.m. Howard A. D. * Moore J. M.
Changing Style of Erosion During the Noachian-Hesperian Transition and a Possible Climatic Optimum [#1192]
Hesperian channel systems differ from Noachian valley networks by their modest degradation, and may have formed during a brief climatic optimum.
- 4:15 p.m. Irwin R. P. III Craddock R. A. * Howard A. D. Maxwell T. A.
Inefficient Fluvial Erosion and Effective Competing Processes: Implications for Martian Drainage Density [#1991]
Low drainage density is an inherent characteristic of past runoff erosion on Mars. Cratering, infiltration, aeolian transport, and inefficient runoff erosion (25–50% less than on Earth per unit discharge) inhibited development of headwater valleys.
- 4:30 p.m. Carr M. H. * Head J. W. III
Formation of Martian Valley Networks: Melting of Low to Mid-latitude Snowpacks During Periods of High Obliquity? [#1183]
Martian valley networks may be cold climate features formed by melting of snowpacks during periods of high obliquity.
- 4:45 p.m. Salamunićcar G. *
Valleys-Ocean Boundary on Mars: Implication for Global Climate Change [#1992]
This work investigates relationship between morphology and elevation of Martian valleys termini and hypothetical Martian ocean, Contact 1 and 2 particularly, as well as their implication for global climate change.