

Climatology and variability of upper tropospheric/lower stratospheric jets from MERRA reanalysis

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The upper tropospheric jets are key dynamical features of the circulation that organize transport in the upper troposphere/lower stratosphere (UTLS). The lowest part of the stratospheric polar night jet often extends down into the UTLS and can thus also play a significant role in UTLS transport. Multiple tropopause are common in the region surrounding the upper tropospheric jets, and are associated with cross-tropopause transport. A method has been developed to characterize the UTLS jets and view trace gas distributions in coordinate systems relative to these jets. We present here an climatology of upper tropospheric jets in relation to multiple tropopauses and the stratospheric polar night jet from the 32-year MERRA reanalysis. Interannual variability and trends are examined. The climatology of MERRA assimilated ozone in relation to the jets and tropopause is examined and compared with that from the 7-year record of Aura Microwave Limb Sounder Measurements.