

Virtual ACOM Seminar

Year to year variability in tropical lower stratospheric temperatures

Alison Ming
University of Cambridge

Date: Monday, August 8th, 2022, 10:00am – 11:00am

Link: <https://operations.ucar.edu/live-acom>

ABSTRACT

The inter-annual variability in mid and lower stratospheric temperatures for the period 1984-2019 is decomposed into dynamical and radiative contributions using a radiative calculation perturbed with changes in dynamical heating, trace gases and aerosol optical depth. The temperature timeseries obtained is highly correlated with the de-seasonalized ERA5 temperature. Ozone and dynamical heating contributions are found to be equally important, with water vapour, stratospheric aerosols, and carbon dioxide playing smaller roles. Prominent aspects of the temperature timeseries are closely reproduced, including the 1991 Pinatubo volcanic eruption, the year-2000 water vapor drop, and the 2016 Quasi-biennial oscillation (QBO) disruption.