Hypothetical Time Sequence of the Morphological Changes in Global and Local Levels of the Dark Dune Spots in Polar Region of Mars [#1918]

Our time sequence of DDS transformations was interpreted as phenomenon resulting from interaction of soil material participants, frosted cover of CO2, soil grains, water ice, water adsorbed layer, and possible formations of martian surface organisms.

Sources, Sinks and Migration Patterns of Dark Veneers in the North Polar Deposits of Mars [#1437]

We report on the geology of veneers of dark materials that commonly mantle the surfaces of layered deposits in the Martian north polar plateau. These features may help explain polar trough formation.

Seasonal Albedo Changes on Mars from MOLA Radiometry and TES: Seeking an Explanation for Apparent “Summer Snow” [#1482]

Radiometry data from the MOLA have identified an anomalous late summer brightening of the northern hemisphere of Mars. We investigate possible causes of this brightening and our results indicate water frost is the most likely brightening agent.

Soil Effect on the Evaporation Rate of Pure Water Ice Under Martian Conditions [#1054]

In order to understand the possibility of increasing the likelihood of liquid water on the surface of ice on Mars, we have measured the effect of a 0–10 cm dust layer. We find that such a layer decreases the evaporation rate by a factor of 5.

Mapping the Exposed Water Ice and CO2 Perennial Cap Around the South Pole of Mars with THEMIS Visible and Infrared Data [#1163]

The water and CO2 ices and the material composing the polar layered deposits have different albedo and thermal characteristics. THEMIS visible and infrared data is also powerful for mapping polar material around the South Pole of Mars.

Changes in the Masses of the Seasonal Polar Icecaps over 3 Mars Years [#2083]

The seasonal mass of carbon dioxide on Mars’ polar ice caps has been derived from the Doppler and range tracking of the MGS spacecraft for a period of nearly 6 Earth-years.

The Annual Cycle of CO2 Snow Depth at Martian Polar Caps from MOLA Data [#1777]

North and south polar regions of Mars are affected by the CO2 that stored in the atmosphere. In a seasonal cycle, 25% of the mass of the atmosphere has been estimated to exchange with the surface.

Observation of the Martian Cryptic Region from Mars Orbiter Camera [#1313]

The distribution of the Martian south pole is not symmetric during the springtime retreat. On the opposite side of the residual cap a so-called cryptic region is found between latitudes 75° and 85° and longitude 150°W and 310°W.

Initial Results of Stratigraphic and Signal Analysis of the Mars South Polar Layered Deposits [#1947]

Fourier analysis and matching algorithms are applied to the south polar layered deposits using DN-depth profiles constructed from MOC, MOLA, and THEMIS data. Preliminary results include evidence for multiple climate signals recorded in the layers.
Pais D. Murray B. C. Pathare A. V. Byrne S. Chomko R. F.
*The Peculiar Stratigraphy of Offset Troughs Within the Martian North Polar Layered Deposits — Evidence for Deformation? [#1042]*
We present observations of curvilinear “wrinkle”-like layering exposed near the junctions of some offset troughs in the Martian North Polar Layered Deposits (NPLD). This may represent evidence of localized ductile deformation within the NPLD.

Fortezzo C. M. Tanaka K. L.
*Unconformity Orientations in Planum Boreum, Mars: Preliminary Results and Interpretation [#2277]*
Measuring the orientations of unconformities and mapping their locations in the PLD of Planum Boreum, Mars with the goal of understanding the relationship between unconformities and their adjacent layers and troughs in which they lie.

Xie H. Zhu M. Guan H. Smith R. K.
*Isolated Water Ice in an Unnamed Crater Away from the Residual North Polar Cap of Mars: The Only One? [#1764]*
This paper examined water ice patches in craters at high latitude regions of Mars but outside the residual polar caps using THEMIS time series visible and brightness temperature images.

Durham W. B. Pathare A. V. Stern L. A.
*The Brittle-Ductile Transition in Mixtures of Rock and Ice: Experiments at Planetary Conditions [#2036]*
The brittle-ductile transition in mixtures of rock and ice: Experiments at planetary conditions.

McGraw M. A. Light A. S. Travis B. J.
*The Effect of Experimentally Determined Salt Viscosity on Convective Plumes in the Subsurface of Mars [#2224]*
We examine how brines alter hydrothermal convection in the subsurface of Mars. The viscosity of the fluid was experimentally determined and then used for simulations. Results indicate that the two brines influence convection differently.

Pathare A. V. Koutnik M. Murray B. C. Marshall S.
*Glacial Flow Modeling of the Martian North Polar Layered Deposits [#2290]*
After adapting a three-dimensional terrestrial flow model to martian conditions, the effects of various surface mass balance scenarios upon present day flow patterns in the north polar layered deposits will be assessed.

Barnhart C. J. Asphaug E. Tulaczyk S.
*Properties of Large Water-filled Crater Basins on Mars [#2437]*
In this work we apply a critical examination to the possibility that the MARSIS detected subsurface feature in Chryse Planitia is a buried ice filled crater and explore its thermodynamic and gravitational properties.