



Recent widening of the tropical belt: Evidence from tropopause observations

D. J. Seidel (1), **W. J. Randel** (2)

(1) NOAA Air Resources Laboratory, Silver Spring, Maryland, USA, (2) NCAR Atmospheric Chemistry Division, Boulder, Colorado, USA (dian.seidel@noaa.gov / Phone: +1-301-713-0295 ext. 126)

Radiosonde measurements and NCEP/NCAR reanalysis data are used to examine the climatology and long-term changes in tropopause behavior in the subtropics. Climatological tropopause heights in the subtropics exhibit a bimodal distribution, with maxima in occurrence frequency near 16-17 km (characteristic of the tropical tropopause) and below 13 km (typical of the extratropical tropopause). Both the radiosonde and reanalysis data show that the frequency of occurrence of high tropopause days in the subtropics of both hemispheres has systematically increased during the past few decades, so that tropical characteristics occur more frequently in recent years. This behavior is consistent with a widening of the tropical belt. Our analysis indicates an expansion of 1.7 ± 0.8 degrees latitude per decade during 1979-2005. This trend is consistent with recent findings by other investigators using different, independent indicators of the width of the tropical belt.