

## SEMINAR

**Constraining the stratospheric sulfur budget: aircraft observations of SO<sub>2</sub> in the Tropical UT/LS****Andrew Rollins****NOAA Earth System Research Laboratory****Abstract:**

Oxidation of sulfur dioxide (SO<sub>2</sub>) in the Tropical UT/LS leads to intense nucleation of new particles that may be globally distributed, and SO<sub>2</sub> transported through this region has been suggested to be a major source gas for aerosols in the stratosphere even during volcanically quiescent periods. In-situ measurements of SO<sub>2</sub> in the tropical tropopause region to inform these processes have however been nearly absent from the observational record. We have recently developed a new laser induced fluorescence instrument for in-situ measurement of SO<sub>2</sub> on high-altitude research aircraft and deployed the instrument during three aircraft campaigns spanning 2015 –2017. These flights provided more than 130 hours of observations up to 19.7 km altitude spanning 1°S – 45°N latitude.

In this presentation I will provide an overview of these recent observations, and compare the measurements with satellite observations (MIPAS, ACE-FTS) and global models (WACCM, GEOS-5). While a few of the UT observations show that relatively high values of up to ~ 100 pptv may result from minor volcanoes and transport of pollution, the majority of our measurements indicate that typical tropopause SO<sub>2</sub> concentrations are near 5 pptv. This low mixing ratio if globally representative is insufficient to be a major contributor to the total budget of stratospheric aerosols.

**Date:** Monday, February 12, 2018; **Time:** Refreshments 3:15pm, Seminar 3:30pm  
NCAR Foothills Laboratory - 3450 Mitchell Lane, Boulder, CO 80301  
FL2-1022, Large Auditorium

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

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