

Observations and simulations of turbulent processes in the upper troposphere and lower stratosphere

Bob Sharman

NCAR Research Applications Laboratory

Enhanced turbulence levels in the upper troposphere and lower stratosphere are relatively rare phenomena, and the lack of routine, quantitative turbulence measurements in these regions limits our understanding of these events. Thus forecasting of these events for the aviation community is principally empirically-based rather than theoretically-based. In this talk, based on available observations to date, some statistics of upper-level turbulence and their relation to known sources will be reviewed. Some results from recent high resolution numerical simulations will also be presented which has helped our understanding of the physical processes involved, including a better understanding of the linkages of turbulence to the larger (and more routinely observed) scales, which is important for routine forecasting. Finally current gaps in our knowledge will be identified, and observations suggested that may help fill these gaps.