



Seasonal Asymmetry in Martian Tides

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Several studies have unveiled the sources of nonmigrating tides on Mars, these sources traditionally including the dramatic changes in the martian topography and the non-uniformity of the surface thermal properties. These surface contrasts in combination with the solar diurnal cycle lead to production of a spectrum of nonmigrating tides with varying strengths. Dust plays a central role in the tidal generation process as it intercepts solar radiation in the troposphere, thus injecting the diurnal cycle directly into the atmosphere. The role of dust in shaping every facet of of the martian dynamics has long been known and studied including its contribution to tidal excitation. In this presentation we show how the interplay between surface-generated tidal components and those excited by longitudinally-varying solar absorption due to dust, explains the seasonal asymmetry of nonmigrating tides as seen in middle-atmosphere Mars Climate Sounder (MCS).