Thursday, March 4, 2010
POSTER SESSION II: PLANETARY ATMOSPHERES
7:00 p.m. Town Center Exhibit Area

Shuvalov V.
Atmospheric Erosion Induced by Oblique Impacts **[#1191]**
The aim of the present study is to calculate the loss of atmospheric air in oblique impacts of large (1–30 km) asteroids and comets.

Maurette M.
Cracking the Elemental Genetic Code of the Atmospheric Noble Gases: The "Missing" ^{36}Ar and ^{84}Kr **[#1114]**
The accretion of hydrous-carbonaceous meteoroids with sizes of 50–200 μm rightly predicts the total burdens of ^{20}Ne and ^{132}Xe in the terrestrial atmosphere. However, the huge excesses of both ^{36}Ar and ^{84}Kr (15×) required additional "spikes" of cometary gases.

Economou T. E. Pierrehumbert R. T.
Mars Atmosphere Argon Density Measurements on MER Missions **[#2179]**
Although there is no meteorology instrument on either of the MER rovers, using the on board Alpha Particle X-ray Spectrometer on both rovers, we were able to measure the argon density variation in the martian atmosphere as a function of seasons.

Niles P. B. Boynton W. V. Hoffman J. H. Ming D. W. Hamara D. Phoenix Science Team
Carbon and Oxygen Stable Isotope Measurements of Martian Atmospheric CO_2 by the Phoenix Lander **[#2315]**
The Phoenix lander has measured the isotopic composition of martian atmospheric CO_2 to a precision better than 0.5%. This is consistent with previous results and has wide implications for understanding the past and current climate history of Mars.

Longhi J.
Some Phase Equilibrium Systematics of Martian Volatiles **[#2039]**
Binary pressure (P) – temperature (T) phase diagrams were constructed for the N_2-, CH_4-, and SO_2-H_2O systems making use of published triple points, critical points, and limited experimental determination of univariant equilibria.

Leeman J. R. Blackburn D. G. Elwood Madden M. E. Ulrich R. Chevrier V.
CO_2 Clathrate Dissociation Rates Below the Freezing Point of Water **[#1418]**
Gas hydrates represent large carbon reservoirs on Mars. Here low temperature rates of carbon dioxide hydrate dissociation are reported and reaction mechanisms determined.

Root M. J. Gainey S. R. Elwood Madden M. E.
Assessment of Hydrate Reservoirs as Potential Methane Sources on Mars **[#1705]**
This work aims to summarize the rates for methane hydrate dissociation in the literature and determine if dissociation of methane hydrate reservoirs could provide fluxes of methane comparable to seasonal methane plumes observed on Mars.

Schuerger A. C. Clausen C. Britt D.
Methane Evolution from UV-Irradiated Spacecraft Materials Under Simulated Martian Conditions: Implications for the MSL Mission **[#2092]**
Methane evolution by solar UV irradiation of spacecraft materials may interfere with the sensitivity of the SAM instrument on MSL to detect CH_4.

Chevrier V. F. Hanley J. Rivera-Valentin E.
Regolith Control of Atmospheric Water Vapor on Mars from Analysis of Phoenix TECP Data **[#2559]**
Preliminary detailed analysis of Phoenix TECP data shows that the humidity cycle is partly controlled by phase changes of magnesium perchlorate hydrates. Moreover, calculations suggest that adsorption may be also responsible for humidity variations.

Saruya T. Toyota T. Baratoux D. Kurita K.
The Exchanges of Water Vapor Between the Atmosphere and the Surface of Mars **[#1306]**
PFS observed the variation of water vapor in the atmosphere of Mars. It showed two local maximums of water at Tharsis and Arabia Terra. We will discuss the possibility of atmosphere-surface exchanges of water at Arabia Terra.

Teal D. A. Murphy J. R. Kahre M. A.
Martian Middle-Latitude Atmospheric Stationary Waves as Manifested in MRO MCS Retrieved Temperature Data **[#2630]**
Stationary waves in Mars' atmosphere at middle latitudes will be investigated via analyses of Mars Reconnaissance Orbiter derived atmospheric temperatures.

Wiseman S. M. Arvidson R. E. Morgan F. Wolff M. J. Morris R. V. McGuire P. C. Murchie S. L. Mustard J. F. Seelos F. P. Smith M. D.
Radiative Transfer Modeling of the Empirical 'Volcano Scan' Atmospheric Correction: Discussion of Artifacts **[#2461]**
Atmospheric correction of spectra acquired by MRO CRISM is important for interpretation of surface spectral properties. We use DISORT modeling to simulate the commonly used empirical volcano scan correction method and identify potential artifacts.

Lemmon M. T.
Martian Cirrus-like Hazes at the Phoenix Landing Site **[#2377]**
Phoenix SSI images show water ice hazes late in the mission. Diffraction by the ice particles constrains the effective radius to 20–50 µm. Diurnal changes in water vapor exceed the cloud abundance, and daily adsorption of ~15 µm of water in the soil is suggested.

Bean K. M. Lemmon M. T.
Nighttime Optical Depth Patterns from the Mars Exploration Rovers **[#1730]**
Using images from the Mars Exploration Rovers, the nocturnal optical depth variations can be better characterized. Trends searched for include an increase due to water ice cloud formation and a decrease due to large particle settling in a calmer boundary layer.

Merrison J. P. Gunnlaugsson H. P. Holstein-Rathlou C. Knak Jensen S. Nørnberg P. Rasmussen K. R.
Formation and Properties of the Martian Dust Aerosol **[#1651]**
The suspension of mineral dust in the martian atmosphere has a major effect on the planets climate. This presentation outlines the current level of understanding of mineral grain transport on Mars and some of the technology involved in this research.

Sciamma-O'Brien E. Carrasco N. Szopa C. Buch A. Cernogora G.
Titan's Atmosphere: An Optimal Gas Mixture for Aerosol Production? **[#2522]**
This study presents the latest results obtained in PAMPRE, a plasma experiment developed to simulate experimentally Titan's atmosphere. It has allowed the determination of the experimental parameters needed to produce tholins in conditions similar to Titan's atmosphere.

Devaraj K. Steffes P. G.
Laboratory Measurements of Microwave Properties of Ammonia Under Deep Jovian Atmospheric Conditions **[#1875]**
Over 500 lab measurements of the 1.5-6-GHz properties of ammonia have been made under simulated deep jovian atmospheric conditions (pressures up to 100 bars and temperatures upto 450 K) using a high-pressure measurement system built at Georgia Tech.

Espley J. R. Morgan D. D. Christou A. Farrell W. Grebowsky J. Gurnett D. Plaut J.
MARSIS Observations of the 2009 Martian Geminid Meteor Shower: Null Results **[#2187]**
MARSIS observations during the predicted martian Geminid meteor shower showed no obvious effects on the martian ionosphere.

Spiga A. Pathare A. Balme M. Renno N. Saca F. Halleaux D. Metzger S.
In Situ Studies of Terrestrial Dust Devils and Ambient Meteorology: Field Measurements of Vorticity **[#1327]**
The main purpose of the work described in this abstract is to relate measured ambient vertical vorticity with simultaneous observations of dust devil size and frequency.

Saca F. A. Renno N. O. Halleaux D. G. Rogacki S. Gillespie R. Musko S.
A Portable Instrument for Atmospheric Measurements **[#1767]**
We describe a new instrument for making accurate measurements in atmospheric systems. It consists of a Prandtl tube capable of measuring static and stagnation pressures, various sensors, and supporting electronics.

Renno N. O. Halleaux D. G. Saca F. Rogacki S. Gillespie R. Musko S.
A Generalization of Bernoulli's Equation to Convective Vortices **[#1745]**
Measurements of the static and stagnation pressures with an innovative instrument proved a generalization of Bernouilli's equation to convective systems.

McDoniel W. J. Goldstein D. Varghese P. Trafton L. Stewart B.
DSMC Modeling of the Plume Pele on Io **[#2623]**
Pele's vent, as imaged by Galileo, is modeled with DSMC, and an asymmetric plume results which better matches observations than do simulations from a simple disk-source.