

Virtual ACOM Seminar

Characteristics of final stratospheric warmings and implications for springtime predictability

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

ABSTRACT

Every spring, the stratospheric polar vortex transitions from its westerly wintertime state to its easterly summertime state due to seasonal changes in incoming solar radiation, an event known as the “final stratospheric warming” (FSW). While FSWs tend to be less abrupt than reversals of the boreal polar vortex in midwinter, known as sudden stratospheric warming events, their timing and characteristics can be significantly modulated by atmospheric planetary-scale waves. We here show that FSW events for both hemispheres in most cases exhibit a clear wave geometry. We find the wave geometry of the FSW affects total column ozone anomalies in both hemispheres, and tropospheric circulation over North America. In the Southern Hemisphere, the timing of the FSW is strongly linked to both total column ozone before the event and the tropospheric circulation after the event. The timing and the wave geometry of the final warming may have implications for improving springtime predictability of surface weather and total column ozone.