GPS-RO OBSERVATIONS OF THE TROPICAL TROPOPAUSE LAYER: INVESTIGATING CLOUD-TEMPERATURE INTERACTIONS WITH COSMIC

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High vertical resolution GPS radio-occultation temperature measurements from COSMIC are combined with cloud measurements from the Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations (CALIPSO) mission to quantify relationships between temperatures and clouds in the Tropical Tropopause Layer (TTL). This study focuses on the behavior of thin cirrus clouds frequently observed over altitudes 13-17 km. The COSMIC and CALIPSO data provide 5000 near-coincident observations per month in the tropics (data within 200 km and 2 hours). We show results for case studies of isolated thin cirrus linked to TTL temperature anomalies, and also examine statistics of correlations between cirrus clouds and temperatures throughout the tropopause region. Initial results highlight persistent negative temperature anomalies in the TTL linked to high level cirrus.