

## **Variability of the cold point tropical tropopause derived from GPS data**

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The high vertical resolution of GPS radio occultation measurements provides the opportunity to examine structure and variability of the cold point tropical tropopause, which is important for understanding stratospheric water vapor and cloud behavior in the tropics. We use the combined record of CHAMP plus COSMIC GPS data to quantify temporal variability of the zonal mean cold point tropopause, and its relationship to temperatures in the upper troposphere and lower stratosphere. GPS data highlight cold point variability associated with the annual cycle and the quasi-biennial oscillation (QBO), in addition to transient sub-seasonal fluctuations. The variations in cold point temperatures are highly coherent with observed changes in stratospheric water vapor.