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Observing the Dynamics of the Martian Atmosphere (I)

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The Martian atmosphere exhibits more dynamical variability than the terrestrial atmosphere with large amplitude tides and gravity waves in addition to the seasonal dust storms. To date, there have not been dedicated wind measurements from orbit around Mars and there is some evidence that the winds do not match expectations from models. As with the terrestrial atmosphere, airglow is one means to observe Martian atmospheric dynamics. The field-widened Michelson imaging interferometer is one technique with which wind and temperature measurements can be made. The O2 IR atmospheric band is an extremely bright emission in the Martian dayglow and allows observations to be made from close to the surface to ~50 km. In this paper, our current understanding of the dynamics of the Martian atmosphere will be reviewed and the ability of an imaging Michelson interferometer to probe the dynamics of the atmosphere presented.

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