

N89-10807

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1969-01

12.1.1969

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SEASONAL WIND VARIATIONS IN THE MARTIAN SUBTROPICS. James Murphy, Conway Leovy, and James Tillman, Dept. of Atmospheric Sciences, University of Washington, Seattle, WA 98195

A recent analysis of winds at the Mutch Memorial Station (22.5N, 48W) will be presented and interpreted. During the late summer period from L_S 100 to L_S 180, there was a gradual transition from winds that are topographically controlled, diurnally repeatable, and predominantly southerly to a wind pattern reflecting reduced topographic influence and the predominance of northeasterly flow of the global Hadley circulation. The signature of the global westward propagating tides is also clear in these data.

During autumn and winter there are also transient disturbances in the period range 1 - 20 sols (Martian solar days). Two of the most prominent disturbances have coherent wind, temperature, and pressure fluctuations near the 2.5 and 3.4 day periods. By combining wind and pressure data we show that these are eastward propagating waves with zonal wave numbers two to four and phase speeds 5-15 ms^{-1} . We infer that they are the equatorward extensions of previously observed baroclinic waves at 48N. Pressure fluctuations at this period show strong interannual variations in amplitude.

Beginning in early autumn and continuing at irregular intervals through early winter are "surges" of strong northeasterly wind with little or no associated pressure fluctuation. These "surges" may arise from enhancement of the amplitude of global normal modes. They may also play an important role in the initiation of Martian global dust storms. Their precise mechanism remains unclear, however.