Geophysical Research Abstracts, Vol. 7, 05963, 2005
SRef-ID: 1607-7962/gra/EGU05-A-05963

Seasonal Surface Frost at Low Latitudes on Mars

N. Schorghofer (1) and K.S. Edgett (2)

(1) Institute for Astronomy, 2680 Woodlawn Drive, Honolulu, HI 96822, USA (norb1@ifa.hawaii.edu), (2) Malin Space Science Systems, P.O. Box 910148, San Diego, CA 92191, USA

During the past 4 Mars years, Mars Orbiter Camera imaging capabilities have been used to document occurrence of seasonal patches of frost at latitudes as low as 35°S, and even 24°S. In one study region, 40–36°S 134–140°E, monitoring reveals bright frost patches on crater walls annually during mid southern winter. Thermal Emission Spectrometer surface temperatures indicate that nighttime temperatures are close to the frost point of CO2 at winter solstice. Thermal model calculations show pole facing slopes reach even lower temperatures and accumulate CO2 frost, which can easily reach several centimeters in thickness. The frost point temperature of H2O in the study region is ∼193 Kelvin. Carbon dioxide frost exists at ∼145 K and should hence be preceded by H2O deposition.