Thursday, March 20, 2003
RECENT WATER ON MARS: GROUND WATER, GROUND ICE, AND GULLIES
1:30 p.m. Salon B

Chairs: S. M. Clifford
N. G. Barlow

Mellon M. T. *
Theory of Ground Ice on Mars and Implications to the Neutron Leakage Flux **[#1916]**
In this work we present new calculations of the geographic and depth distribution of ground ice on Mars and draw comparisons with the inferred distribution of ice from Mars Odyssey Neutron Spectrometer observations.

Clifford S. M. *
The Limits of Theoretical Modeling and Geomorphic Interpretation in Assessing the Present Distribution of Subsurface H_2O on Mars **[#2118]**
Our ignorance about the heterogeneous nature and thermal evolution of the crust effectively precludes theoretical or geomorphic attempts to identify and quantitatively assess the current geographic and subsurface vertical distribution of ground ice and groundwater on Mars.

Richardson M. I. * McCleese D. J. Mischna M. A. Vasavada A. R.
Obliquity, Ice Sheets, and Layered Sediments on Mars: What Spacecraft Observations and Climate Models are Telling Us **[#1281]**
Mars Odyssey GRS data, along with images of recent ground ice and new climate modeling, suggest that the subaerial formation and subsequent slow devolitization of ice sheets may be an important, ongoing process globally, over climate timescales.

Barlow N. G. *
Has the Volatile Content of the Martian Substrate Varied over Time? **[#1122]**
We are utilizing the record of impact craters with fluidized ejecta morphologies to determine if the volatile content of subsurface ice reservoirs on Mars have varied over time.

Arfstrom J. D. *
Upper Dao Vallis: A Basin Dominated by Ice-rich Viscous Materials **[#1208]**
I present preliminary geomorphic interpretations of Upper Dao Vallis. Ice-rich materials exhibiting viscous-flow features dominate its geomorphology.

Howard A. D *
Tongue Ridges and Rumpled Crater Floors in Mid-Southern-Latitude Martian Craters **[#1065]**
Mid-southern latitude craters on Mars exhibit tongue-like ridges extending from the base of south-facing crater walls that enclose smooth, concave floors. These form from retreat of gullied ice fans and massive ice deposits. The ice forces inward flow of ice-rich crater floor deposits.

Hecht M. H. * Bridges N. T.
A Mechanism for Recent Production of Liquid Water on Mars **[#2073]**
Seasonal liquid water could be formed in gullies and other sheltered locations on Mars by a process of condensation, concentration, buffering, and melting. In the present epoch this process would yield little more than a trickle of water, but may have been vigorous as little as 20,000 years ago.

Lee P. * McKay C. P.
Mars: Always Cold, Sometimes Wet? **[#2127]**
A synthesis of a diverse suite of observations of H_2O-related landforms that are possible Mars analogs from terrestrial polar regions (Devon Island in the Arctic; the Dry Valleys of Antarctica) put into question any requirement for extended episode(s) of warm and wet climate in Mars's past.

Baker V. R. * Dohm J. M. Ferris J. C.
Very Recent Hydroclimatic Change on Mars? **[#1435]**
A globally distributed suite of exceptionally young water-related landforms on Mars (periglacial, volcano-ice, fluvial, glacial) is best explained as produced by long-term, episodic climate change involving both orbital and volcanic forcings.

Motazedian T. *
Currently Flowing Water on Mars **[#1840]**
Dark slope streaks on Mars appear to indicate currently flowing water. The dark streaks are concentrated around Olympus Mons. Subsurface ice is melted by geothermal heating, releasing a mineral-rich brine. This brine flows onto the Martian surface, leaving dark streaks of rock varnish.

Reiss D. * Jaumann R.
Debris Flows on Mars: Global Distribution and Their Correlation to Present Day Maximum Surface Pressures and Temperatures **[#1821]**
We correlated the global distribution of debris flows with the minimum requirements for liquid water (pressures >6.1 mbar and temperatures >273 K) using a high resolution MOLA-DTM for maximum pressures and maximum TES brightness temperatures.

Thompson J. * Sears D. W. G. Benoit P. H. Kareev M. S.
Martian Gullies and the Stability of Water in the Martian Environment **[#1035]**
Results from Odyssey suggest that hydrogen (most likely as water) is common on Mars. Here, we present data on the influence of regolith on groundwater properties, and on the ability of evaporation of water to produce features in regolith.