VIKING LANDER IMAGING DURING THE EXTENDED MISSION, R.E. Arvidson, McDonnell Center for the Space Sciences, Washington Univ., St. Louis, Mo. 63130, E.A. Guinness, McDonnell Center for the Space Sciences, Washington Univ., St. Louis, Mo. 63130, C.E. Carlston, Martin Marietta Corp., Denver, Colo. 80201, D. Pidek, Martin Marietta Corp., Denver, Colo. 80201, K.L. Jones, Dept. Geological Sciences, Brown University, Providence, R.I. 02912, C. Sagan, Laboratory for Planetary Studies, Cornell Univ., Ithaca, N.Y.14850, S.D. Wall, NASA Langley Research Center, Hampton, Va. 23665.

The Viking Landers touched-down in the northern hemisphere during the onset of northern summer. The lander cameras have been monitoring the sky and surface on a regular basis since then, providing information on the dynamical characteristics of Mars that extends over nearly a full Martian year.

Results that impact our understanding of aeolian dynamics on Mars are: (1) Wind-blown drifts of soil at both landing sites extend from rocks and point in a southerly direction. The southerly direction for the drifts is consistent with the direction of bright streaks seen from orbit at these latitudes and with the wind direction inferred from the Mariner 9 IR measurements near the end of the 1971 dust storm. However, Viking lander meteorology results suggest a much more complex distribution of winds. Two large "perihelion" dust storms occurred during Viking. Winds did not blow consistently from north to south at either site, during either storm. (2) Viking Lander X-ray fluorescence results and Lander camera multispectral data (.4-1.1 μm) are consistent with the soils being composed of a mixture of weathering products derived from iron-rich igneous rocks. Similarities in composition and spectra at both landing sites imply that the soil has been homogenized by winds on a global scale. (3) No <u>obvious</u> topographic changes have been found in comparing pictures of drifts and other undisturbed areas taken on various days with the lander cameras. Soil material within one of the footpads on VL1 has been significantly scoured by winds. The material in the footpad is loose, and in addition the footpad surface slopes some 30°. Thus, the shear stress needed to entrain material will be lower than that needed to erode material on a flat surface. Soil material dumped onto the lander deck has been considerably shaped by wind and by the action of subsequent dumps of soil, where the soil material impacted onto older deposits and reshaped them. Unfortunately, soil deliveries and dumps have continued throughout the mission, making it very difficult to tell if wind alone has done any of the reshaping. (4) Reference gray patch charts mounted on the lander, used for calibration of multispectral imagery, have obtained a coating of red dust. Some of the dust was blown off the charts at the onset of high winds associated with the two perihelion dust storms. That is not too surprising since the chart surfaces slope at 79° to the horizontal, and the grains must have been held largely by adhesive forces. (5) In sum, the past year on Mars has been a relatively quiet one in terms of aeolian activity at the landing sites. With the exception of some wind induced redistribution of disturbed material, no obvious wind-induced changes have been detected. Yet, the soil at the landing sites has, in the past, been shaped in a significant way by winds. Either significant aeolian activity at the landing sites is

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a very rare event, connected to a very occasional storm with high velocity winds, or the deposits at the sites were last altered in a significant way when local climatic conditions were different. One possibility is that aeolian erosion is strongly controlled by the location of the subsolar latitude at perihelion. At present that latitude is below the equator, while both landers are in the northern hemisphere.

A significant event at Viking Lander 2, located at 48^{o} N. latitude, occurred on approximately the 280th day after landing, just after the northern winter solstice. A deposit of frost, perhaps clathrate, formed and remained as a patchy cover for about 150 days after it was first detected.

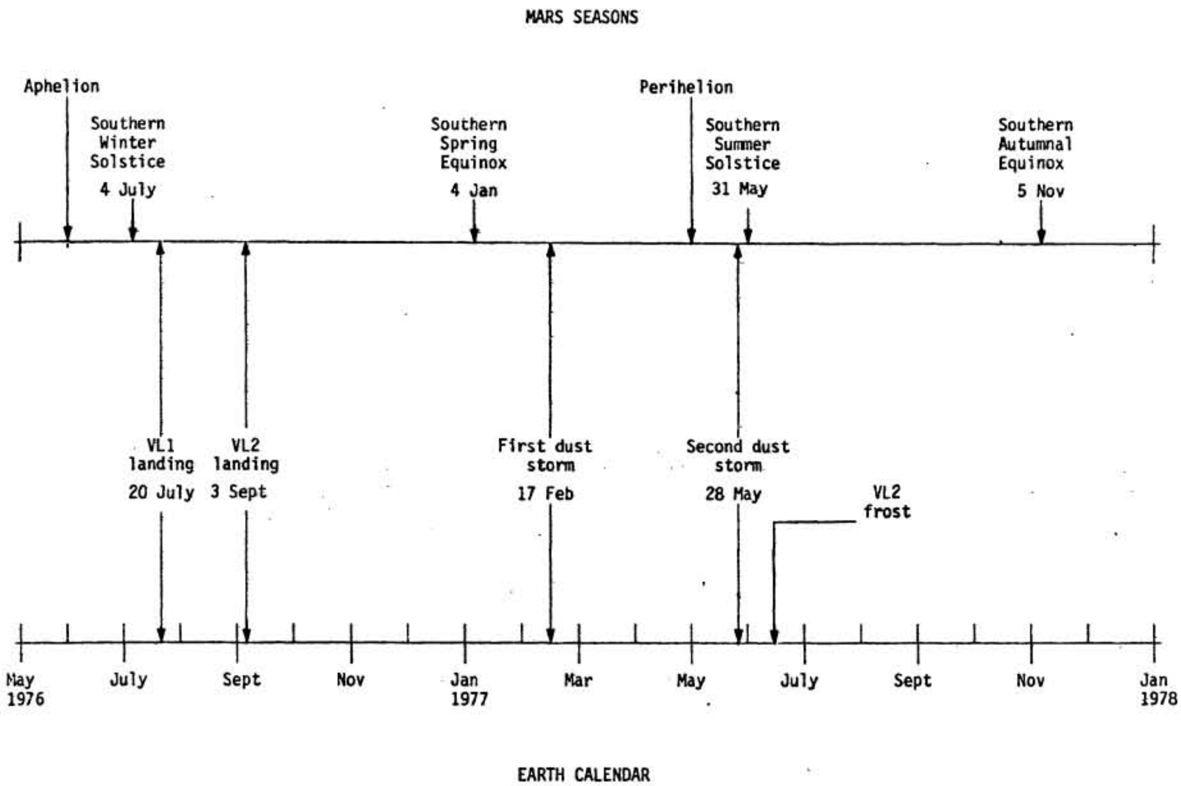

Figure 1: This graph shows the relationship between the Martian seasons and the Earth calendar during the Viking mission. Notice that the two global dust storms started near perihelion, and that frost was formed at the Viking 2 site just after northern winter solstice.