

SEMINAR

The Tropical Tropopause Definitions and Water Vapor Transport in the TTL: New Insights from Airborne in situ Measurements over the Tropical Western Pacific

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The tropical tropopause region plays an important role in the Earth's climate system. The temperature and transport structure there control the amount of water vapor in the stratosphere, which has a significant contribution to the climate forcing. Correctly representing the temperature structure in the tropical tropopause region is a significant challenge for the chemistry climate models. Understanding the controlling processes is a critical step for making progress. The ATTREX campaign provides a unique data set for examining our theory and hypothesis on the tropical tropopause and TTL. I will present an analysis of temperature, water vapor and ozone across the tropopause over the tropical Western Pacific (TWP) using the ATTREX 2014 observations. The analysis aims to address two connected questions:

- (1) The cold point and the WMO lapse rate criteria, which one provides the "correct" definition for the tropical tropopause?
- (2) Vertical versus horizontal transport processes, what are the relative importance for dehydration across the TTL?

These questions have been addressed in the past mostly through theoretical and model approaches. The new insights from the observational study on these problems will be discussed.

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Refreshments 3:15 p.m.

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Live webcast: <http://ucarconnect.ucar.edu/live>

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