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Meridional and temporal variability in Saturn's middle and upper atmosphere

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Abstract

Stratospheric temperatures and composition vary with latitude and time on Saturn, as do other parameters such as the strength of atmospheric mixing (or winds). Saturn's 26.7º obliquity leads to a pronounced seasonal variation in solar insolation, which drives much of the observed variability in atmospheric parameters. However, seasonal variations are not the whole story, as atmospheric parameters vary on a variety of time scales. Middle-atmospheric dynamics plays a strong role in the observed characteristics, and recent Cassini measurements are helping disentangle the details of stratospheric transport. I will review the observational evidence for atmospheric variability in the middle and upper atmosphere of Saturn and discuss some of the physical and chemical processes believed to be responsible for the variations.

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